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REFERENCES AND ABBREVIATIONS

Readers in search of a given subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings Institutions and Corporations with the right to the prefix Royal will be found under that prefix, with the exception of Hospitals which will be found under that heading, and Medical Societies, which are separately indexed under Societies All Universities are indexed under the word University. (A) = Annotation (C) = Correspondence (LA) = Leading Article, (ML) = Medico legal (NI) = New Invention (O) = Obituary, (P) = Parliament (PP) = Panel Practice and (R) = Review

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ORIGINAL ARTICLES

A PRINCIPLE IN RASPBERRY LEAVES WHICH RELAXES UTERINE MUSCLE

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RASPBERRY-LEAF tea has been a herbalist's remedy for many years. It is said to be the best known and oldest of all the herb infusions and to be included "as a proved aid in maternity in the most ancient of herbal books." Our interest in it was stimulated by an inquiry made to one of us (E. R. W.) by Sir Beckwith Whitehouse whether anything was known of the action of raspberry leaves in the body.

The statement made by one firm of herb specialists is as follows: "Raspberry leaves are the dried leaves of *Rubus idæus* (Rosaceæ) which grow in Europe, Canada and northern United States. The leaves impart their properties to water, giving to the infusion an odour and flavour somewhat similar to that of some kinds of black tea. Raspberry leaves have astringent properties and also act as a stimulant. It is found that if the infusion be taken freely before and during confinement, parturition is easy and speedy." It is also said to be useful in painful and profuse menstruation. We have accordingly tested extracts of raspberry leaves for their action on the uterus both in situ and when isolated. In the course of this work we have found that a principle is present which causes relaxation of the muscle of the uterus when this is tonically contracted, and which diminishes the force and frequency of rhythmic contractions. We have also made a general survey of the action of raspberry-leaf extracts on other tissues.

PREPARATION OF EXTRACTS

Active extracts have been made in the following ways:

(*a*) By making an infusion of the dried leaves with boiling water, using 100 ml. of water for 10 g. leaf. This was allowed to stand for half an hour and then squeezed through muslin. The infusion was concentrated by evaporation at 40° C. under reduced pressure until the activity of 2 g. leaf was present in 1 ml.

(*b*) By evaporating to dryness an infusion prepared as in (*a*). Approximately 1 g. residue was given by 10 g. leaf. Of the residue 1 g. was taken up in 5 ml. distilled water, and 5 ml. absolute alcohol was added. This produced a precipitate of inactive material which was removed by filtration. The filtrate was taken to dryness. Of the residue 1 g. was equivalent to approximately 20 g. leaf.

(*c*) By preparing an infusion as in (*a*) (before concentration), and adding basic lead acetate in amount just insufficient to throw down all precipitable matter. The filtrate was evaporated to dryness.

(*d*) By treating an infusion prepared as in (*a*) (before concentration) with Norit charcoal, filtering and evaporating to dryness.

Other steps to purify the active material have been taken, but these are still in progress and will be described elsewhere.

PHARMACOLOGICAL ACTION

Action on uterus of cat in situ.—The action of raspberry-leaf extracts on the uterus has been examined by intravenous injection into spinal cats, prepared by destroying the brain under ether, and into cats anæsthetised with chloralose. The stomach, the small and large intestines, the pancreas and the spleen were removed, and the abdominal cavity was filled with Ringer's solution at 37° C. The ovarian end of one horn of the uterus was freed from its attachments, though its blood-supply was preserved, and the end of the horn was connected by a thread passing over light pulleys to a lever writing on a smoked drum.

The injection of an amount of extract equivalent to 2 g. leaf into the external jugular vein produced a relaxation of the uterus as shown in fig. 1, accompanied by a slight rise of blood-pressure. The effect on the uterus was variable. Instead of the simple relaxation seen in fig. 1, occasionally the relaxation was followed by contraction. Sometimes there were three phases: (*a*) relaxation, (*b*) contraction and (*c*) further relaxation. Often the effect seen in fig. 1 was not obtained with the first injection, but as successive injections were made the relaxation became increasingly pronounced. This is shown in fig. 2, in which the 2nd injection of extract produced no more than a longer pause between two contractions, as shown in fig. 2A, while the 4th injection stopped the contractions for 10 minutes. The 5th injection led to complete arrest of all uterine movements, the muscle being fully relaxed.

While extracts made by the process (*b*) had no great effect on the blood-pressure, extracts prepared as in (*c*) often caused an initial fall of blood-pressure followed, especially in spinal cats, by a rise which was sometimes large; in one experiment the blood-pressure rose from 78 to 196 mm. Hg. The concurrence of a rise of blood-pressure and a relaxation of the uterus at first suggested that both effects might be due to the liberation of adrenaline from the suprarenal glands by the action of some substance in the extract resembling nicotine. Several experiments were necessary to establish that the suprarenal glands played no part in the action on the uterus, and that complete relaxation with cessation of rhythmic contractions was produced in the absence of these glands.

We tested the action of extracts of raspberry leaves not only on the uterus of the virgin cat but also on the non-pregnant multiparous cat and on one cat in late pregnancy. The record obtained before the injection showed large contractions at intervals of 2–3 min. superimposed on a regular rhythm of smaller contractions. When the raspberry-leaf extract was injected the large contractions were abolished during 10 min. while the series of smaller contractions persisted.

Action on uterus of rabbit in situ.—When similar preparations of the uterus in situ were made in the rabbit, using urethane as an anæsthetic, relaxation was not observed to follow the injection of raspberry-leaf extract. Instead a contraction of short duration was seen. Since the rabbit's uterus also contracts when adrenaline is injected, we at first thought that the observation was further evidence that the effects of raspberry-leaf extract were due to the liberation of adrenaline. We do not think that this is so, but that in the rabbit the phase of contraction which is often seen in the cat is the main effect. The uteri of the parous rabbits we used were thicker than those of the cat, and it may be that a much larger amount of raspberry-leaf extract is needed to produce relaxation in the rabbit. That the effect is not due to adrenaline is borne out by the similar stimulant action on the isolated uterus.

Action on isolated uterus.—We have tested the action of extracts on the isolated uterus of the dog, the cat, the rabbit and the guineapig. The two actions of the extracts are well seen in the isolated preparation. The uterus of the dog or cat when first suspended usually remains for some time tonically contracted. If extract of raspberry leaf be added to the bath, the uterus relaxes as shown in fig. 3A. If however the uterus has been suspended for some time the muscle gradually relaxes, and when extract is added to the bath a contraction occurs. If the tone is restored in a cat uterus by the addition of pituitary (posterior lobe) extract to the bath, raspberry-leaf extract then once more causes relaxation.

The uterus of a rabbit has little tone when suspended in a bath and is stimulated by the addition of raspberry-leaf extract, but if a tone is produced by the addition of adrenaline, raspberry-leaf extract relaxes the tone. The only effect we have observed to be produced on the isolated guineapig uterus is that of contraction.

Action on intestine.—We have examined the action on the intestine both in situ and in isolated strips. We inserted a small balloon into the duodenum of a cat through an incision lower down. The balloon filled with water was connected by a catheter to a piston recorder which recorded the changes of pressure in the balloon. The suprarenal glands were removed in these experiments. Injection of raspberry-leaf extract caused a fall of pressure in the balloon due to arrest of the intestinal contractions and relaxation of the musculature which persisted for about 3 min

The extracts were found to relax strips of rabbit intestine suspended in a bath Fig 3B shows the effect of two different extracts The results with these two extracts suggest that the substance which causes stimulation of plain muscle is different from that which causes relaxation Thus the addition of the first extract shown in fig 3B caused an initial contraction before the following relaxation The addition of the second extract prepared by extracting the leaf with dilute acetic acid caused relaxation only

Action on spleen —When the volume of the spleen was recorded in a spinal cat, injection of raspberry-leaf extract did not cause contraction of the spleen volume, though injection of 0 02 mg histamine, which is known to cause discharge of adrenaline from the suprarenal glands, did so

Action on heart and blood-vessels —Extracts prepared by method (*a*) have a slight depressant action on the heart of the cat when isolated and perfused by Langendorff's method The extract was injected into the cannula leading to the heart Similarly if the vessels of a dog's hind-leg are perfused with defibrinated blood, using a Dale-Schuster pump, the injection of an extract into the arterial cannula causes a transitory dilatation of the vessels followed by constriction slightly greater than the pre-existing constriction

Toxicity —The toxicity has been tested by administering the extracts to mice both by mouth and intravenously Using an extract prepared by method (*b*), dissolved in distilled water so that 1 ml contained the activity of approximately 4 g leaf, it was found that doses of 0 5 ml had no harmful effect on mice when given by mouth When injected intravenously the mean lethal dose of such a solution was 0 1 ml per 20 g mouse, corresponding to about 0 4 g leaf Mice injected with a lethal dose had convulsions and died Convulsions were observed to follow the intravenous injection of extracts prepared by method (*a*) into cats

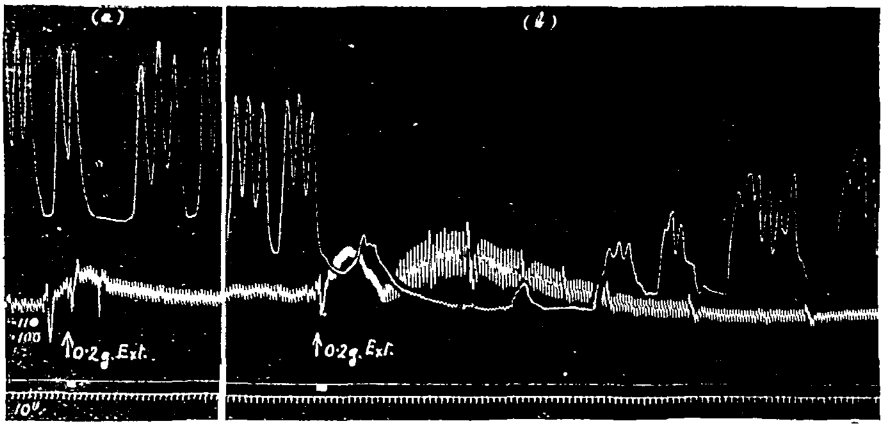

FIG 2—Records as in fig 1 (A) shows the slight effect of the 2nd injection of raspberry leaf extract, (B) shows the prolonged effect of the 4th injection

DISCUSSION

It is very surprising that raspberry leaves should offer themselves as a new field for pharmacological investigation, and that principles having physiological activity should not have been discovered earlier During the course of the work, results similar to that in fig 1 suggested that the activity was due to an amine like tyramine, this was excluded by the stimulant action on the isolated guineapig uterus It was next thought that the activity was due to nicotine or to a substance having a similar action on the uterus, like hydrastinine The nicotine suggestion was attractive because raspberry leaves were smoked during 1914–18 in Germany It was supported by the twitching of the ears and body muscles observed to follow the intravenous injection of crude extracts into spinal cats Accordingly we
densed the smoke coming from a pipe of raspberry le
and looked for nicotine in the deposit None
present Laidlaw[1] found that hydrastinine inhil
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that harmine has both these effects on the rabbit ute

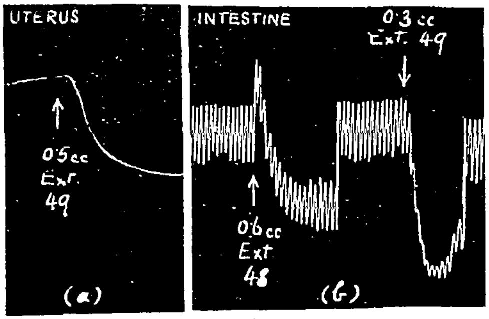

FIG 3 —(A) Record showing inhibition of tone of isolated uterus of dog (B) Record showing inhibition of isolated intestine of rabbit

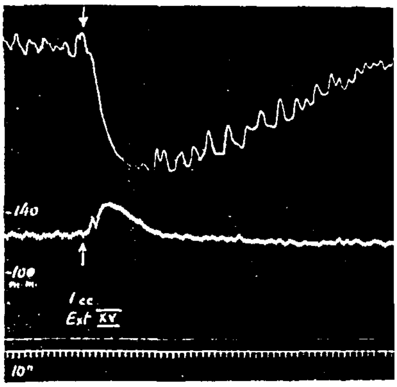

FIG 1—Record of cat's blood pressure (
chloralose) and of uterine movements, sh
relaxation of uterus produced by inj
of extract equivalent to 2 g dried leaf

The fact that raspberry-leaf infusion has a traditi
use (though not a widely known one) to make ute
activity "easier," suggests that the observat
described may have a clinical application It is diffi
to understand how uterine relaxation should as
parturition , rather it would be thought to delay it
diminishing the force available to bring about the b
of the child Conceivably it may assist in dilatatio
the os through being exerted chiefly on the lower ute
segment But a drug which relaxes uterine mu
should be valuable in relieving painful menstrua
when this is due to spasmodic contraction of the ute
The dosage recommended by herbalists is 10–20 oz
a 5% infusion of the dried leaves in hot water T
corresponds to 15–30 g of leaf, and, judging from
observations on mice, should be entirely non-toxic w
taken by mouth

SUMMARY

Dried raspberry leaves contain a principle read
extracted with water which relaxes the smooth mus
of the uterus and intestine when this is in tone T

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[1] Laidlaw, P P *Biochem J* 1911, 5, 243

[2] Gunn, J A *Arch int Pharmacodyn* 1930, 38 507

action is exerted in the body of the cat and also when the muscle is suspended in a bath The relaxation produced in the body increases with successive doses

The same principle or another causes contraction of the uterus of the rabbit in situ, and also of the isolated uterus of the cat, the rabbit and the guineapig when these are not in tone

The principle causing relaxation is probably the basis of the traditional use of raspberry tea for making activity in the uterus less painful

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EARLY RESULTS OF PREFRONTAL LEUCOTOMY

BY

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IN view of the encouraging reports published on the Continent and in America of the therapeutic effects of prefrontal leucotomy, it was considered justifiable, and indeed advisable, to employ this method of treatment here, and 8 of our patients have now been operated on by Mr Wilfred Willway

Review of the Literature (Dr. Hutton)

Owing to the war a survey of European and American literature must be incomplete, for many of the original articles are now unobtainable

Prefrontal leucotomy has been widely adopted, since its introduction by Moniz in 1936, among other exponents being Rizzatti (Racconigi), Bagdasar and Constantinesco (Bucarest), Pimenta (Saô Paolo, Brazil), Sai (Trieste), Lyerly (Florida), Watts and Freeman (Los Angeles), Ventura (Pisa), Ody (Varese); Ferdière (France), and Mixter, Tillotson and Wies (U S.A) The total number of recorded cases cannot be assessed, but Rizzatti and Borgarello (1940) estimate them as at least 500 I have compiled a list of 330 of these

			Year
Rizzatti and Borgarello	185		1940
Moniz	46	Quoted by Rizzatti and Borgarello	1938
Sai	3		
Fiamberti	10		
Bagdasar and Constantinesco	10		
Lyerly	21		1938
Freeman	54		1939
Mixter	2		1940

Out of this total only 5 deaths are recorded as being due to the operation, 2 by Rizzatti and Borgarello (1938) and 3 by Freeman (1939) Freeman gives no details of his 3 deaths, but Rizzatti and Borgarello state that in both their cases death was due to hæmorrhage into an unsuspected frontal glioma

Most recent investigators agree that the frontal lobes, which reach their highest development in man, are in some way concerned with mental processes, and in particular with the higher intellectual processes , and that this fact is correlated with the magnitude and complexity of the prefrontal association tracts Moniz (1936), in discussing the theory which led him to propose frontal leucotomy, considers that whereas in normal people the functional connexions between the cortical cells are variable, giving rise to innumerable different groupings, in certain mental disorders some functional groupings become more or less fixed and give rise to obsessions and delusions Considerable mental improvement might thus be expected from cutting the association fibres concerned in these persistent pathways He was cautious in adopting this experimental form of treatment, and his earliest cases were limited to chronic patients with a poor prognosis The results in the first 20 cases, however, were encouraging , some patients were undoubtedly improved, there were no deaths, and in no instance was the mental condition made worse by the operation

TECHNIQUE AND REPORTED EFFECTS

Technique—The procedure first developed by Moniz consisted in the injection of alcohol into the subcortical white matter , in later cases a leucotome was used with a steel loop, which crushed the white matter in the subcortical area , finally he adopted a leucotome with a steel band which cuts rather than compresses He claims that with his latest technique the symptoms that followed the earlier methods are rarely observed

The original trephine openings were made 3 cm in front of a vertical line passing through the base of the tragus, and 3 cm to either side of the midline, but later the openings were made a little farther back—1 5 cm in front of the vertical line passing through the tragus The leucotome is introduced to a depth of 4 5 cm in an anterolateral direction, the loop is opened and the instrument turned so as to cut a core about 1 cm in diameter in the white matter The blade is retracted into the instrument which is withdrawn 1 cm and a second core cut at 3 5 cm and finally a third at 2 5 cm from the surface of the brain No tissue is removed The leucotome is then withdrawn entirely and reintroduced in an antero medial direction to a depth of 4 cm , where the first cut is made and withdrawn 1 cm to cut a second core at 3 cm , a final section is made at 2 cm from the surface of the brain

Rizzatti and Borgarello (1938) do not seem to have introduced any noteworthy modifications of Moniz's methods , in 55 of their cases the operation was performed with the leucotome devised by Moniz, in 28 with a thermocoagulator, in 5 by the introduction of alcohol In a large number of cases where leucotomy was performed by the leucotome or the thermocoagulator it was followed by prefrontal alcohol injections, a total of 393 injections being given Rizzatti and Borgarello note that Fiamberti in 1937 used the method of transorbital puncture devised by Dogliotti for ventriculography Lyerly (1939) and Freeman (1939) have both modified the technique

Choice of patient—Moniz deliberately decided not to limit his operative measures to a single psychosis or even to a single group of psychoses , indeed, since his aim was to attack association pathways, not only functional but even organic psychoses were to be included in order that any modification in the symptomatology might be observed Among his cases were patients suffering from agitated melancholia, schizophrenia, mania and acute anxiety , only patients with dementia were excluded Rizzatti and Borgarello treated mainly schizophrenics, but their 185 cases included a few paranoiacs, melancholics and patients with disorders of conduct Lyerly (1938) restricted his choice to patients with depression—mainly involutional melancholics—together with a few psychoneurotics, manic depressives and 1 schizophrenic Freeman chose involutional or agitated depressions, psychasthenics or schizophrenics, in whom worry was a predominant factor exhibited in the form of nervous tension, apprehension, anxiety depression, insomnia, obsessive thinking, preoccupation and introversion

Immediate postoperative effects—Moniz (1936) describes a number of mild symptoms of a transitory nature which were present during the first 2 or 3 days after the operation, and in a few instances persisted for 2–3 weeks In every case there was a slight rise of temperature which returned to normal about the fourth or fifth day, headaches were usually present but rarely severe, there was occasional vomiting, and somnolence was usual on the first day after the operation and lasted 1–2 days The neurological signs noted included trismus and fibrillary contractions affecting the masseter and platysma muscles, sphincter disturbances, mostly slight but sometimes severe, and accompanied by diarrhœa, and ocular disturbances in the form of Argyll Robertson pupils, myosis, unequal pupils, ptosis and in one case nystagmus Mental disturbances also occurred—apathy and loss of initiative in about half the cases, akinesia in about a third, resistance to the execution of movements, mutism, negativism, loss of facial expression, and disorientation in space and time in several Catatonic attitudes, kleptomania and a sensation of hunger were noted in a few cases and puerility was observed in one Moniz claims, however, that after the adoption of his later technique with the cutting leucotome the above symptoms were rarely observed, except for ocular signs (sluggish and unequal pupils) which lasted only a few days. Rizzatti and Borgarello (1938) describe transitory aphasia and hemiplegia in 7% of their cases, vomiting and convulsions in 40%, and fever lasting for at least 48 hours in 49%. Lyerly (1938) claims to have had no serious complications resulting from the operation. A small number of patients had urinary incontinence for a few days, but no other neurological signs were found. Mentally there was some slight impairment of memory and disorientation with mental confusion lasting a few days to a few weeks, but it always cleared up entirely. Freeman also mentions slight headache, loss of facial expression, absence of spontaneous activity and disorientation in time and space.

Published results.—The best results appear to have been obtained in patients suffering from depression or acute anxiety; Moniz writes that this operation has a remarkable action in cases with anxiety (see table). Freeman (1939) analysed the symptoms in his 54 patients under 35 heads which included, for example, such things as anxiety, worry, nervous tension, obsessive thinking and apprehension; he noted which of these was relieved—completely, partially or temporarily—by operation and tabulated his results. It is noteworthy that anxiety, which was present in 49 of his cases, was permanently relieved in 36, partially relieved in 4, and temporarily relieved in the remaining 9. Rizzatti and Borgarello (1940) chose principally schizophrenic patients (128 out of a total of 185). Of the 128 only 10 were acute cases; the remainder were chronics who had derived no benefit from other methods of treatment, such as malaria or vaccine therapy. They consider their results encouraging and claim that the number of recoveries increased with the period of observation. Critical evaluation of their figures is difficult, however, owing to the obscure way in which they are presented.

RESULTS OF LEUCOTOMY, COMPILED FROM CASES REPORTED IN THE LITERATURE

—	Cases	Diagnosis		Results			
				Recovered	Improved	Stationary	Dead
Moniz (1936)	20	Agitated melancholia	7	5	2		
		Schizophrenia	8		3	5	
		Acute anxiety	3	1	2		
		Mania	1			1	
		Atypical mania	1		1		
Moniz and Fustado*	18	Schizophrenia		2	3	13	
Bagdasar and Constantinesco*	10	Chronic mental disorders		3	6	1	
Rizzatti and Borgarello (1938, 1940)	185	Schizophrenia	128				
		hebephrenia		16.4%	20%	63.6%	
		catatonia		11.2%	16.6%	72.2%	
		Paranoia	30	6.8%	46.6%	46.6%	
		Cyclothymia, mainly involutional	15	No detailed results given			
		Perversions of character	12				
Lyerly (1938)	21	Involutional melancholias	14	11	2†		
		Psychoneuroses, with severe anxiety and depression	3	No detailed results given			
		Depression (manic depressive)	3				
		Schizophrenia with severe headache and depression	1				
Freeman (1939)	54	Involutional and agitated depressions, psychasthenia, schizophrenia		31	10	10	3

* Quoted by Rizzatti and Borgarello 1938.
† 1 case too recently operated for results.

Spontaneous recovery must always be considered when the efficiency of any therapeutic method for mental diseases is under discussion. A careful study of the time relationships between the onset of symptoms, the institution of treatment, and the date of recovery will con
towards a correct assessment of its importance
first series, Moniz included some recent cases as
some of long standing. Of 10 patients with a
melancholia or acute anxiety 5 had been in hosp
periods ranging from one to eight years, while i
symptoms had only been present for a few months
recoveries recorded all seem to have taken place
the first two months after the operation. It is i
tive to note that recovery occurred in a patien
involutional melancholia two months after the op
though she had previously been in hospital fo
years. In the series reported by Rizzatti and Bor
(1938) the average duration of symptoms before
tion was nine years for the hebephrenic group, fou
for the catatonic group and six years for the par
The recoveries did not occur until a considerabl
after the operation. In Lyerly's series there
14 cases of involutional melancholia, in who
longest history was more than ten years an
shortest four months; in 5 patients the sympto
been present for two to ten years, and in the rem
for less than two years. All recovered cases we
charged within two and a half months of operatio

Prefrontal leucotomy seems to be rarely follo
undesirable sequelæ. Moniz reports none in his f
cases. Rizzatti and Borgarello say that none o
patients show any permanent frontal disturbance
operation. Lyerly also claims that there were no s
postoperative complications, and most of his p
said they could think better and do more work
before. Freeman reports rather more operativ
turbance, mainly transitory. Emotional flatt
procrastination, diminished spontaneity and la
persisted in about 25 of his 54 cases; poor judg
talkativeness, facetiousness and euphoria in 7–10;
lessness, aggressiveness, perseveration and indece
2–4; a permanent gain in weight occurred in 22, inc
appetite in 15, plateau speech and masked facies i
convulsions in 3, vesical and rectal incontinence in
monoparesis in 1.

Psychological tests have been used by Lyerl
Worchel (1941) and by Freeman in an attempt to
any psychological change produced by the operatio
Lyerly and Worchel's series use was made of the
intelligence tests, and the Terman vocabulary, but th
change observed which seemed at all significant was f
to do the "free association" test of the Stanford-
intelligence examination. Of 10 patients tested aft
operation all but 1 failed the test, although 4 out of 5 t
prior to operation had passed it successfully. Fre
(1939) quotes the report of Thelma Hunt who tested
his cases before, and two weeks after, the operation
found less distractability and more satisfactory co
tion after leucotomy, although initiative in startin
tests was somewhat less. Patients were less conc
over incorrect performance, and were slower in ca
out the tests. There was no sign of decrease in
intelligence and accuracy on the average was imp
In the interpretation of pictures, and in other
lending themselves to such a response there wa
tendency to interpret in relation to the self. I
Rorschach test patients were inclined towards e
version and tended to respond to the design as a w
whereas in the word-association test they showed
peculiar responses and hesitated less, and the total
was lowered. The Bernreuter extroversion-introv
test indicated a shift toward extroversion, with low
in the neurotic tendency.

The problem of the function of the frontal lobe
awaits solution. There are grounds for supposing
they are concerned with the higher intellectual proc
but the results of prefrontal leucotomy indicate th
certain pathological conditions they impair rather
enhance the efficiency of the individual and pla
important part in the symptomatology and perhaps
in the ætiology of mental disorders. Thus the wo
Moniz not only has therapeutic value but contribut
the study of normal and abnormal psychology.

Results in Present Series

Moniz himself exercised the greatest caution in
selection of his early cases and his example has
followed in our series; the cases chosen were all of

standing with a bad or hopeless prognosis, and most of them had been intensively but unsuccessfully treated by other methods, any improvement obtained therefore may be regarded as an achievement Much time must elapse before any decisive conclusions can be reached, but this preliminary report on the immediate results of the operation is published now because we feel that the method requires careful investigation whatever the final decision on its value may be

TWO SCHIZOPHRENICS IMPROVED

CASE 1 —A woman, aged 26, who had undergone insulin and other endocrine and electrical convulsive treatments with no conclusive or permanent result She had schizophrenia of 4 years' duration Since admission to Brislington House she had been resistive, negativistic and destructive, and was rapidly deteriorating She was constantly in a state of morbid apprehension reiterating "What am I to do?" Over a period of 11 months she had 77 electrically induced convulsions She reacted well at first, becoming mentally stable for periods of 3–5 weeks Later stability lasted only a few days During one remission she went home on leave, but after a few days became unmanageable She seemed suitable for surgical treatment because she was a worrying type and had reacted well to the electrical treatment

Prefrontal leucotomy was performed under local anæsthesia on Dec 11, 1940 She was quiet and coöperative during the operation and willing to answer questions Immediately after operation she appeared comfortable and sat up in bed and drank a cup of tea Her predominant facial expression of mental strain and tension faded away and she rapidly fell asleep She slept excessively during the first 48 hours but could be roused when necessary When wakened she gave brief but relevant answers to questions and coöperated with the nurses attending to her, but she fell asleep almost instantaneously if she was left undisturbed. There was an attack of vomiting and diarrhœa on Dec 18 A slight rise in temperature (99° F) subsided on Dec 19, the pulse and respiration remained steady Mentally she was dull, confused and moody, at times restless and noisy On Jan 11 she began to take an active interest in her surroundings, helped the nurses in the hospital, and showed attention to her work and books During this postoperative stage she was subject to bed-wetting until Jan 28 She went home on Feb 15 and reports on her progress have been satisfactory, she still has occasional enuresis—a failing of which she is aware but which she is unable to overcome completely at present She is rather childish and dependent on her mother's supervision, but rational and can converse simply but sensibly She has a moderate degree of insight compatible with her childish outlook. Her previous history, however, suggests that she never had more than a modest degree of intelligence She is now partly occupied and able to earn some of her living in a small way

CASE 2 —A woman aged 35 Catatonic stupor with occasional outbursts of impulsiveness and maniacal excitement She showed much apprehension and nervous tension, and frequently repeated without apparent cause, "Is it all right for me to do this?" She was admitted to Brislington House in 1937, and was treated by electrical convulsive methods at the end of 1939, having 14 treatments in all The result was satisfactory and after 2 years of stupor alternating with maniacal outbursts she returned home, the remission lasted for 11 months She was readmitted on Nov 16, 1940, electrical convulsive treatment was again given on 9 occasions She improved mentally and returned home, but within a month (during which time she experienced a severe air raid) she returned for further treatment, and remission obtained this time was only of short duration

On Feb 19, 1941, leucotomy was performed under local anæsthesia Throughout the operation she was composed and coöperative and answered questions There was no sign of confusion or distress immediately after the operation, and no indication of shock. Afterwards the temperature was raised (never above 100° F) until Feb 23, pulse and respiration remained steady There were mild attacks of nausea and a little vomiting for 3 days At first she was rather confused and restless and tried to dislodge the dressings, but as soon as she was up and dressed she began to take an interest in herself and her surroundings She left hospital on April 2 Since the operation there has been periodical bed-wetting which distresses her Except for this, and for some delay in dressing herself in the morning, she is very well mentally and quite stable Reports of her progress are satisfactory

HYPOCHONDRIAC IMPROVED (FATAL HEART ATTACK)

CASE 3 —A man, aged 53, of considerable intellectual attainment, admitted to Brislington House in September, 1940, with a 3 years' history of severe hypochondriasis He complained incessantly of severe pain in the lower abdomen and penis Previously in 1938 bilateral chordotomy at the level of the 6th dorsal had been performed, but the pain had returned within 3 days Considerable physical and mental deterioration had taken place since then He was a tall and well built man but his weight had fallen to 8 st 10½ lb He was restless—writhing on his bed and very noisy—and incontinent with bed sores There had been a history of myocardial degeneration with inversion of the T wave in the electrocardiogram Convulsion therapy, 20 treatments, was given with satisfactory results, the pain was much alleviated and the heart condition was not aggravated. He put on over 2 st in weight, felt better and became mentally clear and composed During December the remission showed signs of fading out, more electrical treatment was given without satisfactory improvement The pain in the abdomen and the genitals again became intense and at this time auricular fibrillation was noted, but he was able to tolerate convulsive treatment without distress The pain persisted, although mentally the patient remained clear Since he had been able to tolerate convulsive treatment without undue strain on the heart, it was decided to proceed with the surgical treatment

Leucotomy was performed under local anæsthesia During the operation the patient was constantly complaining of his pains until the actual division of the tracts when he suddenly became composed After removal from the theatre he said the pain in his abdomen and penis had gone—for the first time in 3 years—and he felt comfortable It appeared that the whole object of the operation had been achieved Unfortunately during the latter part of the day there was a severe heart attack which initiated a state of hypostatic pneumonia, from which he died 2 days later At autopsy he was found to have much myocardial fibrositis, and atheromatous pipestem coronary arteries Death was undoubtedly due to the cardiac condition and not to the operation

TWO DEPRESSIVES IMPROVED

CASE 4 —A man, aged 42, who described himself as a nervous wreck since the last war He had frequently been off work because of nervous upsets He had always been reserved, solitary, self-absorbed and intolerant of noise, with no friends or hobbies, he had suffered from nightmares for many years An acute attack of anxiety was precipitated by an air raid He was working as a builder's labourer at the time, and after having to clear up a shelter which had been hit he was unable to eat or sleep for 3 days, and just wandered round the streets hardly knowing what he was doing He gave up his job and for 3 weeks continued to wander aimlessly about the streets He then got a job but could not concentrate and became a nuisance at home He could not stand any noise and was always listening for sirens On admission in February, 1941, he was mildly anxious, well orientated with good insight, and depressed rather than agitated. If he tried to do anything his mind wandered off and he began to think about his home, his work and air-raids He discussed his family in a dull unemotional way, his whole mental outlook had narrowed to preoccupation with himself and his nerves

On Feb 19 leucotomy was performed under local anæsthesia For 4–5 days there were alternating phases of restlessness and somnolence He would get out of bed and attempt to dress and tidy his room, he removed his dressing frequently, and once sang loudly during the night, waking the other patients During the first 2 days he wrote several nonsensical letters, and his conversation was irrational, but he was conversing sensibly about the third day Disorders of behaviour persisted for about 14 days, he would play with food instead of eating it, would unashamedly urinate on the floor in the ward, and would drape his wet linen round the radiators in the ward to dry He exhibited a rather fatuous euphoria Gradually his conduct improved, he became less indolent, and began to share in the routine work of the ward The most striking change was his indifference to air-raids Several severe raids occurred while the patient was in hospital but he paid little attention and was in no way distressed He was usually asleep before the all-clear went He also lost the nightmares with which he used to be troubled before his admission He remained rather apathetic A mental test suggested that he did not associate quite as freely as formerly There were no neurological symptoms He was discharged on April 16 and returned to work the following week. He first tried his old job of commissionaire, but his work was not very satisfactory and he was extremely unpunctual He seemed to appreciate that his unpunctuality would probably lose him the job but the intellectual appreciation seemed to have no emotional accompaniment It was suggested that he should be given a simpler job with less responsibility and more supervision, he was therefore employed as a porter and cleaner, and since then has been efficient and punctual The former anxiety connected with air raids has apparently completely disappeared, and his indifference to them noted while in hospital has persisted since his return home He reads a good deal and enjoys listening to the wireless He is no longer self absorbed and preoccupied but is interested in current affairs, which he can discuss quite intelligently Unfortunately there is friction in the home, probably attributable to the patient's preoperative personality Before operation his wife complained that he never took any interest in herself or the children Owing to her vague hostility and lack of sympathy the postoperative changes in the patient's character are misunderstood and misinterpreted, this may have a deleterious effect on his reintegration He describes the change from his former miserable introspective brooding to his present carefree outlook as the most important thing that has ever happened to him

CASE 5 —A Jewish man, aged 58, with agitated melancholia, admitted to Barnwood House in 1935 from Brislington House, where he had been for 5 months Before admission he had tried to cut his throat He had previously been in Barnwood House in 1928, after two attempts at suicide, but recovered rapidly in 2 months There was no family history of insanity or abnormality Between 1929 and 1935 he had remained well and at work On his medical certificate in 1935 it is stated that he asked his nurse to " lacerate his brains " While in Brislington House in 1935 he tried to choke himself with his dentures, and after his admission to Barnwood House he remained depressed and agitated, saying that he was afraid of being dropped overboard from an aeroplane He was tube-fed for some time after admission, and had traces of sugar in his urine until 1937 Apart from time spent playing billiards and snooker, he was restless and agitated, reiterating his stereotyped phrases about aeroplanes and fearing injections and giddy heights He had shown no suicidal tendencies for 3 years

On April 2, 1941, a bilateral frontal leucotomy was performed under pentothal anæsthesia with Nembutal premedication The operation was uneventful, after it he remained drowsy for some days and developed bronchopneumonia with a temperature up to 103 8° F Treatment with sulphapyridine reduced his temperature somewhat, but irregular fever persisted for 21 days He was enuretic all the time he was confined to bed, and occasionally after being allowed up, this symptom did not disappear until the 28th day He showed no abnormal neurological signs and symptoms apart from general drowsiness Now, a month after operation he is gaining strength, and walking round the garden, his relatives consider that he has improved He smiles spontaneously, takes more interest in his surroundings, and has gained 16 lb in a month He still talks about the aeroplanes and seems to be somewhat vague about dates, not being able to remember when he was admitted but he is much less agitated than he was formerly It is too early to hope for much improvement yet

THREE SCHIZOPHRENICS NOT IMPROVED

CASE 6 —A man, aged 31, with schizophrenia was admitted to Barnwood House from Wyke House, Isleworth in 1931, the duration of his illness was then one year There was no physical abnormality apart from undescended testicles He had been at Oxford but is stated " not to have got on well " He went into an office but subsequently broke down and was sent to Wyke House He has been a catatonic schizophrenic since admission, with periodic attacks of excitement during which he was noisy and destructive and had to be put in the padded room These catatonic excitements lasted for anything up to 3 or 4 months In the intervals he was quite pleasant and played tennis well While in hospital he had been the subject of a concentrated therapeutic attack lasting many years, beginning with testicular hormone and colloidal calcium His blood iodine was estimated in 1933 at the Middlesex Hospital, hyperfunction of the thyroid was reported and a course of Tyronorman and a salt free diet for 6 months was advised In 1934 the character of his attacks changed, treatment with acetylcholine and pilocarpine was carried out A report on his treatment up to 1936 is given by Dax (1936) In 1938 a course of 23 injections of Cardiazol was given, which produced 16 convulsions but no improvement In 1939 he was given 18 electrical convulsions with no improvement In December, 1939, he was given a course of Ambinon injections, both with and without Pregnyl, in an effort to make his testicles descend, but there was no result

On April 2, 1941, a bilateral frontal leucotomy was performed under pentothal anæsthesia with nembutal premedication The operation was uneventful The day after the operation he was easily roused and conversed reasonably well He subsequently became irritable and difficult with his food He vomited for some days but this gradually cleared up His language was bad—rather worse than he had ever used While in bed he did not masturbate, as he had always done before when confined to bed His postoperative course was otherwise uneventful He had no recollection of the operation but says he bumped his head into a wall There was no bed wetting No definite mental improvement has yet been noted, but he is certainly not worse than he was before

CASE 7 —A woman, aged 32, with catatonia. During the past 4 years she had slowly become more and more difficult to deal with, had been in two nursing-homes and was finally admitted to Barnwood House on June 7, 1940 Since admission she had gradually become worse She was hallucinated and impulsive and finally developed homicidal tendencies and attacked two old ladies in a murderous manner because she thought that they were putting some sort of " influence " on her She was quite irrational, and without any insight

Bilateral frontal leucotomy was performed on April 2, 1941, under pentothal with nembutal premedication The postoperative course was uneventful The effects of the operation cleared up quickly although she complained of headache She was bright and cheerful No bed-wetting Rather inclined to stay in bed in the morning She has shown no real improvement, but is certainly more cheerful than she was before, and says herself she feels much better

CASE 8 —A man, aged 40, with catatonia, admitted to Barnwood House in February, 1922, since then he had slowly deteriorated An account of his early history has been given by Coleman (1931) He showed complete mental dilapidation, was quite inaccessible, hostile, noisy, violent and restless In 1938 he had a course of 10 injections of placental blood with no result This was followed by a course of 17 convulsions with cardiazol with no improvement

On April 16, 1941, a bilateral frontal leucotomy was performed under general anæsthesia with nembutal premedication His postoperative course was uneventful There was no bed wetting Some 3 weeks after the operation it was reported that he had allowed a male nurse to walk round the garden with him, a thing he had never done before, otherwise no essential change has been noted in his condition

ELECTROENCEPHALOGRAPHY

The following report on the electroencephalographic findings has been contributed by Mr Grey Walter

Immediately after the operation there is always a very large, very slow discharge, reminiscent of that following a head injury It is not restricted entirely to the area around the incision or to the frontal lobes—indeed it often involves the whole cortex, particularly while the patient is somnolent and unresponsive It is not well synchronised in the two hemispheres, resembling at times the sort of record found during deep sleep In the weeks following the operation the size of these slow potentials diminishes progressively and the source becomes limited to the frontal regions, sometimes more on one side, sometimes more on the other At this stage the patient is, of course, up and about and normally responsive In case 7 the potentials were very much smaller than in the others, when examined one month after the operation, and (though this may be a coincidence) the patient also showed less mental change after the operation than the others In case 1 even five months after the operation quite large slow potentials were found, localised entirely to the frontal lobes, and since there has been no diminution in size for the last two months it seems possible that this abnormal discharge will persist for a long time

Summary

Prefrontal leucotomy has been performed some 500 times on the Continent and in America but has so far received little attention in Great Britain Among 330 cases reported in the literature there were only 5 postoperative deaths Clinical recovery or improvement after the operation has been reported in patients who failed to respond to other methods of treatment

Bilateral prefrontal leucotomy was carried out on 8 patients (3 women and 5 men) with severe long-standing psychoses of bad prognosis

It is too early to give results of value, only 18 months having elapsed since the first operation was done, but 2 schizophrenics and 1 depressive patient have shown great improvement, 1 depressive case has shown some improvement, 3 schizophrenics have so far shown little improvement and 1 case died from myocardial fibrositis and atheromatous coronary arteries.

Bed-wetting has followed operation in 4 cases In 3 of these it has persisted sporadically for some months

The ideal type of case for operation appears to be the depressive with suicidal ideas and apprehension If we can bring peace of mind to such people we shall achieve a great deal

We wish to thank Prof F Golla of the Burden Neurological Institute for suggesting the operation to us and for valuable guidance, and Mr Wilfred Willway, surgical registrar to the Bristol Royal Infirmary, for performing the leucotomies

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SURGICAL TREATMENT OF MENTAL DISEASES

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More than four years have passed since Moniz (1936) described his operation of prefrontal leucotomy for the treatment of mental disease, but the method has received little attention in this country. This may be because the attention of psychiatrists was mainly occupied with the work of Sakel (1934) and Meduna (1937) on insulin and Cardiazol Since it has now become evident that these methods are not always effective it seems justifiable to consider the merits of Moniz's operation In America the method has already been adopted with enthusiasm, and published results suggest that it offers a hope of cure when the less radical methods have failed

Moniz (1936) attempted to interrupt the frontal association fibres, first by the injection of alcohol into the prefrontal areas, and later by cutting them with an instrument of his own devising which he called a leucotome He made a trephine opening 3 cm from sagittal suture on either side, on a vertical line 3 cm in front of the tragus The dura was exposed and incised and the leucotome inserted into the white substance of the frontal poles This instrument consists of a long hollow needle with a stylet to which is attached a loop of strong wire which is made to bulge through a lateral opening in the needle when the stylet is fully inserted Rotation of the instrument causes the loop to cut a core of white substance This is repeated several times in each frontal pole

Consideration of the physiology of the frontal lobes shows that the operation is based on sound principles Injury to the frontal lobes results chiefly in alterations in behaviour, as is well exemplified by the American crowbar case Behaviour changes have also been noted after surgical removal of the frontal lobes in man and animals Distractibility, lack of restraint and boastfulness have been reported by Brickner (1936) and slowness, deliberate activity, perseverance and freedom from anxiety by Ackerly (1935) Similar changes have been observed in animals, particularly in trained monkeys and chimpanzees This work has shown that removal of the frontal areas gives rise to some form of deficiency that has been termed " intellectual " Jacobsen (1935) in his experiments with trained monkeys showed that unilateral lesions of the prefrontal areas resulted in no memory change for the tasks that had been learned Bilateral lesions in this area, however, caused definite impairment of memory for recent events, and extensive re education failed to re establish the faculty for recent memory Jacobsen concludes that these experiments show a high degree of specialisation in the associative functions in primates, in contrast with the widespread equipotentiality which has been shown to operate in the cortex of lower animals Later Jacobsen, Wolfe and Jackson (1935) showed that under experimental conditions chimpanzees might develop neuroses similar to those demonstrated by Pavlov (1927) in his animals One of these chimpanzees, an adolescent female, who had been coöperative, friendly and eager to work, was also emotional and flew into temper tantrums when she made an error in performing one of the tests These tantrums ultimately became so frequent that further experiment was almost impossible and the animal had to be rested When training was recommenced she was again cooperative but temper tantrums continued whenever she made a mistake After removal of both frontal areas a profound change appeared in the animal's reaction to the experiment, when she made a mistake she showed no emotional disturbance but quietly awaited the next trial Thus, although she made a greater number of errors than before, no suggestion of an experimental neurosis appeared To quote Jacobsen and his colleagues, " It was as if the animal had joined the happiness cult of Elder Micheaux and placed its burden on the Lord "

MODIFICATIONS OF THE MONIZ TECHNIQUE

Moniz's operation is open to the objection that it is performed blindly, and that in approaching from the upper surface of the brain it is difficult to judge the distance from the orbital surface of the cortex Consideration of these objections prompted Lyerly (1938) and Freeman (1939) to adopt modifications of Moniz's technique

Lyerly employs the same approach as Moniz but divides the fibres with a dissector under direct vision obtained with a brain speculum Freeman has modified the approach by making the two trephine openings each 5 cm above the zygoma, on a vertical line 3 cm behind the anterior orbital margin Incision of the scalp at this point reveals the coronal suture through which the trephine hole is made A hollow needle is then inserted through one opening and directed towards that of the opposite side If the ventricle is encountered the needle is redirected anteriorly Along the track of the needle is inserted a nasal elevator which is used as a blunt knife to sever the fibres of the frontal pole in both upward and downward directions

Both methods have been followed by postoperative complications such as incontinence of urine We have performed Freeman's method under post-mortem conditions, and have found it difficult to gauge the distance through which the tip of the instrument moved and to avoid damaging the orbital surface of the cortex It is also open to the objection that only an arc of white matter is cut

Freeman (1939) has applied his operation to patients with depressive states, schizophrenia and neuroses, among other conditions Of 54 patients treated 32 made a good recovery, while in 10 the result was fair, and in 9 poor He states that the first results with schizophrenics were not encouraging, but adds that the method was not at first widely applied because he decided to wait until the insulin and cardiazol treatments had been assessed He regards recent results in this type of case as favourable Lyerly (1938) has applied the method mainly to cases of involutional melancholia, and records apparent recovery in 10 of 13 cases ; 2 showed definite improvement and the remaining case recovered after a postoperative period of depression

One of the disappointments of convulsion therapy has been the frequency with which some patients relapse when treatment is discontinued This necessitates what Shepley and McGregor (1940) have referred to as maintenance treatment It is to cases of this nature that we feel this operation can most usefully be applied—that is, to patients who by their response to convulsion treatment show that they have not lost the capacity to react but are for some unknown reason unable to maintain normality

Technique adopted—We use the following technique The patient undergoes the usual preoperative preparation, and the head in the operation area is shaved and prepared with spirit on two successive days before operation Anæsthesia is obtained with Pentothal Sodium and the surgical approach described by Freeman (1939) and his collaborator is used The precise measurements are readily determined by using a rectangular metal plate, measuring 5 cm by 6 cm, perforated at a site corresponding to the proposed trephine hole (fig 1) This plate is so placed that one long and one short side are superimposed on the anterior orbital margin and zygoma respectively The site of incision of the scalp is marked through the hole in the plate A vertical incision 4 cm long is made at this point and deepened down to bone The periosteum is then reflected, and the bone having been exposed the coronal suture is identified, though it is well to point out that in many skulls this suture is not readily identified at this point A trephine opening 1 cm in diameter is now made on each side of the head These openings are so situated as to lie in front of the anterior branch of the middle meningeal artery The dura mater is exposed and picked up by a hooked needle and a small triradiate opening made in it The cerebral cortex is now revealed and the leucotome can be inserted without damage to the surface blood-vessels By means of metal callipers applied to the trephine holes the width of the brain is measured, and from this measurement the amount of white matter in each frontal pole is estimated The stop on the leucotome (figs 2 and 3) is adjusted so that its distal point will not damage the medial surface of the prefrontal cortex, and the instrument is inserted and directed towards the opposite trephine hole Suction with an ordinary syringe attached to the hollow stylet readily determines whether the anterior horn of the lateral ventricle has been entered or not Redirection of the leucotome more anteriorly is required if ventricular fluid is withdrawn The stylet is now removed and gentle traction exerted on the wire until it fits the notch on the needle The hinged portion, or blade, has now described a circle 2½ cm in diameter and has therefore divided the white matter in this area The leucotome is withdrawn and the surface of the frontal cortex washed with saline to stop any bleeding, though this is usually slight The trephine hole is so small that the dura cannot be readily sutured, but this is a slight disadvantage compared with the disadvantages of a larger trephine hole, and is disregarded The muscle is sutured and the wound closed

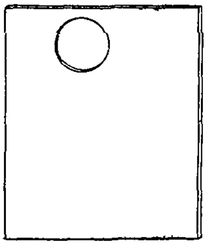

FIG 1—Rectangular metal plate for determining site of trephine openings Half natural size

CASE-HISTORIES

We have performed this operation on 4 patients, all of whom had previously undergone convulsion treatment with failure to maintain improvement, 1 was a melancholic, 2 were schizophrenics and the fourth suffered from delusional insanity In 3 of these cases the postoperative period was unattended by complications The fourth patient developed bronchopneumonia on the ninth day from which he died on the eleventh day after operation He had shown considerable mental improvement before the onset of the bronchopneumonia

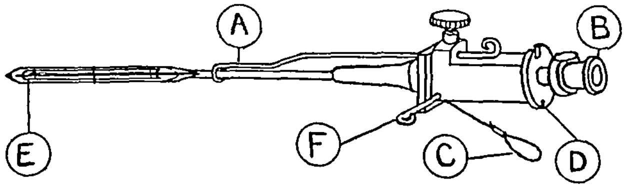

FIG 2—Leucotome, lateral view A adjustable stop, B, hollow stylet, C, traction wire, D, notch for reception of wire at limit of excursion, E, guttered cutting blade, F, guide to plane of cutting blade

CASE 1—Typical catatonic schizophrenia in a well educated woman aged 34 Duration of illness four years Admitted April, 1940, from another mental hospital where she had undergone cardiazol treatment On admission she was solitary, sullen, self absorbed and apathetic During a course of electric convulsion treatment she made a good adjustment, but quickly relapsed when treatment was discontinued Insulin treatment had a similar effect and result Examination on the day before operation showed that she had returned to her former state of self absorption and indifference In this case there was definite mental improvement from the time of recovery from the anæsthetic On the second day after operation she conversed freely and intelligently The sutures were removed on the seventh day and the patient was allowed out of bed On the ninth day she was transferred to a convalescent villa She appears to have made a complete recovery and is now awaiting discharge

CASE 2—A man, aged 47, with a history of recurring attacks of melancholia of four years' duration, characterised by depressed apprehensive anxious affect, and hypochondriacal ideas The attacks each lasted for about ten months On admission in February, 1941, he was restless, agitated and emotional He had hypochondriacal ideas and was without insight into his condition Operation was followed by depression lasting three days On the fourth day he showed a change in his behaviour foreign to his previous personality when he threw his bed-table and pillows across the ward and gave vent to aggressive language After this he steadily improved and is now well behaved, cooperative and helpful He converses readily and says he will be able to go back to work in the near future When questioned about the operation he says he feels that it has relieved him of "tension"

The third case, a catatonic schizophrenic of 7 years' duration, *shows slight improvement only*

DISCUSSION

Although it has been shown that lesions of the frontal lobes may produce a lack of restraint the mechanism by which Moniz's operation effects a cure in depressive states is not clear The procedure divides most, if not all, of the connexions between the frontal pole and the emotional centres in the thalamus, or, as recent work suggests, in the hypothalamus These centres may thus be released from cortical inhibition According to Freeman (1939) interruption of these fibres divorces imagination from feeling tone—or as he explains it to his patients, the "worry centre is disconnected" This remark is somewhat similar to that of our patient who said that the operation had relieved him of "tension"

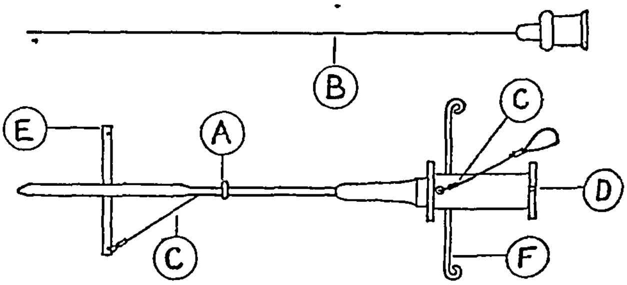

FIG 3—Leucotome from above

SUMMARY

Moniz devised an operation to divide the association fibres in the frontal lobes of the brain by means of a "leucotome" Several observers abroad have recorded improvement in mental patients after this treatment

We have treated 4 patients in this way 1 melancholic, 2 schizophrenics and 1 with delusional insanity Of these the melancholic and one schizophrenic show great mental improvement, the second schizophrenic is only slightly improved The patient with delusional insanity was much improved mentally but died from bronchopneumonia on the eleventh day after operation

The method deserves wider trial

We are indebted to Dr T P Rees, medical superintendent of Warlingham Park Hospital, for his active interest in this work, and for permission to publish this report, and to Mr J W Pearson, assistant clerk of works at the hospital, for his skill in constructing the leucotome

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SULPHATHIAZOLE AND SULPHAPYRIDINE IN ACUTE GONORRHŒA

BY

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SULPHONAMIDE preparations, in particular sulphapyridine, are now firmly established in the therapy of gonorrhœa. It has, however, been repeatedly observed that while in most cases early cure results from intensive administration of these drugs, some cases prove refractory (Cokkinis and McElligott 1939, Prebble 1940, Batchelor, Lees and Thomson 1940). The sulphonamide preparations vary considerably in their potency for different organisms and it is therefore important to determine if the recently introduced compound, sulphathiazole, has a greater action on the gonococcus than the earlier preparations. The value of sulphathiazole (M. & B. 760) in the treatment of acute gonorrhœa in men was compared with that of sulphapyridine, the compound used in the routine treatment of these cases. Acute cases were selected in which gonococci were found in urethral smears, and alternate patients, as far as possible, were given sulphapyridine and sulphathiazole and were kept under close daily observation until the tests for cure were satisfactory.

METHOD

The diagnosis was established in all cases by the demonstration of gonococci in urethral smears stained by Gram's and Sandiford's (1937) methods.

Group 1. sulphapyridine.—Over five days all patients received sulphapyridine, 22 g., the tablets being crushed in water (table I), 1 g. (two tablets) was given at 7 A.M., 10 A.M., 2 P.M. and 6 P.M., except on the first two days when 2 g. was given at 6 P.M. During the five days the patients were kept in bed and urethral smears were taken daily.

If the patients were free from symptoms on the sixth day and remained so until the eighth day tests for cure were carried out, and if these were satisfactory the patient was discharged after two further days observation. If the urethral discharge continued, anterior urethral irrigation with 1/10,000 potassium permanganate was given for the next three days, and afterwards, if necessary, posterior urethral irrigations were carried out until the discharge ceased, tests for cure were then performed. In persistent cases prostatic massage was used with posterior irrigations.

Group 2. sulphathiazole.—Over seven days all patients were given sulphathiazole, 22·5 g. in water (table I), the tablets again being crushed, on the first day, 1·5 g. (three tablets) was given at 8 A.M., 2 P.M. and 6 P.M. and 4·5 g. at 10 P.M. On the second, third and fourth days 1 g. was given at 10 A.M., 2 P.M. and 6 P.M., on the fifth, sixth and seventh days 0·5 g. was given at each of these times. During this first week the patients were kept in bed and urethral smears were collected daily.

TABLE I—DOSAGE IN GRAMMES

Day	*Sulphapyridine* g.	*Sulphathiazole* g.
1	5	9
2	5	3
3	4	3
4	4	3
5	4	1·5
6	—	1·5
7	—	1·5
Total	22	22·5

Tests for cure.—After the patient had been dry for three days the following tests were carried out.

1. A Kollman dilator was passed and the degree of dilatation and presence of tenderness noted, if discharge was present, a smear was prepared from it.

2. Prostatic massage and preparation of a smear. Smears were stained by Gram's and Sandiford's methods and examined for gonococci and pus cells. The presence of pus cells, even if they were only few in number, was considered at all stages to indicate persistence of infection, and treatment was continued. This practice is carried out as a routine measure and has undoubtedly reduced the incidence of relapses, which have been low in this clinic.

If tests 1 and 2 were satisfactory the patient was kept under observation for two days, after which the final tests were carried out.

3. On the third day urine was not passed in the morning until the tests were completed. Anterior urethroscopy was done, the obturator being used for massage purposes, and any abnormality noted. The four-glass test was then carried out.

(*a*) The anterior urethra was washed out with a pint of mercuric oxycyanide (1/10,000) into a conical glass, which was examined with the naked eye for the presence of threads.

(*b*) Into a second glass about an inch of urine was passed—this represented the washings from the posterior urethra and the residue from the anterior urethra.

(*c*) Procedure (*b*) was repeated into a third glass.

(*d*) Thorough prostatic and vesicular massage was carried out and a smear collected.

(*e*) The remainder of the urine was passed into a fourth glass, this represented the prostatic and vesicular washings.

Only those cases in which the urines were clear and the smears did not show pus cells or gonococci were considered cured, if satisfactory after two more days observation they were discharged from hospital. Patients returned after three months for another complete examination. The gonococcal complement-fixation test was not employed because in many cases the test never becomes positive, so that it has only a limited value.

TABLE II—DAY OF DISCHARGE FROM HOSPITAL AFTER TREATMENT

Drug	No. of cases	Discharged after 14 days	14–21 days	21 days
Sulphapyridine	51	9 (18%)	27 (54%)	14 (28%)
Sulphathiazole	30	6 (20%)	17 (57%)	7 (23%)

RESULTS

In this series, 30 cases received sulphathiazole and 51 sulphapyridine. In both groups good results were obtained, dysuria disappeared within 24–48 hours and the patients were as a rule free from discharge in two or three days. There was little difference in the end-results of the two drugs, in both groups most patients (72% with sulphapyridine and 77% with sulphathiazole) had passed the tests for cure and were discharged from hospital within three weeks (table II).

There was, however, an appreciable difference in the toxicity of the two drugs, sulphathiazole was more readily tolerated than sulphapyridine. The patients were under close observation, particularly during the stages of chemotherapy when they were kept in bed and temperatures were taken twice daily. Manifestations of intolerance were shown with both drugs (table III).

TABLE III—INCIDENCE OF SYMPTOMS OF INTOLERANCE

Symptoms	Sulphathiazole (30 cases)	Sulphapyridine (51 cases)
Nausea	3 (10%)	25 (50%)
Headache	2 (7%)	39 (78%)
Vomiting	0	2 (4%)
Pyrexia	3 (10%)	17 (34%)

These symptoms mostly persisted for two or three days, pyrexia when present was only slight, the temperature being raised to about 99° F. The more serious signs of toxicity, such as hæmaturia, cyanosis and anæmia, were not noted. Most patients returned for examination three months after treatment and no relapse has been observed.

DISCUSSION

The number of cases investigated has been small, but the trial was carried out under strictly controlled conditions such as are impracticable in civilian practice. Thus while it is not possible to draw final conclusions from the results, they are worth recording. They show that while sulphathiazole is a useful therapeutic agent in gonorrhœa (as indicated by Lloyd and Erskine 1940), it differs little in efficiency from sulphapyridine. Sulphathiazole is, however, much more readily tolerated than sulphapyridine, even though the large dose of 9 g was given on the first day of treatment toxic symptoms were seldom encountered

These findings suggest that, since the amount of sulphathiazole available is limited, in the treatment of gonorrhœa it should be reserved for the cases which show serious intolerance to other sulphonamide preparations

SUMMARY

In two strictly comparable groups of men with acute gonorrhœa sulphathiazole and sulphapyridine both proved efficient therapeutic agents and there was little to choose between the results Sulphathiazole produced fewer toxic symptoms than sulphapyridine

We wish to thank Messrs May and Baker for supplying M & B 760

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IMPROVED APPARATUS FOR CONTINUOUS INTRAVENOUS ANÆSTHESIA

BY

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E A PASK, M B CAMB, D A

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IN a recent communication (*Lancet*, 1940, 2, 650) we described an apparatus for the continuous administration of intravenous anæsthetics, Further experience confirms the advantages of this route in certain operations, and we now present modifications of our original apparatus which make it simpler and safer in use The new features to which we wish to draw attention are

The use of a standard British Drug Houses or Crookes bottle of saline and/or glucose (1 in fig 1) as a reservoir for the anæsthetic solution greatly increases the applicability of this method The chosen anæsthetic is added directly to the 560 c cm (1 pint) of solution already in the bottle and the mixture is ready for use immediately after it has been well shaken

The "safety" dropper (2), which differs from the ordinary dropper in that it has a side tube, and contains a glass float the lower surface of which is ground to fit into a seating at the bottom of the dropper When there is fluid in the dropper chamber the float is kept away from its seating by its natural buoyancy, but if the chamber should become empty of fluid, as it will if the supply in the bottle is exhausted, the float seats down and the air which is under pressure in the bottle cannot escape into the patient's veins The whole dropper and float are made from thick Pyrex glass and can therefore be boiled

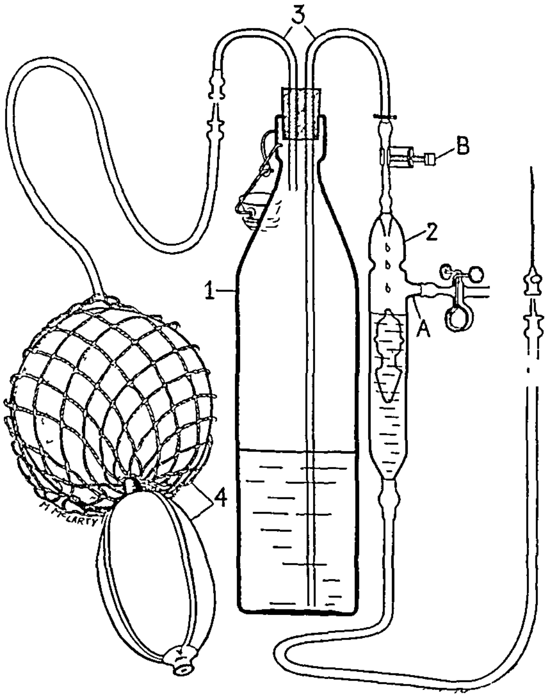

FIG 1

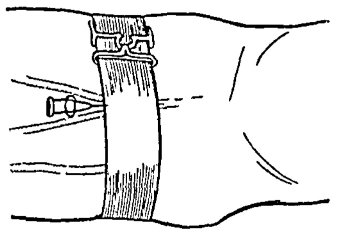

FIG 2

The rigid tubes (3), which pass through a rubber bung of correct size to fit the standard bottles, are made of stainless steel to eliminate risk of breakage

The hand bellows (4) provide sufficient pressure to maintain a rapid flow when needed, so that anæsthesia can be rapidly induced or deepened Once anæsthesia has been induced the bellows act as a reservoir of air sufficient to keep up a slow flow of anæsthetic mixture for many minutes

METHOD OF USE

A sealed standard bottle of sterile saline or glucose solution is opened and the selected anæsthetic added to it A small sterilised package containing the necessary connexions is opened and the bung firmly fixed into the neck of the bottle The hand bellows are now attached and a small pressure created within the bottle With the side tube (A) of the dropper open, fluid is allowed to run into it until the chamber is about two-thirds full, when the flow is cut off and the side tube clamped It may be necessary now to displace the float from its seating by squeezing the tube below it The remainder of the tubing is filled in the usual manner and the needle introduced into a suitable vein

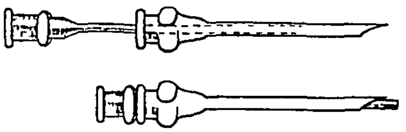

FIG 3

It has been found convenient to retain the needle in the vein by means of a narrow adjustable garter which encircles the arm, and covers that part of the needle which lies beneath the skin, but leaves free the tip of the needle within the vein (fig 2)

When a large vein is available we have used a 1 5 mm needle through which passes a blunt-ended cannula to the proximal end of which is attached the tubing from the dropper (fig 3) The cannula, at first partially withdrawn, is pushed home after the needle has been introduced into the vein The blunt end of the cannula now projects into the vein beyond the point of the needle and is not readily displaced

The screw clip (B) allows the flow to be maintained at a uniform rate, or to be varied at will between a slow drop and a continuous stream The flexibility in the rate of administration which results from adjustment of the screw clip allows a weak anæsthetic solution to be used, and thus dispenses with the necessity for a supply of an "inert" solution such as glucose or saline for keeping the needle patent when anæsthesia is deep

We have used this apparatus for various operations, including major abdominal surgery, and consider it particularly suitable for operations on the head and neck in which it is not desirable to pass an endotracheal tube For example, for ophthalmic operations, or for toilet of wounds or burns of the face, the anæsthetist can sit well away from the surgeon's field, keep a free airway by supporting the chin with the finger, and maintain an even level of light anæsthesia by adjusting the rate of flow of anæsthetic solution Anæsthetic solutions which we have administered by this method include Pentothal 0 5–1%, ether 5–7%, Avertin 1%, alcohol 33%, and various mixtures of these drugs The apparatus has also been used to give glucose and insulin in a case of diabetic coma, and should be of value as a readily transportable apparatus for administering blood

McARTHUR HERNIOPLASTY

By C R McLaughlin, M.B Camb , F R C S E
ACTING SQUADRON-LEADER, R A F V R

Although many surgeons have used the technique first described by L L McArthur[1] in 1904 for the repair of inguinal herniæ, the operation has so far received remarkably little general notice The opportunities for using this excellent procedure offered by a fairly large number of herniæ, seen at a R A F hospital during the last eight months, seem worth recording

The operation is appropriate to war-time conditions in the R.A F for several reasons First, there is a high proportion of cases of inguinal hernia in the surgical admissions to this hospital, partly as a result of frequent routine examinations by station M O s, which have revealed many herniæ of long standing in recent recruits, and partly because operation is recommended in every case of hernia Secondly, skilled man-power is limited, so that there is a demand for a quick cure which will allow the man to return to duty with the minimal delay Again, it is difficult for airmen on active service to avoid heavy manual work on their return to duty, and to advise " light duty for three months " is seldom practicable A reliable permanent cure is needed, so that it has been found wise to adopt a method of radical repair which enhances the natural strength of the inguinal canal without disturbing its essential anatomy None of the patients was over fifty, so few of the herniæ were large The objection, that in strong young adults with small herniæ any repair is an interference, is answered by the simplicity and certainty of the method, and by the fact that it shortens rather than lengthens the time in bed

TECHNIQUE AND ADVANTAGES

The McArthur operation has been carried out 90 times and (with the exception of rare cases where a Gallie *operation is indicated*) is now a routine procedure The hernias operated on included 83 indirect, 7 direct and 8 recurrent cases (direct and indirect)

The usual skin incision is made and the external oblique aponeurosis is split upwards, parallel to its fibres, for about 5 in from the external ring The sac is cleared and dealt with in the usual way Both leaves of the external oblique are then thoroughly cleared and examined If the fascia is of normal thickness a strip about ⅓ in wide is cut from the medial leaf and freed at the upper end. By using curved scissors and strong retraction this is easily managed Where the fascia has been much thinned out a rather wider strip is necessary The strip is separated downwards as far as the pubic bone, and this gives a length of 6 or 7 in , the natural fixation at the lower end is maintained, and is an economy both in time and tissue The strip is mounted on a Gallie needle, the spermatic cord is mobilised and lifted well clear of the canal, and a continuous suture begun It is important to include a good bite of conjoined tendon and of the medial point of attachment of the inguinal ligament in the first stitch The suture is continued till the internal ring fits closely round the emerging cord In large hernias it may be necessary to reinforce the upper segment of the ring, using a final fascial stitch where possible The repair is completed with an interlocking stitch and a linen fixation suture The external oblique aponeurosis is united by a continuous catgut suture, care being used to reconstruct the pillars without undue tension This last step is a departure from McArthur's original method, which involves the use of a second fascial strip to unite the divided external oblique

The normal mechanism is not altered by this operation, and the shutter effect of the internal oblique is increased to a maximum, in contrast with the results of variations of the Willys-Andrews technique The fascial suture avoids the disadvantages of catgut, which is absorbable and therefore temporary, and of silk, which is a foreign body In this connexion it may be noted that only one case in the series of 90 showed any sepsis The method is essentially simple and rapid, taking only 30 minutes in average hands It may be remarked that the tedious part of Gallie's operation is obtaining and preparing the strips, not their actual use The patient treated by McArthur's operation can return quickly to full duty In straightforward cases our routine is bed treatment 10 days , ambulatory treatment 5 days , sick leave 21 days , making a total of only five weeks

Except in older patients with massive herniæ it is possible to cut an adequate strip of fascia in almost every case, and the method can be applied equally well to direct and indirect herniæ In recurrent cases it is common to find the external oblique much scarred, but usually a strip can still be cut, and its fibrous character does not affect its utility

No recurrence has been reported among the cases in this series, but this proves nothing because too short a time has elapsed since operation Early recurrences have been often reported, however, where inadequate repair has been carried out by inferior methods On the other hand those who have used the McArthur operation longest are most positive of its reliability , and anyone who has felt at operation the extremely strong canal it produces must find it hard to see how any hernia could recur, even under severe strain

SUMMARY

A series of 90 cases of inguinal hernia treated by the McArthur fascial repair is reported

A fascial strip, cut from the external oblique, is used as a suture in the repair of the canal

The operation produces a strong result, and permits the man to return to full duty in five weeks It has special advantages under present conditions

I wish to thank the Director General of Medical Services, R A F , and the Officer Commanding this hospital for permission to publish this article , also the senior surgeon for encouragement and advice

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[1] *J Amer med Ass* 1904 **43**, 1039

Medical Societies

ROYAL SOCIETY OF MEDICINE

At the meeting of the Neurological Section on June 19, with Prof Geoffrey Jefferson, the president, in the chair, a paper on

Electroencephalographic Changes in Head Injuries

was read by Squadron-Leader Denis Williams He divided the changes into those occurring immediately after the injury and those seen in the chronic post-traumatic state, which might last for years after the injury Seventy-four patients had had a head injury less than 20 days before an electroencephalographic record was made, and in 10 instances a record was obtained within a few hours of the injury Three types of abnormality were encountered—the presence of large slow waves, whose period and amplitude were related to the severity of injury , absence or diminution of the normal frequencies , and, during the period of recovery shortly after the injury, outbursts of high voltage sine waves like subclinical epileptic attacks The third disturbance was found without any clinical evidence of epilepsy A series of slides and a film were used to show the progressive recovery in the e e g , which closely followed clinical improvement The e e g very often remained abnormal after clinical recovery seemed to be complete and in some of these cases recurrence of symptoms took place after the patient had returned to duty Records taken within 12 hours of a simple concussion were normal, in contrast to the gross abnormalities seen in the more severe degrees of head injury The rate of recovery of the e e g varied greatly in different subjects, but it usually paralleled the clinical recovery The disturbance was initially generalised but as improvement took place focal areas of maximal abnormality were seen These were found to coincide with areas of direct cerebral trauma by bomb fragments with depressed fractures, and with physical signs of corresponding cerebral damage, but they were also found in silent areas Careful psychological testing showed that mental changes characteristic of the frontal lobe syndrome were present with electroencephalographic changes in the frontal poles only It was concluded that in the acute post-traumatic state the e e g accurately reflected the degree of cerebral damage incurred

A total of 600 cases were used to investigate the changes in the chronic post-traumatic state In the first 325 of these cases records were kept of detailed clinical data, including progress, ultimate state of the patient, and an evaluation of the probable causation of the syndrome in each instance Half of these patients had an abnormal e e g in contrast to 3% of normal flying crews and 8% of Army personnel Even in a group of 22 patients who had sustained the head injury more than two years before an e e g was recorded, 45% showed abnormality There was a positive correlation between the length of post-traumatic amnesia and the percentage abnormality in the e e g While almost every patient with dural penetration had an abnormal e e g almost all who were free from symptoms showed no abnormality From these observations, it was concluded that in most instances an abnormal e e g after a head injury is a direct result of the organic cerebral damage and that the chronic post-traumatic syndrome of headaches, vertigo, loss of concentration, undue fatigue, mood changes and alteration in personality is usually organic in origin when the e e g is abnormal This was supported by the occurrence of a much lower percentage of abnormal records in subjects with family or personal histories of instability, epilepsy, psychopathy or psychosis In many of these the symptoms had arisen after a comparatively mild head injury

Normal e e g s in the presence of post-traumatic symptoms might be due either to full recovery of cerebral damage or to absolute destruction of cerebral substance, for complete loss of cerebral tissue did not cause the abnormal slow waves resulting from cerebral dysfunction Abnormal records were three times as common in patients discharged from the Services as a result of the symptoms as in those who returned to duty In 55% of those in whom the symptoms were thought to be organic the records were abnormal, contrasting with 33% of those with constitutional inferiority and 20% of those in whom the symptoms were thought to be due to an exogenous neurosis It seemed from these results that the e e g was an index of cerebral abnormality after head injuries, and so long as the clinical recovery and improvement in the e e g went hand in hand the outlook was good When disparity occurred it seemed that symptoms were persisting in the absence of abnormal cerebral substance, or that recovery was not complete in a patient who seemed clinically normal with an abnormal e e g In these the prognosis was less favourable

In the discussion which followed, the PRESIDENT referred to Foerster's work on the incidence of epilepsy after head injuries He said that Squadron Leader Williams's observations were in line with the clinical follow up of cases which showed that late epilepsy could not be predicted in the early stages of recovery from a head injury It seemed that some undemonstrable abnormality arose which predisposed the subject to epilepsy in later life He thought that a long-term study of the subject would be very profitable, now that the e e g was available to indicate prolonged cerebral abnormality

Dr J ALDREN TURNER asked what was the significance of the epileptiform disturbances shortly after a head injury, in relation to subsequent epilepsy, how long it took them to disappear, and whether they could be reproduced experimentally

In reply, Squadron-Leader WILLIAMS said that these epileptiform waves were so frequently seen after head injuries that they seemed to be a stage in recovery and did not necessarily have any untoward prognostic significance, although it was interesting that they were coincident with the usual time of onset of " immediate post-traumatic epilepsy " and with the periods of alteration in consciousness which C P Symonds had likened to the post-epileptic states They disappeared before the acute effects of the head injury had subsided, and could occasionally be produced afterwards by over-breathing

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Reviews of Books

Principles and Practice of Diphtheria Immunisation

By J TUDOR LEWIS, M D Lond , D P H , deputy M O H for Croydon London Humphrey Milford, Oxford University Press Pp 155 8s 6d

THIS monograph has appeared when it is most needed, for with increased war-time application of prophylactic medicine, and growing public interest awakened by broadcasts and press propaganda, the immunisation campaigns of most local authorities have been intensified We seem to have escaped the toll from epidemic diphtheria which might have been expected as a result of shelter life and overcrowding, but fortunately this has not deterred many boroughs from their efforts to raise the percentage of immune children in preparation for next winter New experiences have been gained in mass immunisation against diphtheria, and this book is the result of Dr Lewis's recent experiences in Croydon It describes the methods and technique used in that borough. The historical notes and the discussion of factors influencing antibody reaction should provide a useful background for students, but the section on blood-antitoxin estimations may confuse those who have not been in recent contact with the subject The book ends with an account of the administration of a campaign among school-children, with an elaborate analysis of factors influencing the desire for immunisation, including the attitude of head teachers This and the chapter on organisation and clinic routine might well be condensed in a later edition Those working in public-health departments will find in the book a careful attempt to present up-to-date information on the routine of diphtheria immunisation in a practical and straightforward way

Science and Practice of Surgery

(7th ed) By W H C ROMANIS, M Chir Camb , F R C S , and PHILIP H MITCHINER, M S Lond , F R C S London J and A Churchill 2 vols Pp 1952 30s

THIS standard textbook has undergone complete revision and parts of it have been rewritten , it now has a section on war surgery, including the treatment of gas injuries The character of the book remains unchanged it is comprehensive, and aims at providing enough about the science of surgery for those taking the higher examinations as well as for those graduating in it, and it covers the ground well A candidate could scarcely be expected to have a more extensive theoretica knowledge than can be gleaned in these pages but he would have to supplement it with a practical operative surgical textbook in order to carry out the recommendations contained in it Specialists in different branches of surgery would no doubt find matter fo criticism but, taking everything into consideration, the authors have given a balanced and judicious account of their subject It is remarkable that the publishers have been able to maintain the quality of paper, print and binding in the midst of war without increase in price

Therapeutics of Internal Diseases

Vol III Edited by GEORGE BLUMER, M D London D Appleton Century Company Pp 738 Complete i four volumes £9 the set

THE third volume of this work deals with diseases due to parasites, physical and chemical changes i metabolism and the respiratory and circulatory systems According to the preface, diseases due to allergy, the avitaminoses, the common skin diseases and diseases of the endocrine organs should be included in this volume but they seem to have been omitted Generally speaking the sections reach a high standard but in a work of this size the reader is entitled to expect more precise details than are sometimes given—for example, a clear account of postural drainage of the bronchial tree omits the important practical point that drainage should be practised before rather than after meals It is always unavoidable that in a work with many contributors contrary opinions should occur from time to time , the scant mention of Mecholyl in the treatment of paroxysmal tachycardia in this volume contrasts with the enthusiastic account of its value in the section on pharmacology in the second volume In such cases the specialist may be able to discriminate but the general practitioner is likely to be confused More illustrations would be welcomé Why should each of the fungi have an appropriate diagram and all the metazoa and protozoa lack this distinction ?

THE LANCET

LONDON SATURDAY, JULY 5, 1941

PREFRONTAL LEUCOTOMY

THE suggestion that some cases of mental illness might benefit by division of the association fibres of the frontal lobe of the brain was first put forward by Prof EGAS MONIZ of Lisbon five years ago He argued that in such disorders the functional connexions between the cortical cells, instead of being variable, become fixed, giving rise to obsessions and delusions , and that by cutting the fibres concerned it might be possible to release the patients from their symptoms Any proposal that mental disorders should be treated surgically is bound to arouse criticism, probably not untinged with emotion The psychological and physiological hypotheses on which MONIZ founded his operation seem at first sight to be opposed to much current thought in psychological medicine, and particularly to the modern holistic view of the nervous system which has replaced earlier conceptions of localisation Our knowledge of the anatomy and physiology of the cerebrum is so scanty that we can only indicate generally the possible results of structural damage But this need not deter us from accepting any empirical treatment if it should prove valuable , indeed our ignorance should make us chary of rejecting any treatment merely because it conflicts with psychological preconceptions

That surgical interference is not devoid of risk cannot be a complete argument against it , in general medicine, if non-operative methods fail, we weigh the dangers and disadvantages of operation against those caused by the disease and choose the lesser of the two evils Insanity often carries worse consequences for the patient and his relatives and dependants than bodily disease, and many cases of insanity must still be regarded as being incurable In many of its forms mental disease is chronic, not endangering the life of the patient , but surgery is often used in the treatment of chronic bodily disorders, and few would hesitate to advise an operation with a low mortality for the relief of chronic distressing symptoms Yet in the treatment of all disease (as distinct from structural defect) surgery must be regarded to some extent as a makeshift, marking the incomplete state of our knowledge, and this is specially true of the brain

The original mental patients operated upon by MONIZ and by RIZZATTI and his colleagues were all cases with a poor or hopeless prognosis, who had failed to respond to other mothods of treatment and who could, indeed, be accepted as incurable As yet we have had no opportunity in England of judging the value of the treatment, but the latest reports from the United States seem to support the original contentions of MONIZ and the Italian school that the operation produces something like a cure in a large percentage of cases resistant to other therapeutic methods Any claim to therapeutic success in the cases reported in this issue by MCGREGOR and CRUMBIE and by HUTTON, FLEMING and FOX is naturally impossible after so short an interval , but it is noteworthy that in these two series of cases, treated entirely independently, no grossly harmful effects followed operation and there were, in some cases, signs of mental improvement LANGE has recently reviewed cases submitted to frontal lobectomy and concludes that the patients show some loss of initiative and possibly of prevision The disturbance to the adjacent nervous structures caused by the Moniz leucotomy is certainly less severe than in lobectomy but further study of leucotomised patients may reveal similar blunting of these faculties Whether this will be found too high a price to pay for the benefits claimed, and whether such benefits are lasting, remains to be seen From the evidence so far submitted it seems that the operation has most chance of being useful in cases of acute anxiety and in obsessional states

WAR FORMULARY

IT is three months since the Medical Research Council issued its War Memorandum No 3,[1] calling for economy in drugs and setting out lists of those which we can or must use fairly freely (A), those with which we must be careful (B), and those which we must give up altogether (C), but as Dr PAPPWORTH makes clear in his letter on another page the response has been disappointing Various authorities and the E M S have asked their hospitals to follow the M.R C advice, but hardly anyone seems to have taken the requests very seriously, and most practitioners have made no changes at all in their prescribing habits After a few years in practice the doctor knows what effects he may expect from certain drugs and mixtures of drugs, what are the snags to be avoided in prescribing them, and which are specially suitable for particular patients , it may take him months to become as familiar with alternatives, and he will get no thanks from his patients for making changes Moreover, some of the drugs we are asked to economise in still seem to be plentiful—bismuth and iodine, for example—and it is not encouraging to find rows of proprietary syrups in the chemists' shops when "sucrosum" and syrups appear in list B The hospital dispenser, too, who can remind the staff of the need for care sometimes takes the view that there is no point in limiting the prescription of substances of which he has a large stock The reason for economy is not always easy to grasp , we have to remember both the need for reserving all the cargo space and foreign exchange we can for food and war materials, and also, in the case of drugs made at home, that their constituents may be more useful as food or munitions, and that their manufacture and transport mean diverting labour from war industries

This is a grand opportunity for us not only to help the war effort but also to throw off unworthy traditions and rationalise our prescribing In peace-time drugs, natural and synthetic, pour into our ports from every quarter of the globe, and if some are inactive and others could well be replaced by cheaper ones who cares ? Doctors and patients have their fancies and could afford to humour them Thus the width of our world trade has widened our materia medica, and traditional medicines have come to contain ingredients whose very presence most prescribers have forgotten and few could justify Polypharmacy must always handicap progress in therapeutics by obscuring the action of active ingredients and now there can be no excuse for it We must now be in no doubt what we are prescribing and why ; when we are ordering morphia for a patient with diarrhœa we must ask ourselves whether it will really help to mix it with chloroform, hydrocyanic acid, capsicum, cannabis, peppermint, glycerin and alcohol. Simplification must be the first step towards economical prescribing, and it will lead to a fuller realisation of the true action of drugs and of how much can be done with how few. Above all, let us turn to the B.P. before the commercial circular. Not only drugs but druggists as well are scarce, let alone bottles and wrapping materials, so we must be sure before we write any prescription that there is in fact a need for medicine in this case. Placebos are very well in peace-time, and a bottle of medicine combined with reassurance may be as sound psychotherapy as any, but now we must sometimes omit the bottle and rely on the reassurance. If we do order a placebo at least let us be sure that its contents are not being brought from the ends of the earth.

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[1] Economy in the Use of Drugs in War time H.M Stationery Office Pp 18 3d

In February the Ministry of Health announced the composition of a committee to draw up a war-time formulary, and its labours should be nearing completion. Publication of the formulary will greatly ease the task of the conscientious prescriber, and hospitals have naturally awaited its appearance instead of drawing up emergency pharmacopœias of their own. The War Formulary (W.F.) will no doubt immediately replace the National Formulary for N.H.I. prescribing, and the insurance doctor who ignores it will find himself surcharged in the ordinary way. In addition it should replace all hospital formularies, and there are already indications that the Services and local authorities will give it their blessing. In drawing up the W.F. the committee have been aiming at making the best use of available drugs and not at offering inferior substitutes, and the private practitioner will be doing the best for his patient as well as saving himself and his dispenser trouble if he uses it in his everyday work. When prescriptions are written outside the W.F. there should be some way of keeping the M.R.C. lists in the doctor's memory, or perhaps in his pocket. It could be made a rule that a chemist or hospital dispenser would make up a mixture containing something in list B only if that something was initialled by the prescriber. The unessential drugs in group C are presumably no longer imported and will slowly disappear from the market. There remains the question of proprietary medicines. Their manufacturers may deserve some reward for their foresight in laying in stores, but the Ministry of Supply cannot expect wholehearted support from doctors for saving on drugs while the M.R.C. lists are ignored by commercial firms.

A RARE SPIRIT

As WILFRED TROTTER would have been the first to remind us, it is not while grief is still poignant that an author's rank is fairly appraised. That thought may deter some who rereading his collected papers[1] and recalling the gracious personality of their author are moved to prophesy that the slender volume will live on the accessible shelf which holds "Religio Medici," ALLBUTT's FitzPatrick lectures and a selection of OSLER's essays, perhaps also HILTON on Rest and Pain, and SUTTON's lectures on Medical Pathology. Certainly, like the authors named, TROTTER could "write." He is speaking of "the case," the patient upon whom a pioneer operation was done on Nov. 25, 1884:—

> "The heresy of admitting that at the centre of this event there was a human being is possibly condoned by his short appearance before us not being without a certain tragic dignity. He was young, intelligent, courageous, and he was to die. I owe to the impeccable memory of a contemporary witness the knowledge that this young man's name was Henderson and that he was a native of Dumfries. I record this with pious satisfaction in being able to add a name to the exiguous roll of those by whose misfortune or endurance the world has directly gained. It is a strange defect in medical history to have kept so few of the names of these benefactors and to have left it to accident that we still know there existed such humble but significant people as little James Phipps and Sarah Nelmes or Alexis St. Martin. To the high professional spirit treasuring such names may seem trivial and even a little ludicrous. Let us not forget, however, that they are the names of those who have borne more substantial witness than has yet been produced by any philosopher or any theologian that all suffering is not in vain."

That TROTTER felt that emotion explains why he was beloved; that he could so express it will explain why he will be loved by those who never even saw him.

These papers cover a wide range of topics but are informed by a common purpose. It is to show that the great, the ideal doctor should understand the harmony of art (in the Hippocratic sense), science (in the laboratory sense) and philosophy (in Galen's sense) not confounding the persons nor dividing the substance of the trinity. Other great doctors before TROTTER have written memorably on the first theme. ARISTOTLE himself, so very long ago, remarked that something more than knowledge was needed for healing. Nobody has written so well on the psychological aspects of clinical medicine:—

> "The attitude of the patient approaching his doctor must always be tinged—for the most part unconsciously—with distaste and dread; its deepest desire will tend to be comfort and relief rather than cure, and its faith and expectation will be directed towards some magical exhibition of these boons. Do not let yourselves believe that however smoothly concealed by education, by reason and by confidential frankness these strong elements may be, they are ever in any circumstances altogether absent."

Great investigators before TROTTER have realised that pompous general principles impede scientific progress, as HARVEY's comment on BACON—"He writes philosophy like a Lord Chancellor"—showed. They might not have explicitly admitted what TROTTER made plain—viz., that "in general, discovery has been the result of action rather than thought" or drawn this conclusion:—

> "The historian is apt to be indignant at the obstacles to new knowledge offered by the censure of theologians and the persecution of ecclesiastics. Theologian and ecclesiastic have no doubt done their best, but the effect of their utmost zeal has been insignificant in comparison with that resulting from the conscientious use of the rational mind."

Yet the history of medicine, as TROTTER showed, bears out this diagnosis. Nobody now reads GALEN, none of his works which once gave law to the medical world will bear reading. But there are some essays, like TROTTER's, perhaps addresses to students or practitioners, neither too long nor too steeped in wholly obsolete technicality to be unreadable. One, on the proposition that the best doctor is also a philosopher, exemplifies the defect of Greek and still more of Hellenistic science. GALEN did believe in scientific research but he had a still stronger faith in principles and abstractions. His order of importance s the *logical*, the *physical*, the *ethical* , of him it was plainly true that —

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[1] The Collected Papers of Wilfred Trotter, F.R.S. London: Humphrey Milford, Oxford University Press. Pp. 194. 10s. 6d.

> "Now facts unfortunately are not the natural diet of he mind They are laborious and often undignified to collect , they are apt to be formless, ugly, and even nasty , they dirty the fingers, they smell, and sometimes bite How different from the noble, shapely, and above all well-behaved conceptions of the mind, which are so manifestly of a higher order of reality."

That this was true of GALEN and that GALEN could ' write ' had disastrous consequences for the growth of medicine But it does not lead TROTTER to conclude that the ' theoretical speculative and rational element in the pursuit of medicine " should be rooted out On the contrary, he remarks that ' experience seems to show that a branch of knowledge strictly limited to experiment and without any kind of speculative admixture tends in time to lose its inspiration and drift into a dry and rigid orthodoxy Some such decline was perceptible in the physical sciences towards the end of the 19th century and there can be little doubt that a strict reliance on experiment alone would in the long run have a similar deadening effect on scientific medicine '

In the last of his papers which was printed a few months before his death, TROTTER approaches this problem We admit he says in effect, that reason, the *intellectus agens* of the scholastics, has in fact often produced disastrous results (indeed a modern mathematician said that ARISTOTLE, from whose creative reason the scholastics evolved their *intellectus agens*, was one of the greatest misfortunes which happened to mankind) But we must also admit (*a*) that purely experimental science tends to ultimate sterility, (*b*) that large tracts of human interests, for instance social institutions, are not directly open to experimental study and that without the application of reason "it seems probable that the ominous fatuity and confusion that mark our social and political affairs must continue to increase ' How then can we free the use of reason from its defects and retain its value ? TROTTER was already a sick man when he posed this question and his answer is partial With his usual modesty he would have said that he could not answer it, but he has indicated the direction in which a solution may be found

> "We must get rid of the disastrous belief that there is any activity of the mind corresponding with the conception of pure reason The mind has no such function All processes of reasoning however abstract are participated in and influenced by feeling We cannot separate off the reasoning process as such and set it to work in an emotional vacuum What we can do is to suspect the grosser cases of the effect of feeling and to make an appropriate correction "

Some on reading this will murmur Freud ' some will recall a teacher even greater than FREUD who defined the conditions of entrance into the kingdom of heaven There is the soul of TROTTER s teaching, intellectual humility ' The fault dear Brutus, is not in our stars but in ourselves ' We are not to throw away the instrument of reason but we are to root out the deadly sin of intellectual arrogance the fatal pride of the intelligentsia But this train of thought carries us beyond the bounds of our profession We say hail and farewell to a beloved contemporary, sure that his influence will work upon those to come after us when these times are but a memory of old unhappy, far-off things

Annotations

NERVOUS CONTROL OF THE COLON

DURING the past two years White, Verlot and Ehrentheil,[1] at the Massachusetts General Hospital, Boston have made a series of observations on the pressure changes in the rectum and lower colon in patients with disease, injury or operative lesions of the brain, spinal cord or pelvic nerves The method used was to infuse into the rectum water at the rate of about a litre in ten minutes and observe the pressures by a manometer while recording the patient s sensation of wind, desire to defæcate or cramp-like pain Normally the maximal comfortable capacity of the colon is 1500–2000 c cm , there is a basic tone which gradually relaxes with increasing amounts and this is interrupted by peristaltic contractions which last a few seconds and send the pressure up A sense of fullness is reached in the normal colon, as in the bladder, when the pressure reaches 30 cm of water , a contraction which raises the pressure above 50 cm is distinctly uncomfortable The basic tone rises steeply as the normal capacity is approached and peristaltic waves occur with increasing frequency until a state of tetanic contraction is reached , at this point fluid usually escapes round the catheter If a weak barium suspension is used and the bowel observed with X rays, the contraction peaks are seen to correspond with mass peristaltic waves Haustral segmentation movements produce no visible change in the manometer From their cases these workers conclude that the cerebral cortex normally has an inhibiting effect on the spinal reflex activity of the colon, thus increasing its storage capacity Lesions situated in the cortex or brain-stem frequently remove this inhibitory action and result in hypertonicity In spinal-cord injuries the stage of spinal shock passes relatively quickly, and a remarkable hypertonia of the colon appears soon after high injuries to the spinal cord Destruction of the cauda equina or of the sacral segments in the spinal cord produces a state of the colon in which the peristaltic rush movements are absent though haustral segmentation continues At the same time loss of sensation—of the feeling of fullness—in the lower half of the colon is complete In taboparesis and syphilis of the cord the colon shows low basic tone and feeble peristalsis and an increased capacity (3000 c cm) with greatly reduced sensation The results are comparable with those of T R Elliott[2] on the nervous control of the bladder

White and his colleagues early observed during the passage of a barium meal that the movements of the distal colon were quite different from those in its proximal part In the proximal colon there is a gradual filling of the cæcum and ascending colon with ingesta passing out of the small intestine, and this goes on until the colon is filled to beyond the hepatic flexure Haustral contractions change only the contour of the contents , at intervals, however, a great peristaltic wave occurs which sweeps the contents of the proximal colon into the sigmoid and upper rectum, and to the exterior if the anal sphincter relaxes or is out of control With training, inhibition of defæcation occurs by voluntary contraction of the anal sphincter, and this voluntary effort is absent in infancy, in unconsciousness, in disease or injury of the brain and in states of shock Further work on the lines these workers have laid down may show that in some patients with excessive sphincter action, with relaxed tone of bowel musculature, or with a combination of these arising from the persistent neglect of the defæcation call, there is an altered nervous control of the lower bowel accounting for the delay now described as dyschezia

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[1] White, J C Verlot M C and Ehrentheil O *Trans Amer surg Ass* 1940 58 608 *Ann Surg* 1940 112 1042

[2] *J Physiol* 1907, 35 367

VITAMIN C IN CORNEAL INFLAMMATION

RESEARCH in the biochemical problems of cataract[1] has shown that in this disease the lens may eventually lose all its vitamin C, while normal in the blood the level of this substance is usually low in the urine Bouton[2] suggests that the administration of ascorbic acid in certain cases of cataract is followed by visual improvement due to its effect on the ocular media, retinal vessels and optic nerve and not to any benefit it gives to the lens Further exploration of the therapeutic value of vitamin C has been made by Livingston and Walker[3] who claimed that ascorbic acid administered intravenously reduced the severity of the corneal lesions in rabbits whose eyes were subjected to a small drop of liquid mustard gas Ida Mann and Pullinger[4] were unable to confirm that ascorbic acid had any counteracting effect on mustard-gas keratitis Keith Lyle and McLean[5] have tried ascorbic acid in the treatment of 10 patients suffering from superficial punctate keratitis, dendritic corneal ulcer, scleritis with early sclerosing keratitis, postvaccinial keratitis, phlyctenular keratitis, phlyctenular "ring" ulcer, and keratitis and corneal ulceration associated with seborrhœic dermatitis In these cases there was no reason to believe that vitamin-C deficiency existed, yet although they had received routine treatment for weeks without appreciable improvement the daily administration of 500 mg of ascorbic acid (Roche) intravenously brought about a definite improvement within 48 hours In some cases all clinical signs of inflammation had subsided in 4–10 days The injections were stopped when active ocular inflammation ceased, and were followed by the administration of two 250 mg tablets of ascorbic acid t d s by mouth No local or general reaction followed the injections

PSEUDOCYESIS

THE condition of fake pregnancy was recognised in the time of Hippocrates, who reported no less than 12 cases in his practice, and many subsequent writers, including such masters as William Harvey, Mauriceau and J Y Simpson, have added their observations on the ætiology of this syndrome Perhaps two of the best known cases are those of Mary Tudor and Joanna Southcott The latter, a virgin prophetess, enjoyed a considerable following in the early nineteenth century and in 1814 announced herself with child at the age of 64 Her physician was convinced of her pregnant state by reason of the enlargement of breast and abdomen and the "sensible motion of the womb" Her disciples anxiously awaited the coming of their new messiah, but Joanna died 2 months after the date of expected delivery An autopsy was performed and no trace of the pregnancy was discovered Bivin and Klinger[6] in their monograph were able to collect 425 reported cases, adding 19 of their own The youngest patient in their series was aged 7, the oldest 79 The peak incidence from the point of view of age groups was in the 33rd year, while only 16% occurred in the menopausal age group, contrary to the usual teaching These writers noticed the tenacity with which the patients cling to their self-made diagnosis, the enthusiasm that they expend on preparations for the confinement, and the scorn that they pour on the unfortunate physician who dares to refute their claims to pregnancy They reported 3 cases who remained unconvinced that they were not pregnant for eight, nine and eighteen years Rutherford,[7] who has lately reported 7 cases seen at the Boston Lying-in Hospital between 1927 and 1940, says that the main psychological factors in the ætiology are fear, desire, hysteria, suggestion and autosuggestion The symptom complex includes menstrual disturbanc (the most common feature), enlargement of the abdomen, which may be due to fat, flatus, fæces, a full bladder hysterical spasm of the diaphragm or muscular contraction, and gastro-intestinal symptoms, of which particularly violent "fœtal" movement is the most remarkable The diagnosis is made by careful clinical observation, for the physiological changes of pregnancy in breast cervix, uterus and vagina are never faithfully copied i their entirety by pseudocyesis, there is one importan universal sign—in true pregnancy the umbilicus i everted while in false pregnancy it remains depressed Radiography and the Aschheim Zondek or Friedman test will clinch the diagnosis and provide useful concret evidence with which the physician can convince a doubting patient How difficult that may be is well illustrate by Rutherford's quotation from Simpson's "Diseases o Women" To satisfy a Scottish peasant woman in he nineteenth month of pseudocyesis that she was no gravid he anæsthetised her in the presence of her sister who, when the patient was well relaxed, felt the spin through the collapsed abdominal wall As the anæstheti wore off, the tumour reappeared and the expectan mother awoke to find herself still in possession of he tumour and her original conviction Her siste admonished her "Hauld your tongue, woman, you'r nothing in your wame for I felt your backbone mysel with my ain hand" This tip is worth rememberin when a stubborn woman defies all efforts of the physicia to convince her. But no matter with what clinical an scientific proof these patients are confronted they ma be extremely difficult to convince, so firmly roote is their belief

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[1] Hawley E E and Pearson, O *Arch Ophthal N Y* 1938, 19 959

[2] Bouton, S M *Arch intern Med* 1939, 63 930

[3] Livingston, P C and Walker K M *Brit J Ophthal* 1940, 24, 67

[4] Mann, Ida and Pullinger, B D *Ibid* p 451

[5] Lyle, T K and McLean, D W *Ibid*, June 1941, p 286

[6] Bivin, G D and Klinger, M P Pseudocyesis Bloomington, Indiana, 1937

[7] Rutherford, R N *New Engl J Med* April 10, 1941, p 639.

SULPHONAMIDES AND BONE-MARROW

PATIENTS who have received no sulphonamide drug are becoming a pathological curiosity, Wilson, in Sidney has found 20 of them, however, suffering from variou infections, and has compared the changes in the granulocytes of their bone-marrow with those in a comparabl group who had received various doses of sulphonamides The largest dose given in the second group was 159 of sulphapyridine given over 42 days to a boy age three who died from pneumococcal meningitis In th marrow of the first group toxic granules appeared in th myelocytes, and macropolycytes—large multilobulate polymorphonuclear leucocytes—were prominent, precisely similar changes appeared in the marrow of th sulphonamide treated patients—in fact, Wilson coul find no qualitative or quantitative difference between th groups Agranulocytosis has been rightly regarded a the most common of the serious toxic reactions cause by the sulphonamides Sulphonamide agranulocytos follows exactly the same clinical plan as other forms it may come on after a single small dose, but it may no appear until after a considerable amount has been give over a period of some days, or not even until a second o subsequent course of the drug is given, similar variations have been recorded in agranulocytosis due, fo instance, to amidopyrin The bone-marrow changes i agranulocytosis have been thoroughly described by Custer[2] and by Darling, Parker and Jackson[3], there i almost complete disappearance of all the granular white cells, the normoblasts are unaffected, and there are myeloblasts, lymphocytes, and plasma cells in varying proportions according to the time the disease has lasted Similar changes in the bone marrow of fatal cases of agranulocytosis have been reported by Sheckett and Price[4] (among others) in sulphanilamide cases, and by agerman and Goto[5] in sulphapyridine cases Wilson ind nothing like this in his patients , but none of them d even leucopenia and no patient with unusual sensi-ıty seems to have occurred among them Paul and marzi[6] followed the blood and bone-marrow changes ring sulphanilamide treatment, and they too were able to detect any conspicuous changes in the marrow anulocytes, even though one of their patients developed ute hæmolytic anæmia after only 15 g of sulphanil-nide, given over 8 days

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[1] Wilson, T E *Med J Aust* March 1 1941, p 257

[2] Custer, R P *Amer J med* Sci 1935, 189, 507

[3] Darling, R C, Parker, F Jun and Jackson, H Jun *Amer J Path* 1936, 12, 1

[4] Sheckett, H A and Price, A F *J Amer med Ass* 1939, 112, 823

The close analogy between granulocytosis due to ılphonamides and that due to other drugs suggests that is, like the others, an example of idiosyncrasy This is ertainly true of the cases occurring after a single dose, but ı a much larger group of cases agranulocytosis develops ı patients who have been taking sulphonamides for ome time Further clinical experience has confirmed 'olebrook's[7] estimate that if 25–30 g is exceeded in a ingle course of treatment the risk of agranulocytosis is nuch increased Is this due to a progressive depressing ıction of the drugs on the granulocyte-forming tissue, or s it due to a greater liability on the part of the patient o develop idiosyncrasy ? If the former, we are right in topping the administration of sulphonamides when the ranulocytes of the blood show a steady fall, and feeling hat so long as there is no such fall relative safety is ıssured But if the second explanation is correct we ıre only acting on probabilities, with the risk of agranulo-ytosis always present To answer the question we ıeed to know the changes in the bone-marrow in patients who have granulopenia and to follow these changes in ecovery or relapse Neither Wilson nor Paul and Limarzi could do this, since none of their patients showed 'eucopenia , but Wilson's observations will have shown what changes in the marrow granulocytes must be put down to the effects of concurrent infection In the meantime these negative results should not deflect us from continuing to treat every sulphonamide drug as a potential producer of agranulocytosis

PHŒNIX CITY

AFTER the seventeenth-century fire of London, as everybody knows, Christopher Wren, John Evelyn and many others devised charming plans for the new city, with capacious thoroughfares, gardens and ordered and harmonious houses Needless to say they were admired and then filed away; and London grew up as we knew it before the second fire, its narrow streets congested with raffic, its buildings for the most part undistinguished and abutting on slums, the Thames nowhere visible except from the wharves and bridges Here is another opportunity, and the London County Council with praiseworthy foresight hopes to ensure that we use it well. The Postwar Reconstruction Committee on compensation and betterment (Uthwatt committee) has published a report in which powers required to facilitate reconstruction are already being considered Something must be done to make immediate action possible when the war is over No rebuilding can take place at present without the licence of the Ministry of Works and Buildings but there is nothing to hinder owners from entering into transactions for the sale, leasing and redevelopment of their sites Owners can begin to prepare schemes and incur professional fees and expenses , and some may already be devising elaborate developments which whether they mature or not will serve to enhance the purchase value of the land Thus if the L C C has to acquire the sites after the war they would, in addition to the cost of purchase, have to cover any expenses incurred by the owner and recompense those who had gained an interest in the site The L.C C suggest that a suitable way of curbing these activities would be to prescribe any area which ought to be redeveloped as a whole Public notice of such prescription would have to be given by advertisement and by notices posted on the site The areas affected would be shown on a map and would be subject to the approval of the appropriate minister, who would also consider objections No new interest created in land in the prescribed area would be allowed to increase the purchase price to the local authority, and no building or other works would be permitted without the authority's consent The L C C consider that these powers, if granted, should operate throughout the war and for such time afterwards as might be fixed by an Order in Council , and that no compensation should be payable to owners of property because of the local authority's refusal to allow building during the period of stabilisation Similar provisions, they think, should apply to isolated properties on or near new roads, or on sites required as open spaces or for public buildings and schools Londoners may well be glad that the new vistas opened up to them by their enemies abroad are not to be closed by enemies at home

HOSTELS FOR DIFFICULT CHILDREN

CHILDREN were difficult before the war, but only those who had to deal with them—teachers, social workers, magistrates and/or parents—realised what a nuisance a difficult boy or girl could be "a sort of privileged nuisance," to turn a phrase of Sir Walter Scott. In those remote days the situation seemed to be met by a few child-guidance clinics and one or two camps run by benevolent amateurs for those who had come up against the law Evacuation accentuated the problem in two ways First, because habits of discipline were largely broken and psychological conflicts were precipitated by the uprooting of the children and their transfer to the care of people with limited power of control over them Secondly, because hostesses were unwilling to put up with unsatisfactory behaviour which parents would have prevented or condoned The fact that some billets were unsuitable also helped to bring the question to the notice of the authorities Attempts to solve the problem have been to provide hostels, to extend social welfare work among the evacuated children and to refer cases to psychiatrists, working either in child-guidance clinics or in association with local authorities Hostels for difficult children have been opened in receiving areas all over the country At present they vary greatly because trained personnel is scarce and many hostels have only a kind, motherly—and no doubt long-suffering—woman as a matron, with one or two well-meaning but untrained assistants Such an arrangement is nowhere proving satisfactory Few psychiatrists are available, and in many cases the social work has had to be carried out by people already doing a whole-time job and who have had no special training in handling difficult children Local authorities, moreover, are only just learning to take advantage of regionalisation Ideally, a hostel should serve a region, so that staffing could be adequate, children could be moved freely in a large area and proper grading of cases would be possible Psychiatric advice and treatment are essential, as the Board of Education recognise , they stipulate that proposals to send difficult children to hospitals will only be approved—under section 80 of the Education Act—when psychiatric treatment can be made available and complementary to residence in the hostel

The Mental Health Emergency Committee has taken a special interest in the provision of hostels This committee is formed from representatives of the three chief voluntary organisations for mental health—the Central Association for Mental Welfare, the Child Guidance Council, and the National Council for Mental Hygiene—and of the Association of Mental Health Workers and the Association of Psychiatric Workers Thanks to the activity of the committee, mental health workers were classed among those in reserved occupations, and a register of them, and of people suitable for work in hostels, has been compiled Workers have already been loaned to Bedford, Brighton, Caernarvonshire, Cumberland, Gloucestershire, Hampshire, Nidderdale in Yorkshire, Northampton, Oxford, Reigate, and Westmorland In several of these places the Ministry of Health has since approved the appointment of permanent workers The Child Guidance Council, moreover, is arranging a course for hostel workers The emergency committee suggest that hostels should be of the following types (*a*) sick bays for children suffering from minor physical disorders, (*b*) observation homes where difficult children can be watched for a time, (*c*) homes for those suffering from temporary emotional disturbances such as spasmodic enuresis or behaviour difficulties due to mishandling or the wrong surroundings, (*d*) homes for children with persistent psychological difficulties such as enuresis, stealing or truanting, and those of backward intelligence, or showing special types of educational retardation They suggest that whenever possible homes of type (*c*) and (*d*) should be placed in an area where psychiatric advice and treatment are available Many hostels are already doing useful work and considerable numbers of difficult children have been readjusted and returned to billets It is to be hoped that when the war is over the more satisfactory hostels will be maintained, there will always be some children who will benefit from a period of special psychiatric treatment away from home and under hostel conditions

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[5] Tragerman L J , Goto, J M *J Lab clin Med.* 1940, 25, 1163
[6] Paul J T , Limarzi L R. *Proc. Soc exp Biol N Y* 1940, 43, 29
[7] Colebrook, L *Lancet*, 1939, 2 158

SHORT ŒSOPHAGUS

ŒSOPHAGEAL ulcers are not uncommon and have the pathological characteristics of gastric and duodenal ulcers Discussing their relationship to the short œsophagus at a meeting of the diagnostic section of the Faculty of Radiologists on May 23, Dr A S Johnstone remarked that two conflicting views hold the field According to Briggs, Dick and Hurst, peptic ulcer of the œsophagus is almost always associated with that form of hernia of the upper part of the stomach through the diaphragm caused by congenital shortening of the œsophagus Chevalier Jackson, whose cases were in an earlier age group, denied that there is any coexisting œsophageal abnormality, and suggested that the shortening of the œsophagus in the more elderly group is acquired Hiatus hernia is a relatively common condition and fully developed in old age It is a reversible type of hernia with the cardia and a small pouch of stomach slipping freely through the hiatus, the cardiac canal being within the sac The causal factors described are loss of fat in the hiatus, loss of elasticity in the peri-œsophageal connective tissues, a stretching of the muscle bundles forming the hiatus, and increase in the intra abdominal pressure, particularly in the middle age group These herniæ are thought to be acquired on account of their frequency, their preponderance in old age and the significance of increasing intra-abdominal pressure in their production Johnstone's experience has borne this out He has met with 7 cases of chronic œsophageal ulceration and all had definite shortening of the œsophagus It is generally agreed that the congenital short œsophagus is rare, and while it has been described at all ages it seems unlikely that it is an important factor in the ætiology of chronic œsophageal ulcer This condition occurs in a large group of elderly people, numerically out of all proportion to the incidence of the hernia The most important factor in the ætiology of peptic ulceration of the œsophagus appears to be the frequent regurgitation of acid gastric juice, whose detrimental action becomes more intense when there is hyperacidity Regurgitation readily takes place with laxity of the cardia and hiatus The ulceration starts as an acute ulcer which either heals or becomes chronic It is reasonable to assume that in t course of time, during which the ulcer recurs or remai chronic, extensive infiltration will occur over a lar area This extends lengthwise in the œsophagus so tha it is likely to become shortened Contraction of t scar tissue causes the lax cardia to be dragged throu the hiatus, so that, if a reducible hernia previou existed, it now becomes irreducible There is furth support for the hypothesis of acquired shortening clinical grounds All of Johnstone's cases were in a age-group (average 64 years) later than that in whi peptic ulcers are most common, and symptoms mig reasonably be expected to develop much earlier in congenital abnormality

A SIDE-LINE OF NURSING

IN America the curriculum of the public heal nurse has lately been under discussion[1] Since 19 courses approved by the National Organisation f Public Health Nursing have been organised at universities or colleges, but the only guides to th curriculum have been the standards laid down by th organisation, and these have undergone no radic revision since they were formulated Changes hav undoubtedly been made in training to meet new deman —in psychology, social science and public health nursi administration—but it was doubtful whether the had been sufficiently far-reaching A committee h now been appointed under the chairmanship of M Katherine Tucker to determine what the public heal nurse needs to know, and the best ways of providi her with the necessary knowledge and skill T curriculum foreshadowed is to be flexible rather tha hard and fast, designed to meet present needs and the of the next four or five years It is revealing an stimulating to see what ground the committee feel t public health nurse's training should cover, she is n to have her attention focused on anatomy and phy ology, bedpans, incubation periods and the niceties hospital etiquette but on a range of living subje including maternal health, infant health, health of t preschool child, control of communicable disease, a of tuberculosis and venereal disease, care of pneumon influenza and the common cold, care of orthopædic a plastic conditions, cancer control, care of heart co ditions, of mental disorders and diseases, diabe control, care of oral conditions, and industrial hygien and the committee feel that they may have to consid other subjects—such as housing and care of the aged before they have done That the positive elemen of health, its psychological and sociological aspects, a to pervade the whole curriculum is clear from the topi under review We have no appointment over he comparable to that of the American public health nurs maybe the woman sanitary inspector, having lo become the health visitor, will finally emerge as t state registered health nurse But that time is st remote, for it will require some readjustment of standar and curriculum Meanwhile the American committee inquiry points towards that goal of social work— public health service with the accent on positive healt

Air-Marshal H E WHITTINGHAM, who has latel become director-general of the R A F medical servic has received the honour of K B E

SIR FREDERIC STILL died at Harnham Croft, Salis bury, on June 28, aged 73 Starting at Great Ormon Street his whole career had been given up to the stud of disease in children and every movement for makin their hold on life more secure had his untirin support

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[1] *Publ Hlth Rep, Wash* April 4, 1941, p 679.

Special Articles

HOSPITALS AND THE PUBLIC HEALTH

By T Ferguson,
M.D EDIN, F.R C P E, D.P H, F.R.S E

Two major problems now face social medicine. the promotion of healthy living which implies the prevention of disease, and the prevention of incapacity from disease In the past the potential value of hospital resources has not always been fully recognised, they have not been fully developed as major instruments of constructive health policy It is significant that hospital authorities are themselves beginning to express dissatisfaction with existing conceptions: recently the chairman of managers of Glasgow Royal Infirmary said that when we ask ' Have we a really national health service ? " we must answer No He had in mind the need for a unification of health activities in which hospitals would be important but not isolated elements This reorientation of policy involves changes in administration of hospital services and changes in our conception of what hospitals can contribute to a new health order Administrative changes are necessary enough if only to permit enlightened assessment of hospital needs, to prevent unnecessary duplication of staff and equipment, and to provide a means of administering to the best advantage hospital resources as links in the chain of health services Some of the flaws in existing services result from lack of beds, others from inability to make the best use of existing beds The defects appear to lie principally in lack of diagnostic facilities, lack of what may be called finality in treatment, and lack of linkage between hospital and other major health services of the community.

THE EARLY CASE

Two types of patient compete for available hospital accommodation. those exhibiting gross pathology, which has often produced complete and long-continued disability fit only for the most transitory patching, others in whom disease is not yet so deeply established as to be inconsistent with functional recovery The claims of the former group to hospital admission are compelling enough, often it is impossible to nurse them at home and hospital authorities have no alternative but to admit them, if only on the score of policy No-one would seek to deny hospital treatment to these cases, but does their admission make the best use of limited resources ? It may well be that we need a new type of hospital to give these patients the medical and nursing care they need leaving more highly equipped hospitals to patients whose clinical condition would repay such care Patients of the " earlier " group often have to be treated hurriedly in outpatient departments where it is not always possible to exclude those early stages of disease which the hospital should treat if it is to be of real service in preventive medicine. It should be no cause for reproach that a patient admitted to the wards for investigation sometimes does not yield demonstrable pathology It may be necessary to admit a patient for exclusion of early tuberculosis though he may turn out to be free of the disease, but surely that is much better than to run the risk of missing an early, curable case and have to admit at a later stage a patient suffering from advanced tuberculosis whose prospect of ultimate recovery is slight and who may have already done considerable damage to the community Similarly, it may be desirable to isolate for diagnosis and treatment some conditions that do not normally secure admission to hospitals for infectious diseases, or to admit a patient past middle life who is losing weight, but who has—under conditions of outpatient examination—no demonstrable lesion. and even, perhaps no diagnostic change on X-ray examination, if after complete overhaul such a patient is proved to be free from malignant disease there should be satisfaction rather than regret that a hospital bed has been occupied unprofitably for a few days

The long waiting-lists of patients seeking admission to hospital inevitably exaggerate this lack of provision for diagnosis and early treatment since other more compelling—though not necessarily more promising—conditions have often to be given priority of admission As a result of the arrangement to treat Service patients in hospitals originally provided for the reception of civilian casualties (but fortunately not yet fully used for that purpose) it has been possible to treat such conditions as hernia and dyspepsia in hospital, though it is sometimes difficult to obtain similar hospital care for civilians It may be true that while a man cannot soldier with bad feet he can hirple along in civilian employment It is to be hoped that measures recently proposed for reduction of the waiting-lists of civil hospitals will make available earlier diagnostic and treatment facilities for the general community This is a type of medical care notoriously difficult for middle-class people to obtain.

LACK OF FINALITY IN TREATMENT

It is difficult to avoid the impression that from the wider public health point of view the best results are not being got from hospital treatment This does not necessarily imply criticism of the work of hospital staffs or of any particular type of hospital, there is reason to believe that some of the best of our hospitals and hospital staffs are dissatisfied with things as they stand Part of the difficulty arises from pressure on hospital resources which demands a rapid turnover of patients and, as already noted, the occupation of valuable beds by patients who have little prospect of ultimate restoration to working efficiency Even in peace-time a considerable number of the patients treated in the best of our hospitals are discharged improved to their homes and to work after the shortest possible period of hospital treatment often they return to living or working conditions that cannot fail to predispose to recurrence or aggravation of their illness There is a serious lack of convalescent accommodation and other ancillary treatment resources to bridge the gap between acute hospital treatment and restoration to working capacity The Interdepartmental Committee on rehabilitation drew attention to this leakage in relation to the aftermath of industrial accidents The observations and general lines of recommendation of that committee could be applied with profit to a wider range of states, medical and surgical alike In the care of orthopædic cases for instance, the influence of Oswestry has not yet penetrated sufficiently throughout our hospital system We are in this and other aspects of the treatment of long-continued incapacity far behind pre-war Denmark, where for 10 or 12 years there was a system of rehabilitation and absorption into useful work in which the hospital and ancillary care played a vital part

This problem of long-continued incapacity must become one of compelling importance in this country very soon for already before the war a large part of the total sickness incapacity for work of the insured population was represented by illness of over 2 years' duration, and not all of these chronic invalids were old people · a formidable number were under 45 years of age In the prevention of this long-continued incapacity, alike wasteful to the nation and demoralising to the individual, the hospital—suitably reinforced—must play an increasingly important part Despite delay in securing admission to hospital which inevitably prolongs incapacity most patients have already received some kind of inpatient or outpatient hospital treatment before they have been incapacitated for work for 3 months and it should often be possible to take more effective steps to minimise incapacity Doubtless in some cases there are inadequate notes from the family doctor to the hospital when the case is sent for overhaul, and in others there is inadequate communication by the hospital of the results of its ministrations When a doctor sends a patient to a hospital outpatient department for a single consultation he usually receives a report, but lack of coöperation often arises when the hospital undertakes treatment, inpatient or outpatient Too often the practitioner is not informed of the progress of the case, sometimes not even of the diagnosis; he may be dependent on such information as the patient himself can supply when he calls to collect certificates of incapacity This lack of coöperation may prejudice the treatment of the patient and prolong his incapacity.

Recent advances in medicine have opened up great possibilities, for example in the dietetic care and after-care of patients suffering from alimentary disorders and the nutritional anæmias, in the maintenance therapy of such conditions as diabetes and pernicious anæmia, and in the treatment of a large variety of physical and mental conditions calling for systematic rehabilitation, a group bound to assume compelling importance in the immediate future

SUPERVISION OF DIABETICS

Adequate supervision of maintenance therapy is needed and illustrates the importance of close linkage between hospital and other social agencies The cost of insulin is much less than the cost of preventable invalidity, and there is specific legal sanction for the provision of insulin and such nourishment as is necessary in necessitous cases of diabetes But strict control of insulin therapy is necessary for two reasons because indiscriminate use of insulin represents a serious danger for the patient, and because faulty insulin dosage may suffice to prolong life without relieving needless invalidity, thereby creating avoidable economic loss and hardship The cost of necessary supervision may be considerable, greater than the initial cost of the insulin, but adequate control is necessary If it is true, as many competent observers believe, that diets prescribed for diabetic patients frequently receive inadequate attention on account of lack of knowledge and supervision, then the whole basis of treatment must inevitably be undermined, for an insulin dosage can only be determined accurately if, among other factors, diet is maintained at the prescribed level, whatever that may be It is imperative to secure the cooperation of the patient, often under conditions irksome and trying, and this calls for the collective encouragement of all the forces that can be brought to bear upon him and his family—the family doctor, the suitably trained health visitor and the hospital with its dietetic department There are some occupational groups for whom it may be almost impossible to secure the necessary precision of diet—workers in domestic service for instance

WORK SUITED TO DISABILITY

This question of capacity for work in relation to nature of employment is becoming increasingly important. Of patients who have not worked for a long time, some comparatively young subjects (notably those suffering from diseases of the heart and vessels), already do not seem to offer any prospect of response to rehabilitative effort, and there are others for whom a change of occupation is clearly desirable, of whom I can cite a furnaceman, aged 39, suffering from myocarditis, a bus conductress of 25 with valvular disease of the heart; a jute worker of 36 with pulmonary fibrosis, a moulder of 17 with chronic bronchitis, a miner of 25 with a psychoneurosis, a tram driver of 34 with duodenal ulcer and gastric dilatation, a motor driver of 25 with deafness following a mastoid operation There are many occupations which involve for their workers hazards that may be particularly objectionable in the health circumstances of a particular patient To a limited extent machinery exists for preventing obvious misfits of this type, for example, in some of the silicosis-producing industries, but in many kinds of work there is not, and cannot well be, such formal machinery It should be a function of the hospital, with such specialist advice as may be necessary, to determine the risk of special dangers of this kind and to reinforce with authority efforts to induce the workmen to obtain a change of work It is important, if only in the interests of economy and manpower, that workers should be used for the kind of work they are best able to perform Since the beginning of the war there must have been thousands of patients boarded out of the Army in this country on account of such conditions as gastric and duodenal ulcer These patients can be kept symptom-free in hospital, but they frequently relapse on their return to civil life, and many of them who ought to be useful workers are incapacitated for long periods It should not be impossible by concerted effort to maintain reasonable fitness and working capacity in many of these cases, and in their aftercare the hospital can exercise an important fatherly rôle Just how best to provide the supervision and helping direction that many of these people require is a considerable administrative problem, but surely not an insuperable one in these days The almoner system as we know it does not go far enough This problem must be recognised as being a major one of social medicine, worthy of the vigorous attack of health services

REGIONALISATION

If this wider conception of hospital function is to b
adopted there must be considerable change and amplifica
tion in methods of administration long overdue. One o
the major aims of the Local Government Act of 19
was to make it possible to remove the treatment of th
sick from the sphere of the Poor Law to that of publ
health Already before the passing of the act steps ha
been taken in some enlightened parts of the country t
put hospital services on a better administrative basi
and the Committee on Scottish Health Services rightl
pointed out that for cooperation between statutory a
voluntary hospitals it is necessary to place both grou
of hospital on an equal footing, regarding hospital trea
ment as a public health function and as such dissociat
from the Poor Law In the view of the committe
hospital services should be developed by cooperation
voluntary and statutory hospitals and the publ
authorities and a definite obligation should be placed
local authorities to supplement existing hospital faciliti
if required by the central department to do so Fund
mental administrative changes of this nature are
essential prelude to any rational policy of regionalisati
and unification such as that contemplated in the com
mittee's report and more recently adumbrated by Sir
Farquhar Buzzard and the Nuffield Provincial Hospi
Trust Even with such regionalisation more beds will
necessary, in some parts of the country at all even
and for special purposes It should be possible to sal
from emergency war provision much that will go far
happier days to fill gaps in civil hospital resources a
make possible the development of comprehesive schem
of adequate provision for convalescent care, the care
the aged and the care of cripples Development of t
sort will free beds for more intensive work on early ca
and for the provision of diagnostic facilities, possib
in highly equipped diagnostic units attached to select
hospitals In this earlier work there should be clo
cooperation between clinician, radiologist and laborato
workers These steps will promote Sir James Macke
zie's conception of attack on the beginnings of disea
They should also prepare the way for the development
an active policy of rehabilitation such as that blessed
the Interdepartmental Committee, a policy whi
undoubtedly has a sphere of usefulness much wider th
the aftermath of accident, as Denmark has show
One of the principal postulates of the Rehabilitati
Committee was the importance of continuity of care
the prevention of incapacity for work Clearly
family doctor must play an important rôle in such ca
and he ought to be in closer touch with the work of
hospitals than he is, but his efforts must be supp
mented by an organised, systematic drive designed
make the benefits of hospital treatment more permane
There is need for more constructive hospital treatme
treatment that will not stop short at first-aid, valual
as that undoubtedly is Lives must necessarily be
planned That is delicate work requiring cooperati
(often difficult to gain) from the man who needs help

In securing and guiding that cooperation the hospi
and the doctor who already have won his confiden
have greatest opportunity They can, in fact, add
their other services a wider creative function and th
may well take as their text in this extended usefulne
the words of Francis Bacon, “ In sickness respect heal
principally, and in health, action ”

Ray Strachey Memorial —A committee has been set u
on the initiative of the London and National Society f
Women's Service, the Women's Employment Federation a
organisations representing women civil servants, to promo
the establishment of a memorial to the work of the la
Mrs Oliver Strachey It is proposed that this memori
should take the form of a fund for the preservation a
expansion of the Women's Service Library on women's l
and work, which is normally open in Marsham Street, Londo
S W 1, and is now temporarily carrying on its work
Oxford Mrs Strachey was one of the prime movers in t
establishment of this library She herself made constant u
of it and regarded its development as of cardinal importan
to the women of future generations Donations to the fu
should be sent to Viscount Cecil of Chelwood, c/o Miss Watt
13/14, Dartmouth Street, S W 1

In England Now

Running Commentary by Peripatetic Correspondents

N our hospital, situated as it is in the heart of the ntry, we believe firmly in the value of entertainment a therapeutic factor for patients and staff alike, and aim at securing at least two diversions of some sort ry week. In addition to these evening concerts, we ve arranged during the winter a series of Wednesday ernoon lectures, not to provide formal instruction so ich as comment on topical events in the light of their storical or geographical setting, the whole often served under some disarming title such as "The Garden of len" Occasionally, to leaven this lump, we have a cital in which the element of uplift does not profess to prominent at all, and quite a lot of amusement is often rived from these unpretentious and informal gathergs There was the learned knight who came, unshamed, to tell us funny stories, and there have been ne or two excellent song recitals, which most of us have een able to enjoy if not to appreciate fully. Recently, o wind up the winter session, we had a recital of Hebridean songs and stories of the Western Isles, rather daring venture when it is remembered that the audience was essentially a soldier one and drawn largely from English regiments The lady who gave the recital was a youthful-looking grandmother, and apparently the ritual called for the wearing of a flowing bardic robe, a terrifying, betasselled, trailing gown of green, embellished with wonderful pagan emblems, a curious mixture of thistles and acorns We are not well versed in Hebridean songs or in the technique of their delivery, but it is certain that the bardic garb is calculated first to startle and then to envelop an ordinary southern community, it creates an atmosphere at once mystic and awe-inspired

The songs themselves are extraordinary, with, to the untutored ear, one common characteristic—an underlying wail of sadness even when they profess to be records of happy days There are *sheiling* songs, love songs, mother songs, songs of sea sorrow, heroic pagan lays, clan laments, tramping songs, heroic lullabies, mystic songs, songs of death and the beyond, and labour lilts The songs of this last group are far removed from the music now employed to stimulate production in munition factories, they deal with labour of other days—milking, reaping, *spinning* and weaving, quern-grinding and cockle-gathering—simple, unsophisticated lilts, droning and dreamy, which our bard sought to illustrate by appropriate actions We were unable to provide a cow wherewith to illustrate the milking song of Skye, but nothing daunted our lady embraced one of our good tables as if it were "of the nature, substance and quality of the article demanded" and proceeded to put its legs through hypothetical milking movements

We feared for the effects of all this on our patients But they behaved in a most exemplary fashion, almost as if spellbound by their first glimpse of the golden portals of faery and the enchanted land of the west They could not have understood all that the bard had to say and sing, but even under circumstances that must have appeared to them to be quaint and unusual they preserved a philosophic calm that made us marvel As a rule they are vocal and outspoken critics, but Hebridean songs seemed to be wholly new to them and quite beyond their powers of repartee Even when milking songs were being illustrated by recourse to the mythical cow they retained a wide-eyed wonder and preserved a straightness of face that was an excellent tribute to the spell-binding quality of the performance or to Army discipline They did not even fade away as our patients so often do when exposed to the effects of something frankly beyond them, and they applauded vociferously at the end of the performance, leaving us uncertain whether they had really enjoyed it or whether they had been in some land of trance One of the songs dealt with the anguish of a calf suffering from a pain in its inside and apparently incapable of anything other than speculation about what it might eat that night, but even this appeal to the realities of life produced no obvious reaction among patients numbering quite a large proportion of sufferers from gastric or duodenal ulcer

The staff lacked the stoic qualities of their patients they appreciated, of course a fine artistic performance, but they were not so overcome as to be unable to sense the humour underlying the performance, more than once we detected an ominous twitching of the corners of the mouth and a reluctance to meet the eyes of colleagues, of patients or of the bard herself But everything passed off excellently, the patients and staff dispersed in good order and over a cup of tea we came to realise that the bard was a very human soul when divested of her bardic raiment, full of good fun and quite untouched by the gloom of her subject There must, indeed, be something beyond southern comprehension in these enchanted isles, something strangely different from the hectic bustle of our times

* * *

A friend writes "I am very reluctantly idle for the first time in my life and prepared to slay anyone who (1) talks of the joys of 'retirement' or (2) quotes 'He also serves who only stands and waits'"

How doth the recent busy bee
  Resent each idle hour,
And all the sweets of leisure he
  Implacably finds sour

How angrily he takes repose,
  How savagely observes
"I'd like to have the blood of those
  Who say 'He also serves'"

From birth to age man travels fast—
  In fact he fairly whistles
He gets a good sit down at last
  To find it is on thistles

* * *

One still sees the results of savage vaccinations—large, dirty, low-lying islands in a pool of angry red Once I was vaccinating a member of my crew in Honolulu, when an American doctor who was watching me said, "If I did that, I'd sure be in the law courts" He showed me their simple method and I have used it hundreds of times since You clean up the skin as usual, put a tiny blob of lymph in the usual place, then, with a sterile needle mounted on a cork and held almost horizontally, nearly parallel to the skin, you gently prick a tiny area under the lymph—say 1 sq mm—about a dozen times There is no blood and after wiping the surplus lymph away, you dismiss your patient incredulous He may need a protective dressing in about five days—it depends on his occupation I have done many a sleeping baby and others rarely cry The ripe result is like a pearl button on pink silk and the scar is a neat, pea-sized depression. The Americans have shown conclusively that there is no relation between the size of the vaccination and the immunity it conveys Severe vaccinations are chiefly due to secondary infection

One advantage of vaccinating by this method, especially for quarantine purposes, is that if you make a control, by putting another cluster of light intradermal pricks about an inch below the place where you are going to vaccinate, you can soon tell who is immune to smallpox For he will have a red patch at his vaccination in 24–72 hours, but you won't be able to see where your control was I did over 1000 vaccinations by this method and only two men who had not been previously vaccinated showed this immunity reaction, one, a New Zealand farmer turned sailor, had a history of cowpox, the other had a history of chickenpox in an epidemic in Northern Canada three years before, but said 'There was an old retired doctor up there who said he thought it was smallpox"

Things get lost and found again in medicine Jenner drew attention to the immunity reaction, though he didn't call it that

* * *

It was a grilling afternoon, if the Ministry of Information will allow me to say so To save a teaspoonful of petrol I had walked down from my house to the surgery With a proper sense of self-admiration and carrying a heavy stethoscope I started to walk the half-mile back which is uphill all the way Opposite the surgery there was a small girl who was bouncing a ball between her legs against a wall, catching it and bouncing it again as though her life depended on it She seemed to be working against time A few yards further on I met a small boy alternately fly-kicking and dribbling a soccer ball as fast as possible up the steep road On the grass field at the corner some local and evacuee children of both sexes were enjoying a game which appeared to be the result of a mésalliance between soccer and rugger, it was being played at a brisk pace and with desperate vigour on a sloping pitch among tussocks of grass about two feet high Arrived home I shed my coat, collar and tie and watched my infant son playing by himself with a small chair and table The game consisted in lugging the table up to the chair, sitting down on the chair for a couple of seconds, then rising and pushing over the chair and table in opposite directions, the ritual was then repeated ad libitum What a pity it is, I reflected, that all the surplus energy of children cannot in some way be harnessed (without their knowing it, of course) to the war effort

* * *

I have been interested in dreams in an amateurish sort of way ever since, as a medical student, I began to read books on modern psychology I have recorded sufficient of them to be satisfied that Mr Dunne's "Experiment with Time" has the kernel of something deeply significant, although his more elaborate expansions of his elementary theory leave me ignorantly guessing But it is the more trivial aspects of dreams which I find more interesting because I can understand these and can amuse myself by following the curious low-brow play in words which often happens, at any rate in my nocturnal adventures The other night I had a confused affair with strategy in the Middle East mixed up with hospital work, as the success of an air-borne invasion became uncomfortably obvious I was confronted with the clear fact that Hitler's secret weapon was an all-glass syringe This piece of apparatus was vividly in my thoughts as I woke As I turned over I heard the throb of foreign planes flying northwards and then—still more awake—the distant sounds of the warden's whistle in the village Suddenly the significance of the syringe was borne in upon me I had slept through the still more distant syrens and my sleeping brain had coined a silly pun syren-syringe No doubt some more sinister interpretation is possible but it is the low-brow aspect that appeals to me Scorn the humble pun as we may, as juvenile and facetious, by night the most fastidious wit of us all loses his snobbishness and sinks to the level of the pantomime comedian, or lower Odd in how many ways we can climb up and down our family tree

* * *

My omniscient gardener having been removed from the trivial task of growing food for 32 persons and put into a factory where he pours milk out of a can into a drying machine, it became necessary to find a substitute We have been fortunate enough to secure the services of the ex-head-gardener of a peer—and a pretty lofty peer at that We are, of course, a bit of a come-down for him, but he is very civil He asked permission to smoke an occasional pipe while at work and this was graciously granted "Of course," he added, "I wouldn't smoke opposite the windows where the gentry could see me" Not being able to think of a suitable reply we inclined our heads His only drawback is that he is stone deaf, which makes for one-sided conversation, but he is a good lecturer and for a lifelong teetotaller curiously broad-minded He tells me that, during the last war, he harangued a bishop in church who was denouncing the drunkenness, bastidity and licidity (sic) of the soldiers "I told 'im there weren't no bastidity nor licidity," he said "and as for drunkenness that weren't nobody's business so long as the chaps was on p'rade at the proper time I told 'im I'd pawn my shirt—and his too if I could—to buy drink for our chaps arter what they bin through and if so be as they wanted it and with that I picks up my 'at and goes out" During the last war he had five cameras 'confisticated" A man to be reckoned with

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EPSOM COLLEGE —On June 20, at the eighty eighth annual general meeting of the college, Lord Leverhulme, the president, expressed the governors' gratitude to Dr John Fawcett for his services during the past six years as treasurer, and their regret at his resignation Surgeon Vice Admiral Sir Reginald Bond was elected treasurer in succession to Dr Fawcett

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Letters to the Editor

SULPHONAMIDES LOCALLY

SIR,—Arising out of your leader of June 21, may I attention to the fact that the local application of anilamide is often remarkably effective in clearing impetigo and the allied superficial exudative conditions, particularly when they yield an abundant culture of hæmolytic streptococci These represent a problem of some importance in the Serv and it is to be hoped that those who have charge of will take the present opportunity to assess the v of local chemotherapy

My own observation upon a small number of cases made it quite clear that within a few days one usually get rid of the exudative phase even when t infections involve the beard or scalp, and that with change hæmolytic streptococci can no longer be from them I have usually employed a paste (kindl supplied to me for trial by British Drug Houses) con taining 30% of sulphanilamide and also cod liver oil but we do not yet know whether a much smaller centration of sulphanilamide will serve as well, whether the inclusion of cod-liver oil has been of value Nor again do we know whether in some of the staphylo coccal cases sulphathiazole, internally or externall (or both), will be helpful There is room too for in vestigation of the underlying (? metabolic) factors whic favour these troublesome infections and sometimes seen to prevent their complete cure after the streptococc infection has been eliminated

Basingstoke LEONARD COLEBROOK

SAVING ON DRUGS

SIR,—On Jan 4 you published a paper of mine which I urged the importance of economy in drugs, you strongly supported me in a leading article Af lapse of six months I have investigated the response the profession, my findings are very discouraging I three counties and one large city in which I have ma fairly extensive inquiries the hospitals are doing little nothing in the matter True the Ministry of Health h issued several circulars and distributed some copies the M R C War Memorandum No 3, but no steps hav been taken to see that the suggestions contained there are even thoughtfully considered let alone carried ou Most of the circulars are sent to medical superintenden of hospitals, most of whom are surgeons not interested prescribing The documents are filed and that is t end of them I spoke to a dispenser attached to a hos tal of over 1000 beds and he dismissed the whole idea drug economy as rubbish "As long as I can get an thing I order why should this hospital do witho anything ?" was his viewpoint, and many others wi whom I have spoken are disciples of this unpatriotic a puerile *attitude*

That circulars merely recommending but not enforci economy are insufficient was shown by Form G P 9 dealing with squill, issued by the Ministry The circul urgently requested practitioners "to refrain fro prescribing squill in all cases where its use cannot be sa to be essential" Is squill ever essential ? Practitione are advised that when they prescribe a N F formul containing squill (there are over a dozen of these) the should indicate on the prescription that squill can omitted I have interviewed twelve G P acquaintanc and only three bothered to read the circular carefully an none had ever followed its advice A busy doctor soo forgets, if he was ever aware of the fact, that, for exampl Mist diuret N F contains squill

Recently, on the same day as medical superintenden in a certain county received copies of the M R memorandum on drug economy, they were also regale with a circular from the county central purchasi *officer* stating that he had made arrangements for th buying of stocks of boric lint of B P C quality instead previous varieties The M R C pamphlet strongl condemns the use of boric lint of any type

Another glaring instance of complete neglect Ministry circulars was seen in the *British Medic Journal* for April 19 (p 584), where J R Lee advocate that a solution of iodine and potassium iodide mixed wi glycerin should be painted on abrasions and poured in inds as a routine in all air-raid casualties I suppose t as a result of his article first-aid posts and hospitals making gallons of this mixture which completely flouts M R C advice

Over six months ago Sir Wilson Jameson formed a ommittee to revise the N H I formulary Why the g delay ? The matter is urgent When the new mulary appears I urge that its use shall be made comlsory—no prescribing from the present formulary should allowed

I do not know of any large hospital, local authority or unty council which has yet compiled a war-time armacopoeia In E M S hospitals the same complancy rules Memorandum A B H 141, issued by the epartment of Health for Scotland to auxiliary and base ospitals is the most sensible official circular I have seen aragraph 4 states

"The Department have decided that from June 1, 1941, ntil further notice the drugs and preparations specified in olumns 1 and 2 of section I of the Appendix, being unnecesary under war conditions, shall not be purchased centrally or ocally for use in their hospitals Similarly, the drugs set orth in section II shall not be used in the form or for the purposes specified in column 2 and purchases, central and ocal, must be adjusted accordingly"

Why has not a similar circular been issued and similar ompulsion enforced in all E M S hospitals throughout he United Kingdom ?

The attitude of at least one county council appears to e that their total drug bill is small compared with other ospital expenditure, and therefore the problem is of minor mportance This attitude is fundamentally wrong We hould economise on drugs not for the sake primarily of aving £ *s* *d* but as an important contribution to our war ffort I advocate compulsion and immediate action

Mitcham M H PAPPWORTH

PEPTIC ULCER

SIR,—I had hoped that when the needs of war brought out the great frequency of peptic ulcer in young males some active steps would be taken to determine the factors responsible Instead the recent discussion at the Royal Society of Medicine produced no more constructive suggestion than the opener's final remark that the "establishment of a special hospital for the study of gastroduodenal disease is long overdue" Might I make the following points based on experience in the Navy and four years of study devoted almost exclusively to this problem ?

1 The clinical diagnosis of gastric or duodenal ulcer is almost worthless In 410 first barium meals on males under fifty at the Radcliffe Infirmary, where most of the physicians have at some time or other interested themselves in dyspepsia, astric ulcer was diagnosed clinically 64 times and radiogically 25 times, but only in 3 cases did clinical and X-ray diagnosis agree, and a little work with a slide rule will show that on the basis of chance there should have been 4 agreements Duodenal ulcer was diagnosed clinically 102 times and radiologically 51 times, but only in 17 cases did clinical and radiological diagnosis agree (chance expectation of agreement 13 times)

2 The radiological demonstration of lesser curve gastric niches is usually reliable, but some X-ray work is done by men whose presbyopia does not give them proper accommodation to the screen image or by men who have insufficient time to get full light adaptation and in this way small niches on the posterior wall are easily missed But in contrast to gastric ulcer, the radiological diagnosis of duodenal ulcer in this country can only be described as a farce There is no valid evidence from the post mortem room that the ratio of D U G U exceeds 1 5 1, but different radiologists working on the same material may produce ratios varying from 1 1 to 4 1 and in extreme cases up to 10 1 And unfortunately, with the present economic structure of medicine, the radiologist who produces the highest ratios and agrees with the clinicians most gets the reputation of being the cleverer man and even the cleverer radiologist

3 Granting the above facts and granting the notoriously selected nature of the ulcer population admitted to any hospital for treatment, it is obviously impossible for us to form even a rough estimate of the liability of different occupations and modes of life to produce ulceration Hence we are faced with the absurd situation that with all the huge sums spent on statistics and public health organisation peptic ulcer in young women has died out and in young men has probably enormously increased, and yet we have only guesswork and vague clinical impressions to explain the cause

4 Surely the right answer to our problems is that surgeons should notify the perforated ulcers which they suture and that we should accept that for the present as a rough guide to the incidence of ulceration—rough but better than nothing?

The logical fallacy seems embedded amongst medical scientists in the English-speaking world that because problems already solved have turned out to be simpler than was previously supposed the same applies to problems not yet solved But again and again the history of pseudoscientific theories shows that the commonest reason for accepting an erroneous explanation is this strong popular prejudice in favour of simple and single explanations where highly elaborate ones would be more appropriate As Alvarez long ago pointed out, no existing theory of peptic ulcer accounts for more than a fraction of the 20–30 anomalies in its life history and most of them can be countered by almost overwhelming arguments I believe that half the organisation of curative medicine recommended by your correspondents would become unnecessary if only valid statistics compelled us to a more hygienic mode of life in which teeth, jaws, nose, sinuses and alimentary canal developed properly and the advertisement of aperients ceased to be a major source of revenue to magazines

Oxford DENYS JENNINGS

ENDEMIC FLUOROSIS

SIR,—The problem of fluorosis, to which increasing importance is being attached, was raised from oblivion by two Swiss investigators, H Cristiani and R Gautier (*Ann Hyg publ*, *Paris*, 1925, 3, 40 210, 1926, 4, 141, 261, *C R Soc Biol Paris*, 1925, 92, 139, 946, 1276, 93, 911) A herd of cattle kept in the environment of aluminium factories and feeding on fodder exposed to gases emanating from these factories all perished within a very short time, after having suffered from a disease diagnosed by veterinary surgeons as osteomalacia, since spontaneous fractures of the bones were one of the outstanding features of the disease The investigators achieved precisely the same disease picture by feeding animals on fodder exposed experimentally to hydrofluoric and fluosilicic acids, or by administering fodder to which salts of these acids had been added The disease was so typical that they suggested for it the appropriate name of "fluorosis" The influence which cryolite (a fluorine mineral of the composition Na_3AlF_6, used in the production of aluminium) exercises upon the health of the workmen who handle it in the process of mining, sorting, packing, &c, was described by K Roholm (1937) In your issue of Feb 15 Dr Dagmar Wilson noted the effect which some of the water-supplies in this country are producing on the population of counties as widely separated as Cornwall, Somerset, Gloucester, Buckingham, Cumberland, and Durham No mention, has, however, so far been made of the clinical observations which I published in 1928 (*Franco-British med Rev* 5, 1, 61) and in a monograph entitled The Clinical Aspect of Chronic Poisoning by Aluminium and its Alloys (London, 1933) It was observed that amongst the symptoms described one in particular occurred very frequently—namely, paræsthesiæ affecting mainly the hands and more especially the fingers supplied by the dorsal cutaneous branch of the ulnar nerve, that is to say the inner side of the little finger and the adjacent sides of the ring and little fingers This last sensation was experienced on many occasions in self-observation There is to my knowledge one poison only which affects the ulnar nerve (just as lead affects the radial nerve)—namely, fluorine and its compounds, they also produce gastro-intestinal symptoms, urticaria, hypopiesis, and albuminuria, all of which were described by me as an essential part of the symptom-complex The term "fluorosis" was adopted and introduced, so far as I know, for the first time by me in this country, and the endemic nature of the poisoning was demonstrated without knowledge on my part of any earlier work on the subject by others It is to be hoped that the possibility of fluorosis will be kept in mind when dealing with cases of gastro-intestinal disturbances of obscure origin

London N W 6 LEO SPIRA

MEDICAL AID FOR CHINA

SIR,—The China Medical Aid Committee appeals for your interest and assistance to carry on its work For four years China has held out against the aggressor, and war has produced devastation and destruction, not only of homes and industries but of hospitals, with an increasing number of wounded, sick and crippled needing medical aid China, with slender medical resources, has valiantly attempted to deal with this suffering and Dr Robert Lim, director of the Chinese Red Cross, has set up numerous medical units for treating the sick and wounded and for training first-aid workers for the fighting services, but in China the number of doctors with modern training is few and in 1938 Dr Lim appealed to the western world for help.

In 1939 this committee, in cooperation with a Norwegian committee, sent out some twenty doctors who have now become heads of Red Cross units and are striving with inadequate materials and very little trained assistance to create a medical service in the front line The Chinese Red Cross, short of funds, asks us to maintain at least in part the doctors we sent out nearly two years ago The following is taken from a recent report to us

> "Moreover epidemics of typhus, typhoid and relapsing fever have taken terrifying toll In the absence of qualified people to guide the inhabitants in elementary self-protection, whole families have been wiped out and entire villages and districts have been devastated by such epidemics Infantile mortality is very high Over 70% of the population of the North West suffer from trachoma and this means thousands of blind Millions of people have not a single doctor to give advice and help the sick and wounded and there are no medicines to treat disease, prevent epidemics and protect the newborn"

The army medical service alone requires 30,000 doctors and there are but 5000 in the whole country Our contribution to this immense deficiency is small but it is appreciated Dr Lim, writing to us in March of this year, says, "Let me say how grateful we here are to all of you for still taking an interest in poor China while England is being so battered from the air It is simply splendid of the British people, and the common aim of our armies to struggle on against aggression and the example given by Britain have given the people of China a new stimulus to fight on"

Please let us have your utmost assistance and let China see that we appreciate to the full, amidst our own troubles, the great service to our cause afforded by her continued resistance to aggression Your support will be greatly appreciated Please forward donations to Dr E R C Hambly, Treharrock, Long Grove, Seer Green, Bucks

HORDER,
President, China Medical Aid Committee

ABDOMINAL ANEURYSM AND SYPHILIS

SIR,—In his criticism of my paper Dr Pappworth seems to be trying to make a case for predominance of atheromatous aneurysms, and he feels that I have not made sufficient use of the available literature I would like to take those two points in turn

I said that Nixon, Bryant, Kampmeier and Osler agree on the predominance of syphilis in abdominal aneurysms, but with only four cases of my own I did not express any personal opinion about ætiology My paper was in any case mainly intended as a clinical study, and perhaps that is why I felt that the view of these eminent clinicians was worth restatement Dr Pappworth is better pleased by a quotation from Campbell and Bedford who deduced from a "fairly comprehensive study" that 30% of abdominal aneurysms are syphilitic I should point out that more than 50% of all abdominal aneurysms known were described before the introduction of the newer, but not infallible, methods of diagnosing syphilis, of which Dr Pappworth reminds us Of these cases about 45% were under 40 years of age and 60% under 50 years of age, though I make no point of that, nor, if I were Dr Pappworth, would I make any point of the fact that Turnbull and Coombs between them only found 3 cases of abdominal aneurysm amongst 278 cases of syphilitic aortitis One might as well emphasise the fact that many patholo [illegible] seen many more consecutive cases of abdominal aortic atheroma without seeing single abdominal aneurysm

Dr Pappworth comments on the fact that I only q one "modern author" May I point out that author, Kampmeier (68 cases with at least 573 syphilitic infection) is the last and practically only authority to describe a long list of cases, and to re the past literature The 16 cases of Garland (437, syphilitic) are only briefly mentioned in a long general paper on aneurysms, while the papers of Lucke and Re and Lipschutz and Chadoff, merely mention a number abdominal aneurysms without any comment whatev If I had wished to do so, I could not have drawn a ætiological conclusions from their papers As for th series of Browne, Nunneley and Pepper, these too a not described by "modern authors," and in any ca they are included in Nixon's series which I quoted Nixon himself reviews Bryant's cases separately from h own, which he described as the "179 cases of which have collected published records"

Edgware G H JENNINGS

DEATH CERTIFICATION

SIR,—Dr Spence's article of June 21 reveals, if th facts are correct, a state of affairs in the registration deaths in Newcastle-on-Tyne which must constitute grave reflection on the medical men who provided th figures quoted and also on the registrar of births an deaths Let me quote from the first paragraph, "Nearl 10% of the deaths (25 out of 272) had taken place witho the child having received previous medical attention usually these were sudden or unexpected deaths from brief illnesses, yet an attempt had to be made to certif the cause" These doctors appear to have overlooke the gravity of attaching their signature to a documen known by them at the time to be substantially untru in fact The certificate of death states quite clearl "last seen alive by me," and the law does not permit medical practitioner to certify the death of a perso whom he has not attended in the last illness To do s constitutes an offence for which the General Medical Council may erase his name from the Medical Register

To quote again from the same paragraph "Most doctors admitted their difficulty in reaching a satisfactor diagnosis, but pleaded the necessity of putting down something which would satisfy the registrar When i doubt some used stereotyped but often irrelevant diag noses which they knew would be acceptable" Th "necessity" does not exist, for in such an event it their duty to report the death to the coroner as one th exact cause of which is obscure It is the coroner duty to establish the proper cause of death, even if t medical practitioner is satisfied that the cause is a natur one of some kind It is not for the doctor to despoil t statistics by certifying some "irrelevant diagnosis" is both stupid and dangerous for him to indulge in such practice

Guy's Hospital KEITH SIMPSON

"SCIATICA"

SIR,—The clinical picture of sciatic pain caused b pressure on one of the sciatic nerve roots by a poster protrusion of an intervertebral disc has been carefull described The essentials of the syndrome—fro descriptions based on study of an adequate number o proved cases, in which laminectomy has been performe and the protrusion removed with subsequent relief o symptoms—appear to be these —

The patient is usually an otherwise healthy man aged from 20 to 50 years In about 80% of cases there is a history of trauma, usually caused by lifting a heavy weight, but there are patients who can recollect no injury of any kind, not even a trivial one "Sciatic pain" may follow immediately, or may come after an interval, sometimes of several month The pain is felt in the buttock, in the posterior part of th thigh and the posterolateral part of the calf It is accom panied by numbness or tingling in the leg, and is aggravated coughing, by prolonged standing, and by stooping

Certain *lumbar signs* are almost constant These are, "sciatic scoliosis"—i e, a list of the lumbar spine towar or away from the affected side, limitation of movement the lumbar spine, tenderness on pressure over L4 or L

Tenderness is also almost constantly elicited by pressure on the sacroiliac ligaments, the buttock, and along the course of the sciatic nerve, on the affected side Lasègue's sign is almost always positive

Neurological signs are inconstant, they may be totally absent in 50% of cases The commonest is an absent or diminished ankle jerk. Hypotonia or atrophy of the muscles of the buttock, thigh or calf may be found, while rarely, loss of sensation can be demonstrated within the root areas of L4 and L5

The course of the malady is marked by remissions and exacerbations Pain is increased in cold, wet weather Patients in whom a protrusion has been demonstrated by lipiodol X ray examination have been cured by rest alone

In what respects does this clinical picture differ from that which Dr Walshe would attribute to a sciatic neuritis? Jevons, in his "Elementary Lessons in Logic," writes "The truth of a hypothesis altogether depends upon subsequent verification and accordance with observed facts To invent hypotheses which cannot thus be verified, or to invent them and then neglect the verification, leads to no result at all, or to fallacy" The hypothesis of an interstitial neuritis of the sciatic nerve has been invented to account for syndromes similar to that just described, chiefly because of tenderness along the course of the nerve and the inconstant neurological signs It cannot be verified I am aware that some years ago the operation of exposing and stretching the nerve had a vogue, and that this gave opportunity for naked-eye observation of the nerve covering But I am not aware that the existence of an interstitial neuritis has never been adequately demonstrated

Further, this hypothesis, advanced to account for a case of sciatic pain, is rarely in accordance with observed facts Would Dr Walshe assume the presence of a sciatic interstitial neuritis in a case in which sciatic pain followed immediately after an injury? Or in one with clear lumbar signs, especially sciatic scoliosis and tenderness on pressure over the 5th lumbar spine? Or in one where the pain is aggravated by postures which cannot possibly stretch the sciatic nerve?

There is a clinical syndrome identical with that of lumbar-disc protrusion, except that lumbar signs are absent One meets it, I should say, in about one patient in every fifty complaining of sciatic pain (and in this expression I do not include pain referred to the leg from a lesion in the region of the hip girdle—a condition which the most superficial clinical observation is sufficient to identify) Is this the picture which Dr Walshe regards as characteristic of a sciatic neuritis? If sciatic neuritis exists, its clinical distinction from pain caused by a protruded lumbar disc is of great practical importance Lumbar puncture is unreliable, and lipiodol X-ray examination impracticable, as routine diagnostic procedures

I suggest that the most helpful classification of sciatic pain should for the moment be based on clinical syndromes and not on hypothetical ætiology Excluding pain due to tuberculosis or neoplasm in the pelvic bones, and the radiating pain with which Mr Kellgren confuses the issue, there remains what most of us recognise as common or garden sciatica And this may be subdivided into

1 The syndrome of lumbar-disc protrusion Infinitely the commoner syndrome, it might be called cryptogenic sciatica type 1

2 The same, without lumbar signs It is quite rare, and might be called cryptogenic sciatica type 2 It may or may not be caused by a sciatic neuritis

London, W 1 KENNETH STONE

SIR,—What is sciatica? Surely the answer is—a group of symptoms, pain in the sciatic region being particularly prominent, which in common usage medical practitioners associate with neuritis of the sciatic nerve as well as on occasion with a variety of lumbo-sacral abnormalities

Common usage attaches the term sciatica to many painful lumbo-sacral-sciatic conditions, just as it associates such terms as "neurasthenia," "mania" and "rheumatism" with other groups of not well-differentiated symptoms

Bournemouth E L HOPEWELL-ASH

THE FUTURE OF GENERAL PRACTICE

SIR,—The letter signed by Dr H H MacWilliam to your issue of June 21 calls for an answer because it displays a grave misunderstanding of the policy of the Nuffield Provincial Hospitals Trust on the part of the author The latter is under a misapprehension in regard to the area which, it is suggested, should be included in the region of which Liverpool would be the centre

Most of those who are conversant with local conditions would agree that a large part of North Wales is served by the "key" hospitals in Liverpool, but, so far as I am aware, no decision has been reached in regard to the grouping of the North Western parts of Lancashire, Cumberland or Westmorland These matters are being discussed by representatives of the local interests concerned in this grouping, and the recognition by the trust of regional hospital councils is conditional largely on the grouping being acceptable to all such interested bodies Dr MacWilliam has overlooked the fact that each regional area contains two or more divisions to each of which there is a key hospital, municipal or voluntary, easily accessible to all parts of the division The regional grouping is mainly for consultative, coordinating and teaching purposes

Again Dr MacWilliam's description of the staffs of key hospitals dominating the lives of those attached to subordinate hospitals, "giving a small number of men the chance of brilliant careers but thwarting the development of the great majority" is entirely a figment of his imagination and quite opposed in principle to the policy of the Nuffield Trust Rather, I would suggest, does our regional scheme offer opportunities for development to many more of our profession than they have ever had in the past, if by development is meant a rise in the value of their work and of their usefulness to the community whom they serve

Oxford E FARQUHAR BUZZARD

THE PHILOSOPHICAL APPROACH

SIR,—I should like to associate myself with Dr Wright's tribute to Dr Russell Brain's most admirable essay I fear, however, that in this matter of the philosophical approach Dr Wright's misgivings are more likely to be justified than are his hopes A physician does not become a philosopher simply by stating that in his opinion there may, after all, be something in human personality which cannot be fully explored and assessed by the methods of organic neurology on the one hand, or of orthodox "scientific" psychotherapy on the other When he announces this conclusion as a startling new discovery, he makes himself slightly ridiculous, and he often reveals with refreshing naïvete that his conception of scientific method is as pleasantly vague as his notion of what constitutes philosophy

By all means let Dr Russell Brain's essay be read at inaugural lectures on psychiatry, as Dr Wright suggests, but also let no such lecture be given save by a physician who has studied some such work as, for example, McNeile Dixon's "The Human Situation" In that truly noble book we may read "Science and materialism are one, and cannot live apart Matter talks matter, and science knows no other language Suppose an independent world of thought, science has no means for its exploration To admit a world beyond her powers of inspection would be to sign her own death warrant . . She files and oils the old key, and clings resolutely to the hope that some day it will be found to turn the wards"

London, W.1 HENRY YELLOWLEES

THE NATIONAL LOAF

SIR,—Sir Ernest Graham-Little complains that an important aspect of the fortified loaf remains obscure—namely, the one relating to calcium The *Daily Mail* of June 25 contains what is apparently an official announcement to the effect that the fortified flour at present does not contain added calcium, and that it is doubtful whether calcium will be added later It has been stated in a memo of the Medical Research Council published a few weeks ago that it has become necessary to add calcium to flour because of the unsatisfactory condition of the bones of part of the population Well, let them produce (say) a dozen adults suffering from this disease and exhibit them at the Royal Society of Medicine

In a memo published by the council in your issue of June 28 it is stated that the present emergency requires the addition of calcium to bread No scintilla of evidence exists for this pronouncement

The original proposal was based on evidence derived from pre-war data, and this proposal was not intended to be a war measure I should like to know on what authority it is stated that the added calcium can do no harm in any type of disease It is not enough to say that there is no evidence that added calcium can do no injury in any type of disease , the responsible authorities must make *sure* that chalk can effect no injury in any circumstances They must prove this , for forty million people cannot be used as experimental rabbits All available evidence suggests, too, that calcium in these circumstances is ineffective without the addition of vitamin D

I know that the assertion of the M R C that added calcium can do no harm in any type of disease is contrary to the actual facts If there is to be compulsory chalk swallowing today, there may be other substances which cranks may force on us in the future Public interest demands that an exhaustive inquiry into the matter should be instituted by a board comprising men familiar with the different aspects of the problem physiologists, physicians, pathologists, biochemists, food experts, pharmacologists Members of this body ought to have no connexion with the M R C or the Food Ministry The inquiry should be open and detailed evidence published I trust the Government proposals will not become effective until the pronouncement of such a body becomes available

Liverpool I HARRIS

A RE-DRAFT OF THE DRUG BILL

SIR,—In an annotation last week you appear to have welcomed, without qualification, the disclosure of formulæ of proprietary medicines, on the ground that it was an anomaly that grocers were to be allowed to sell recommended medicines of unknown composition and not those of declared composition

Whilst this does at first sight seem an anomaly, it is clearly not so, because the grocer sells these articles as commodities at the present time, knowing nothing of their composition and being unable, by reason of lack of knowledge of their contents, to do more than sell them on the demand created by advertising When, and if, disclosure is the rule with these medicines, it will be found that grocers assume a knowledge of what they are selling, and commence recommending or " prescribing " the medicines There are firms who will supply them with the requisite assistance in this respect , hence a tremendous increase in counter prescribing and self-medication, such as doctors have not hitherto had to experience, is a very likely result of this apparently sensible requirement, unless some other restriction on the sale of these preparations is included in the bill

G A MALLINSON,
Secretary, National Pharmaceutical Union

MEDICAL PLANNING RESEARCH

SIR,—Medical students are naturally profoundly interested in the form that the medicine of the future is to assume, and welcome the opportunity to play an active part in shaping this future We feel that the section of the research in which we can be most useful is medical education, since what we lose in perspective we gain in familiarity It may interest your readers to know that the British Medical Students Association has been invited by the chairman of the B M A Planning Commission to submit a memo on medical education for the consideration of the commission The production of this memo is to be the chief subject for discussion at the B M S A council meeting to be held at 3, King's Parade, Cambridge, on July 5 and 6 It may not be too late to add that all medical students are welcome at this meeting, and any who are unable to be present are invited to submit proposals in writing to me at that address

Cambridge CECILY M TINKER,
Hon Sec B M S A

MISTY WINDOWS

SIR,—If gas attacks come we may have difficulty in maintaining clear vision through the windows of our respirators Some ten years back Mr Bedford Russell told me, apropos laryngeal mirrors, that any propne toothpaste makes as efficient an anti-dimming prepa tion as it is possible to get A little of the paste sho be smeared on and then polished off It works well wi gas-mask windows, and incidentally with motor-c windscreens as well

Chobham, Surrey H S BUCKLAND

Public Health

From the Annual Reports

RUTLAND

Dr Christopher Rolleston's report on school children of Rutland is brief but breezy Rutland is one of the smallest education authorities in England—an advantag to the school medical officer because it allows him tim and opportunity to recognise slight departures from full health Much of the criticism of evacuated children by medical officers in receiving areas, though just, did not allow for the large numbers of children the officers of great cities have to keep under observation Rutland received children, mainly from London, of whom Dr Rolleston examined 289 He found their nutrition to be good only 1 was of subnormal, and 5 of poor nutrition There were 4 cases of obesity and 1 of tuberculous glands He is a strong advocate of tonsillectomy and records " with considerable pleasure" that 23 out of 205 pupils routinely examined had had the operation performed , 19 other children are in need of operation In the whole group 259 teeth had been filled " No doubt this redounds to the manual dexterity of the dental profession," he says, " but it appears to me that this highly specialised portion of the profession might contribute something to the causation of this condition Most of the work in this direction has been published by medical men and physiologists, and their results tend to prove that the prevention of caries rests with the treatment of pregnant women " Dr Sim Wallace and other dentists will have something to say about this statement Dr Rolleston mentions the rapid cure of cases of persistent suppuration of the scalp by sulphamethylthiazole

BOOTLE

Bootle was on the first list of towns to be evacuated and its school work was much hampered by the fro and-t movement of children in the first period of the war I June, 1940, the number on the roll of elementary school in Bootle was 9226 In Southport, to which the childre should have been evacuated, there were only 892 Bootl children. The number of school-children evacuated i September, 1939, was 1346 In medical inspection 29 cases of inflammatory conditions of the external eye wer detected, of which 23 only were treated by the ophtha mic surgeon , there was no case of phlyctenular co junctivitis or corneal ulceration, and it is a reasonabl presumption that most of the cases were minor forms o infectious conjunctivitis Dr E T H Wood record an incidence of 0 9% of suppurative ear discharg among children routinely inspected and says tha " this figure continues the curve of steady decrease i number since the system of registering and followin up aural defects was instituted in 1930 " In forme years otorrhœa was the most frequent cause of rejectio of recruits for the Army, and one of the commones defects of school-children The remarkable reductio in its frequency in the past 15 years has been due mainl to the intensive drive against it, but has probably bee helped by the mildness of scarlet fever and measle and by improved nutrition

WREXHAM

Dr T P Edwards reports that among 3626 school children, 406 had treatment for skin diseases, of whom 93 had impetigo, 76 scabies and 14 ringworm Scabies has generally been increasing in the last four years, more rapidly since the war started , impetigo always has been highly prevalent in school-children and shows no sign of diminishing Two cases of definite pulmonary tuberculosis were discovered in children inspected last year When school medical inspection started we expected to find many cases of phthisis, but it soon appeared that this manifestation of tuberculosis is rare at the school age , of late years, however, with bette pervision of contacts and improved means of early gnosis, we are finding early tuberculosis of the lungs ore often in young children Formerly a positive gnosis of pulmonary tuberculosis in a child was ntamount to a death warrant, but cases detected early w usually do very well Dr Edwards calls attention the epidemic of cerebrospinal fever which struck rexham severely in the winter of 1939–40, but makes mention of any sequels (the chief of which from the hool medical point of view is deafness)

CROYDON

Dr Oscar Holden in his school report for 1939 remarks n the low incidence of infectious disease, both in schoolhildren remaining in Croydon, and in Croydon children vacuated to reception areas "A completely satisfacory explanation is not yet available," he says, "but ndoubtedly the closure of schools and the curtailment f school time appears to have been an important factor" ost school medical officers call attention to this unexectedly low incidence of infectious disease in 1939–40 nd many attribute it to school closure Dr Percy tocks of the Registrar-General's office has shown that here is some statistical evidence to support this explanaon, but if it is the true one the low incidence should erely have proved only temporary and have been ollowed by epidemic prevalence when the schools eopened, and this has not occurred yet In the last war, hen there was no school closure or dispersal, the ehaviour of the endemic infections was as follows carlet fever rose in attack-rate per 1000 population from 9 in 1911 to 4 47 in 1914, and then sank to 1 44 in 1918 rise to 2 29 in 1919, diphtheria rose from 1 24 in 1912 1 61 in 1914 then declined to 1 28 in 1917 to rise again 1918 to 1 31, enteric, after being steady for three ears, fell continuously from 23 per 100,000 population n 1914 to 9 in 1919, measles mortality (incidence igures are not available) fell to 0 247 in 1914, rose to 46 in 1915, fell to 0 15 in 1916, rose to 0 38 in 1917, and hen fell to reach the record low rate of 0 098 in 1919, erebrospinal fever *deaths* rose from 163 in 1913 (the ighest number for many years) to 194 in 1914 and then umped to 1974 in 1915, after which they declined, but ever fell again to the low levels usual before 1913, nfluenza deaths remained between 5000 and 10,000 nnually from 1913 to 1917, but in 1918 rose to 112,329 erebrospinal fever is the only epidemic disease which ppears to be directly associated with modern wars from he time of their declaration

The rheumatism clinic of Croydon shows a reduction n numbers of cases referred to it, which in part must be ttributed to evacuation, but this clinic, as do others, hows a steady decrease of incidence, and still more of everity, in child rheumatism during recent years Dr R Millar, who is in charge, classifies his new cases into hree groups mild and potential, definitely active, nd definitely quiescent In the three years 1937–39, he percentage in the second group fell from 14 5 to 11 1, whereas in the third group it rose from 9 5 to 24 1

NORFOLK

Dr T Ruddock-West in his school report for 1939 ells us that on the last day of the year there were 36,783 Norfolk children and 10,707 evacuees on the chool registers The percentage of children found by outine examination to be in need of treatment other han for defects of nutrition, uncleanliness and dental isease, was 10 79 There were great increases in cabies, impetigo and verminous heads, increase in these onditions was general throughout the country Unlike nfectious fevers they appear to have been fostered by chool closure and dispersal This might have been xpected, since children have least direct contact when hey are in school A survey of Norfolk children dislosed 973 with suspected mental defects, of whom 6 were diots, 52 imbeciles, 19 uneducable feeble-minded, 325 ducable feeble-minded and the remainder—except for ne insane child—dull, or backward, or unstable

Infectious Disease in England and Wales

WEEK ENDED JUNE 21

Notifications —The following cases of infectious disease ere notified during the week smallpox, 0, scarlet ever, 955, whooping-cough, 4837, diphtheria, 919, enteric fever, 127, measles (excluding rubella), 8958, pneumonia (primary or influenzal), 668, puerperal pyrexia, 116, cerebrospinal fever, 211, poliomyelitis, 9, polio-encephalitis, 0, encephalitis lethargica, 6, dysentery, 113, ophthalmia neonatorum, 75 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on June 18 was 1607, including scarlet fever 187 diphtheria, 314 measles, 282, whooping cough, 457, enteritis, 13, chicken pox, 81, erysipelas, 36 mumps, 7, poliomyelitis, 1, dysentery, 3, cerebrospinal fever, 47, puerperal sepsis, 9, enteric fevers 12, german measles, 14, glandular fever, 1, other diseases (non infectious) 60, not yet diagnosed, 83

Deaths —In 126 great towns there was no death from scarlet fever, 2 (0) from enteric fever, 34 (3) from whooping-cough, 10 (0) from measles, 24 (0) from diphtheria, 32 (1) from diarrhœa and enteritis under 2 years, and 6 (0) from influenza The figures in parentheses are those for London itself

Ilford and Nottingham each reported a fatal case of enteric fever There were 4 deaths from diphtheria at Liverpool Fatal cases of whooping cough were scattered over 24 great towns, Liverpool reporting 5

The number of stillbirths notified during the week was 213 (corresponding to a rate of 44 per thousand total births), including 17 in London

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Parliament

Pharmacy and Medicines Bill

Mr Ernest Brown, the minister of health, introduced this Bill *to amend the Pharmacy and Poisons Act 1933,* and to prohibit certain advertisements relating to medical matters and to amend the law relating to medicines

QUESTION TIME

Fortified White Flour

Mr R J G Boothby asked the Parliamentary Secretary to the Ministry of Food when it was proposed to commence the fortification of white flour and when this process was likely to be completed —Major Lloyd George replied Flour millers supplying flour to the whole of South Wales have commenced the fortification of their deliveries of white flour with vitamin B_1 The area over which fortified white flour will be delivered will be extended rapidly with the increase of supplies of vitamin B_1 but I am not able to state precisely when it will be possible to fortify all white flour delivered throughout the country

National Milk Scheme

In answer to a further question from Mr Boothby, Major Lloyd George said The approximate number of persons now benefiting under the National Milk Scheme is 3,050,000 The annual cost of the scheme to the Exchequer is £13,500,000 including approximately £600,000 for administrative expenses

Clothing Coupons

Mr C T Culverwell asked the President of the Board of Trade whether he would allow the white drill coats used by medical and dental students, nurses, workers in laboratories, shop assistants and others to be sold without coupons —Mr O Lyttelton replied The suggestion is being considered as part of the general question of special occupational needs, on which discussions are proceeding The principle is agreed, but it is a question of securing a definition

Adjustment of Sectors in London E H S

The extent to which effect can be given at the present time to the Select Committee's recommendations on the London sectors is being considered in conjunction with the several officers and bodies concerned Certain rearrangements have already been made which will reduce the number of sectors by one as from next week (Miss F Horsbrugh replying to Sir Francis Fremantle)

Mental Health among Children

Sir Francis Fremantle asked the Minister of Health what arrangements were made for mental health work amongst evacuated children and in bombed areas, and whether assistance would be given to the Mental Health Emergency Committee for this work —Miss Horsbrugh replied Mental health work amongst children is a normal development of the mental health services and in particular of the school medical services with which child guidance clinics are associated in many areas A number of hostels have been established for difficult children in reception areas, and it is desirable that in every region some of these hostels should be earmarked for children requiring mental treatment and should be associated where practicable with child guidance clinics A grant from Exchequer funds was made to the Mental Health Emergency Committee in respect of the year ended March 31 last and application for a further grant is now under consideration

Amendment of Notifications

Mr W Leach asked the Minister whether table 28 in the Registrar General's report for the year 1938 referred only to cases of infectious diseases notified, or whether the figures had been corrected to allow for wrong diagnosis, in view of the fact that from 20 to 45% of cases notified as diphtheria were subsequently re diagnosed —Mr E Brown replied The record of notifications appearing in the Registrar-General's publication is based on returns received weekly from each local medical officer of health The form on which the weekly return is made includes a space for the amendment of provisional or erroneous notifications in previous returns The published record relates to notifications as amended under this arrangement In practice the number of corrections brought to notice in this way is relatively small and is in no way indicative of the scale of re diagnosis suggested in the question

Re-examination of Recruits

Mr G Mathers asked the Minister of Labour if men called up and medically examined, but who had had their posting to the armed forces deferred for a period, would be given a further medical examination before having to report for service —Mr Ernest Bevin replied If re examination after a specified period were to be prescribed it would not be administratively practicable to confine it to men about to be called up and a great amount of trouble and expense would be caused to no purpose I propose, therefore, to arrange for men who have been medically examined to be informed that they should let the ministry know if subsequently they think that there has been any deterioration in their physical condition, so that a further medical examination may be held in such cases This arrangement will cover cases that would not be included in a system of automatic re examination after a fixed period

BIRTHDAY HONOURS

The honours list for members of the Services issued on July 1 contains the following names of members of the medical profession —

K B E

Air Marshal Harold Edward Whittingham, C B E, M B Glasg, F R C P, D P H, D T M & H, K H P, R A F
Director general of R A F medical services

C B

Surgeon Rear Admiral Cyril Verity Griffiths, D S O, M R C S, K H P, R N
Major General Robert Cecil Priest, M D Camb, F R C P, D T M & H, K H P, A M S
Consulting physician to the British Army and B E F, professor of tropical medicine at the Royal Army Medical College

O B E

Major Abani Mohan Chaudhuri, M B Calcutta, F R C S, I M S
Acting Captain Edward Cawdron Cordeaux, D S O, M B Lond, R N
Surgeon Lieut Commander Ronald Grant Dingwall, M B Aberd, R N
Major (temporary Lieut Colonel) William Ralston Duncan Hamilton, M B Glasg, R A M C
Surgeon Commander Thomas Madill, M B Dubl, R N

M B E

Lieutenant (temporary Major) George Jameson Carr, M B Edin, R A M C

A F C

Flight Lieutenant William Kilpatrick Stewart, M B Glasg, R A F V R

Messrs E and S Livingstone inform us that their binders' premises have been destroyed by fire The whole of the contents, which included all work in progress and a large reserve of bound stock of their publications, have been lost They are doing everything in their power to replace the more important books, but some of these will be out of print for a time, and medical practitioners interested in their publications are meanwhile asked to make allowances

Obituary

DAVID WARDROP

M R C S, F R C S E, MAJOR R A M C

Gale and Polden

Major Wardrop, killed by enemy air action in th Near East when acting as surgical specialist to general hospital, was only son of Mr David Wardrop, consulting surgeon to the throat department of the Hospital of St Cross, Rugby David junior went t school at Lawrence Sheri and then on to Rugby, whe he excelled at football H studied medicine at Birmingham and at St Mary's, qualifying in 1928 and takin the Edinburgh surgical fellowship three years later after house-appointments and a surgical registrarship at the Birmingham General Hospital In 1932 he married Joyce, daughter of Dr Arnold Chaning Pearce, and started practice in Wellingborough, moving thence in 1935 to Seaford "His was a particularly happy nature," writes a colleague, "but, while enjoying life to the full, he was always conscious of his duties to others When at Rugby, he played three-quarter for the school XV and later he represented his university and county He was a keen golfer and was never unduly downcast by finding his ball in an awkward lie In fact, David was an all-round sportsman In his work as in his play he put his best foot forward, and in addition to being in a busy general practice he was showing considerable skill as a general surgeon "

Major Wardrop leaves his widow with three children

DONALD STARR

M B MANC, CAPTAIN R A M C

Captain Starr, who has lost his life on active service in the Middle East, was only son of Mr James Starr of Wigan Educated at the grammar school there and at Manchester he qualified M B, B Ch in 1926 He was house-surgeon at the Royal Infirmary before gratifying his love of travel by five years' service with the White Star Line He was then medical officer for nine years at the Kent mental hospital, Chartham Down On the outbreak of war he applied at once for a commission in the R A M C Loyalty, patriotism and devotion to duty were outstanding amongst his qualities, and his constant cheerfulness and optimism endeared him to his friends

ADAM BROWN KELLY

M D, D SC, LL D GLASG, F R F P S

Dr Brown Kelly, who died on June 25 at his home in Helensburgh, aged 76, was the son of Adam Lawson Kelly, who practised in Carlton Place, Glasgow Brown Kelly graduated at Glasgow University both in science and medicine in the 'eighties, and afterwards made a special study of diseases of the ear, nose and throat In addition to his practice in Glasgow he was for many years surgeon for his specialty to the Victoria Infirmary He had been president of the section of laryngology R S M, and in 1926 he was Semon lecturer in the Uni versity of London He edited the section on laryngo logy and rhinology in the Transactions of the 17th Inter national Medical Congress In 1932 his university conferred on him the honorary degree of LL D in recognition of his services to medicine and to the medica school. His son Derek, who is assistant surgeon in his father's old department at the Victoria Infirmary s at present serving with the Royal Navy Dr Brown Kelly is also survived by his wife and a daughter

LYON RAMSAY BLAIR

M D ST AND , SURGEON-LIEUTENANT, R N V R.

Dr L R Blair, who is "presumed lost ' by the sinking of the *Manistee*, was born at Dunblane in 1907 Within six months he was taken to South Africa, where he spent the first nine years of his life When his parents returned to Scotland, he attended the Morgan Academy, Dundee He graduated from the University of St Andrews in 1931 and when he returned last year to receive his M.B as the only graduate in uniform he received an ovation from the students After six months as casualty officer at Dundee Royal Infirmary, Dr Blair held assistantships at Blantyre and at Stockport, finally settling in practice with Dr. George Bridge at Preston At the outbreak of war, he joined the Royal Navy as a volunteer, and was posted as medical officer to a destroyer He was removed from her to be operated on for appendicitis three days before she was sunk Thereafter he became one of the residents in a naval hospital on the Forth until he joined the *Manistee* In 1933 he married Isabel Breen of Newport Fife They have two sons

Elliott & Fry

Blair spoke several languages easily and while still a boy attended the scout jamboree in Birkenhead as interpreter to the Belgian camp Gaelic was his pet study; and everything Highland had his devotion Standing well over six feet, he was a commanding figure in any company. He was an elder in the presbyterian church at Preston

Births, Marriages and Deaths

BIRTHS

BARNS —On June 28 in London, the wife of Mr H H F Barns, F R.C S —a son

ROUTLEY —On June 15, at Penang to Dr Barbara Routley (née Barnetson) wife of Dr Paul Routley—a son

SMYTH.—On June 27 at Sutton the wife of Captain Edward Smyth, R.A.M C —a son

MARRIAGES

CHAPMAN—TOPHAM —On June 14 at Bishop s Stortford Frederick John Shirley Chapman B M , to Gladys Emma Topham

COWPER—NEWITT —On June 21, at Woolacombe Claude Marriot Lovell Cowper, M.R C S , late of Leighton Buzzard to Irene Newitt.

MILNE—MAYOU —On June 28 at Boxmoor, R. Ian Milne M R C S , surgeon lieutenant R.N V R , to Jean Mayou Mayou

DEATHS

BROWN KELLY —On June 22 at Helensburgh Dumbartonshire, Adam Brown Kelly, M.D , D.Sc. LL D Glasg F R.F P S , aged 75

KING —On June 20, at Swindon Violet Maud Redman King M.B Leeds

LAING —On June 26, at Blairgowrie James Hill Williamson Laing M.A B Sc. St. And , M.B Edin

LLOYD ROBERTS —On June 24 at Maesincla, Caernarvon Griffith Lloyd Roberts M.D Edin.

McBRIDE —On June 25, at Dinton, Aylesbury, John Best McBride, L P C.P I L.M

MORGAN —On June 14 William Parry Morgan M.A. M B Camb B Sc Lond. formerly of 39 The Parade Cardiff

PIKE.—On June 26 at Lincoln Sir William Watson Pike K C M G , D.S O F R.C S I major-general late R.A.M C aged 81

STILL.—On June 28, at Salisbury Sir Frederic Still K C V O , M.D Camb LL D Edin., F R C.P

Appointments

BOYLE, E O , L A H Dubl D P H L.M M O H for Pudsey

DALLIWALL, KENNETH M.B Lond senior asst R.M.O at London Road Hospital Stoke-on Trent

DUTHIE E W , M.B Aberd examining factory surgeon for Cruden Aberdeenshire

ESSEX LOPRESTI PETER M R C S D A resident surgical registrar at Arlesey Emergency Hospital

FLAVELL, GEOFFREY F.R C S R S O at the Hospital for Consumption and Diseases of the Chest Brompton

MATHESON BERNARD, M.B Edin D.P M temp medical superintendent at South Okenden Colony, Essex.

MURRAY J R. M.D Lond D.P M resident medical superintendent at St George s Mental Hospital Morpeth

WILSON A E , M R.C S first asst M O at the Royal London Ophthalmic Hospital

Notes, Comments and Abstracts

SCANDINAVIAN ODYSSEY

IT was January, 1940, when our ambulance unit set off for Finland Movement was leisurely—we stopped in the North Sea to pick up some frozen survivors and did some ski-ing in Oslo while the ambulances were stuck in the ice I knew at least the theory of frostbite but soon heard awful stories of its insidious onset—how the ears went and the cheeks, and that then there came a strange emptiness between the thighs which ensured sterility A ladies' organisation had given us Balaclavas with flowing sides and by rearrangement these seemed to solve the problem, except for an epileptic patient whose custom it was to jump out of the window having first shed his garment This was a harmless pastime in summer, but when I saw him there were several feet of snow. I found, to my great advantage, that the major in charge of the Finnish hospital where I was to work was von Bonsdorff, of Helsinski University As the Red Cross was not recognised, the hospital had been carefully camouflaged by sticking small trees in the roof and hanging them around the walls, and with its covering of snow and surrounding woods it must have looked quite a plausible hillock from the air

There were usually air-raids in the mornings so little work was done then, and it was pleasant to spend the time ski-ing, racing back to the woods when the planes came too low The Finns were fighting under such difficulties that distinguishing the planes was no trouble —they were all Russian Electrocardiograms were taken in the afternoon even though we were so close to the front, and later I would take my patients over on a sleigh for X raying With sometimes eight barium meals to do in an evening I might have become a radiologist had the war lasted longer

Gastric cases predominated and when one saw—and ate—the pea soup, the rye bread and the substitute coffee this was understandable Combine this with mobile warfare which would not wait long enough to allow potatoes to be buried feet in the ground to prevent their being frozen and it seems strange that the whole army was not dyspeptic I did see one mild case of scurvy but ascorbic acid was included in the rations at the front and deficiency diseases were uncommon Typhus was never far from one's thoughts but I only saw one case in which it was even suspected Baths were taken at the front—in fact, the construction of baths seemed to be thought more important than the sleeping-quarters Perhaps one day we in this country will reach the cleanliness of the average Finn, if we cannot reach their civilisation in other respects Mild neuroses were fairly common, and it may be an index of the Finns' intelligence that they were nearly all anxiety states The one simple conversion hysteria which I remember had existed since the war of 1918 Hypnosis seemed easy when the patient did not understand a word of what was being said, but it failed to remove the stigma

To a foreigner the Finns seemed wonderfully enthusiastic in their carrying on of the war Of a dour nature, apart from the gay Karelians, they had simple war aims, for they were fighting for their lives and for land which had been lost and regained many times in past centuries The sudden peace with its cession of territory allowed them to indulge in depression—one of the few emotional directions in which they ever moved A nation in tears made one feel strangely embarrassed, and in the hushed corridors our heavy boots and uniforms seemed out of place

As the Finns were sending ambulances to Norway when the Germans invaded that country we felt that we must go too Every vehicle now had to be painted with large red crosses, for we were going to a civilised war Soon after entering Norway in broad daylight two planes proceeded to machine gun the convoy This altered our views and we got another shock when the British A D.M S gave us tea instead of whisky. We found the evacuation already completed, and came only to gaze on a ruined town and an empty bay There were motors in plenty and despite snow, mud and landslides we were back in Stockholm in a few days Some of our more warlike countrymen had to walk over the pass and a few of these suffered frostbite which I treated.

so, I hope, preventing their internment Besides trying to get away there was much of interest in Stockholm The new Karolinska Hospital is worthy of the city. Crafoord as a surgeon is well known but his hospitality is still more delightful

There were hundreds of people who wanted to return to Britain, and after being appointed M O to an official group I felt almost as if I were home The collapse of France made us dependent on our own effort The only way was by boat from Petsamo to America and belligerents were not allowed to travel So the next step was to obtain an Irish passport, but there were delays, and when the boat sailed it was captured by the Germans Again an Irish passport acted like magic, and even the Gestapo considered me harmless if sent back to Finland

In Lappland, while waiting for another boat, we would try to break some interest from eternity by rolling down rocks to sink deep in the pools below Soon we learnt more of this, a syndrome characterised by depression, craving for noise and excitement, and homicidal tendencies shown by letting boulders drop on people below, it is known as Lappland madness But in the end another boat did leave and I got back to England with the homicidal boulder still undropped J G

SIR JAMES LANCASTER AND THE CURE OF SCURVY

The East India Company, from the beginning of the seventeenth century, had a sound working knowledge of the prevention and cure of scurvy Many people assume that James Lind was the first medical authority to direct attention to the value of citrus fruits and that Captain James Cook was the first master-mariner to make use of them, but from 1601 the East India Company's ships carried a supply of oranges and lemons or of lemon juice for the protection of their crews [1] The published records of the Company leave no doubt that these were authorised items in the victualling of the fleet The man responsible for this was that incomparable ship-master Sir James Lancaster who sailed as Commander (or "Generall") of the first fleet sent by the Company to the East Indies in 1600 He was a tried seaman who had been employed some years before in the conduct of a privateering expedition to the East Indies An account of this is included in Hakluyt's "Principal Voyages of the English Nation," where he tells of a "Voyage with three tall ships to the East Indies in the yeere 1591 performed by M James Lancaster " On this occasion there is nothing to indicate that Lancaster was able to keep his crews free from scurvy nor that he recognised the superior value of oranges and lemons as a remedy Yet when we read the account—in "Purchas his Pilgrimes"—of "the first Voyage set forth by the East India Company in 1600" it is evident that Lancaster had by then a sound grasp of the prevention and cure of scurvy The men of his ship "stood in better health than the men of the other ships," and the reason was that "he brought to sea with him certaine bottles of the juices of limons, which he gave to each one as long as it would last, three spoonfuls every morning" There are several other references in this account to the superiority of oranges and lemons "which were precious for our diseased men to purge their bodies of the scurvy" The editors of the "First Letterbook of the East India Company, 1616-1619" in a footnote to an entry of lemon water among the victuals say "We may trace in this item the hand of Sir James Lancaster who was one of the first to use the juice of lemons as an antidote to scurvy" The measure was not formally adopted by the Admiralty until 1795—nearly two centuries later After this entry there are letters of complaint in which the Company's captains brought to the directors' notice that the ships' stores did not include oranges and lemons or lemon juice—a dereliction which they would not condone Woodall, surgeon-general to the East India Company, about the time of Lancaster, gave lemon-juice a prominent place in the cure of scurvy in his book, "The Surgeon's Mate," published in 1628, so the remedy was not kept secret by the East India Company Yet one might suppose that the Navy had never heard of it until Captain Cook's Voyage in 1769, after which "limey" became the term for a British sailor The lime-juice ration which earned this title was not at first made from limes (which have poor ascorbic properties) but from the juice of Mediterranean lemons In the middle of the nineteenth century, partly for political reasons, the juice of West Indian limes was substituted, and by 1870 very little, if any, lemon juice was issued officially The inferiority of lime juice as compared with lemon juice has been repeatedly demonstrated on Arctic expeditions The whole early history is accurately and clearly set out by George Budd in his article on scurvy in "Tweedie's System of Practical Medicine"

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[1] Nixon, J A *Proc R Soc Med* 1938, 71, 193

Medical News

University of Oxford

The Weldon prize for 1941 has been awarded to Dr Julia Bell, Galton research fellow of University College, London, and a member of the scientific staff of the Medical Research Council

Prof T B Davie has been appointed an examiner in special and clinical pathology in the B M examinations until 1942, and Dr A H T Robb Smith until 1943

University of Glasgow

On June 27 the degree of M D was conferred on A L McAdam, J G Scott, and (in absentia) on W I Walker

The Harry Stewart Hutchison prize was awarded to Dr Theodore Crawford, and Dr Esther Hendry

University of Bristol

At recent examinations the following were successful -

FINAL EXAMINATION FOR M B, CH B

G S Andrews and Marie L Bartlett (first class honours), Cecil M Drillien and J C Valentine (second class honours), R C Blackney, N J Brown, J D Cardale, G T Cribb, J H P Davies Sage, Mary L Hunt, D S Maunsell, H R Newman, Christine V Rendell, F B Richards, M O Skelton, J H Wilkins

Group II (completing the examination) —J B Tucker

Order of St John of Jerusalem

The King has sanctioned the following promotions in an appointments to the Venerable Order of the Hospital of St John of Jerusalem —

As Knight —Lord Horder, M D, Major General Sir Eugene Fisc M D, Lieut Colonel Ian Fraser, F R C S, Samuel McCormac, M

As Commander —Captain Richard Williams, M R C S, Maj Stanley Copley, F R C S, G B Peat, M D, Colonel W W Whit M D, Lieut General Sir Gordon Jolly, I M S, Major A T Smit M D

As Officer —J E Dovey, M B, Captain G W C Bissett, M D J A Corrigan, M D, H A Creighton M D, A G Morris, M D E W Stewart, M D, Lieut Colonel J W Tice, M D Lieut Colon F A Barker, I M S retd, John Ferguson, M D, H B Pierce, M B A M Robertson, L R C P E, John Wells, M R C S, Lieut Colon W S C Copeman, F R C P

Shaftesbury Military Hospital Medical Society

At a meeting of this society on July 8, at 3 P M, the speake will be Dr Paul Beeson, chief physician to the America Hospital which is being established in this country

Medical Personnel (Priority) Committee

Dr G C Anderson, as secretary of the Central Medica War Committee, has been invited to attend the meetings c the Medical Personnel (Priority) Committee in an advisor capacity The composition of this committee, of whic Mr Geoffrey Shakespeare, M P, is chairman, was set out i our parliamentary columns last week

The Derry Gardens in Kensington High Street will be ope for the benefit of St Bartholomew's Hospital from Monday July 7 to Saturday, July 12 from 9 30 A M to 6 P M except o Saturday when they close at 1 P M

The George medal has been awarded to Dr Hannah Bill and Dr Bernard Doyle of Stepney and to Dr Aliso McNairn of Plymouth

CORRIGENDUM —Two corrections should be made i Dr Hodgson's paper of last week On page 812, column 1 12 lines from the bottom, read pil colocynth co gr 5 and the first acknowledgement on page 813 should b to Dr Elsie Burns

ORIGINAL ARTICLES

SOMATIC FACTORS CONDITIONING AIR-RAID REACTIONS*

H. CRICHTON-MILLER, M.D. Edin., F.R.C.P.
PHYSICIAN TO THE TAVISTOCK CLINIC AND TO BOWDEN HOUSE, HARROW

MUCH has been said and written about the psychological reactions of civilians to air-bombardment, less about the physical effects that may ensue in the absence of overt trauma, and still less about the relationship of physical and emotional factors. Official policy applauds the morale of the civil population, and claims that functional disabilities attributable to the blitzkrieg are negligible. Moral courage and self-respect can entirely eliminate self-pity and malingering, so that if we think of all functional disabilities as due to one of these causes, or to a combination of the two, we must think of functional disability as evidence of low morale. I suggest that many of the functional results of air-bombardment on the unwounded have no relation whatsoever to any moral quality.

BLAST-CONCUSSION

When high explosives were first used on the battlefield cases began to appear of soldiers who had not been wounded and who did not appear to have experienced any impact concussion, who yet presented the general picture of post-concussion cases. To this condition was given the name of shell-shock. Soon the symptom began to be associated with anxiety, hysteria and malingering. From 1914 to 1918, and afterwards, the differential diagnosis of these cases was erratic and confused. It was inevitable that the public should readily take to the word shell-shock; it covered a multitude of disabilities and some sins too. The Government became somewhat embarrassed. After the war a commission was appointed to investigate the problem, and reached a conclusion which may not unfairly be formulated thus: "We cannot deny that there is such a condition as true shell-shock, but it has been so much abused that we must never again admit its existence." Then came twenty years of peace and pensions. When Hitler's war seemed imminent more committees met, and it was decided that whatever might happen in this war there was to be no shell-shock. The naïf conviction that a symptom can be eliminated by refraining from allowing it a name had its inevitable result. The symptom appeared, a designation had to be found for it, and so the clinicians—as opposed to the ministerial authorities—described it as blast-concussion. It is to be hoped that this name will not be exploited in the way in which shell-shock was exploited; but if it should be the fault will lie not in the name but in the situation. Every mother of a young schizophrenic remembers an occasion when, as an infant, her son fell out of his perambulator and landed on his head. This is very natural. A fall from a pram is, to the popular mind, a highly respectable ætiology; hereditary and other intangible explanations are unpleasant or actually compromising. Shell-shock was more respectable than malingering, so will blast-concussion always be more acceptable than hysteria. These subjective distortions will persist as long as a semi-educated public can escape from a diagnosis that it fears or dislikes. Nor will these distortions be effectively eliminated by a highly educated government department vetoing the use of any particular nomenclature.

What, then, is this blast-concussion? Since air-bombardment began in this country the public has had numerous opportunities of observing the remarkable effects of blast. We have seen plate-glass windows shattered and the fragments hurled against the opposite wall, while the fragments of an adjoining window were caught by the vacuum and deposited in the street. It is reasonable to suppose that similar blast effects, of compression and suction, acting on an elastic abdominal wall should displace the fluids of the body with extreme violence to or from that part of the human anatomy which alone is immune from external pressure—the brain. When we think of blast powerful enough to lift a man many feet into the air, we realise dimly the immeasurable strain imposed on the infinitely delicate structure of the central nervous system with its network of ill-supported cells and motile synapses. Perhaps the nearest experience that many of us may have had to blast-concussion is the flat dive—the "belly-flopper" of our schooldays—an experience which can be associated with headache of such intensity as to convince the subject that some mechanism such as I have described is operative. This is further confirmed by the fact that in fatal cases punctate hæmorrhages may be found post mortem not only in the meninges but even throughout the brain substance.

The treatment for blast-concussion is the same as for impact concussion: absolute rest and withdrawal of all stimulation. It is therefore clear that in all cases of functional breakdown after an air-raid this factor of blast-concussion should be considered. If it is present it must be treated. Unfortunately, it is by no means easy to determine its presence except in well-marked cases or where third-party evidence is available. Furthermore, it is characteristic of all except the severest concussion that the patient is restless and even compulsively active before it is expedient for him to move. Hence the doctor who encourages his concussion case to discharge himself and go home may be doing good work from the point of view of official statistics, but he is doing very bad work from the point of view of sound treatment.

Enough has been said to show fairly clearly that blast-concussion is a not unnatural consequence of exposure to a nearby explosion, that it has no intrinsic connexion with psychology, and that it bears no relation to morale, courage, discipline or any other ethical virtue. I have said "intrinsic connexion" with psychology because extrinsic association is very common. For instance, a man may be suffering from acute anxiety when the blast knocks him out; or alternatively it may affect him without any warning so that he has literally "no time to be frightened." The physiological state will be different in either case, and it is reasonable to suppose that the ultimate clinical picture is influenced thereby. Similarly, a hysterical woman can exploit the effects of blast-concussion in the same unconscious or semi-volitional way in which she would exploit any other disability. Thus we reach the first step in somatic conditioning of air-raid reactions: the combination of the organic factor of concussion with the emotional factor of fear. In all functional disabilities we are liable to find this phenomenon of synergy, and for this reason the physician who deals with functional disorders must command an absolutely open mind. If he approaches the case with bias in favour of a psychological ætiology, or with bias towards an organic causation, or—worst of all—with the conviction that all unwounded patients are malingerers, then he is not likely to find anything but confirmation of his own preconceptions.

In a large number of cases, however, the man who has been exposed to blast has also been wounded; that is the great safeguard. The wound is probably severe enough to ensure the rest which is essential for the cure of the concussion, and to disarm the scepticism and lack of sympathy liable to be manifested both professionally and domestically. Moreover, the subjective effect must not be ignored: there is an irrational feeling of loss of prestige, a lowering of the ego-ideal, a hurt to one's narcissism, in being disabled without obvious trauma. For all these reasons we may expect the worst effects of blast-concussion to show themselves in the unwounded.

PHYSIOLOGICAL FACTORS INFLUENCING RECOVERY

All fluctuations in vital efficiency modify in some measure both the intensity of instinctive and emotional reactions and the effectiveness of cortical control. An exhausted man reacts to the fear of death or to acute pain in a manner and measure different from his normal. Exhaustion within physiological limits is associated with a lowering of the blood-sugar to fasting level or below it; we may take other aspects under the heading of pathological exhaustion. It is for this reason that all

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* A paper read before the British Psychological Society on April 19, 1941

A R P personnel are urged to give sugar in large quantities It is certainly the best treatment in exhausted cases, but its indiscriminate administration is open to serious criticism In assessing exhaustion we must always bear in mind the possibility of complicating factors that militate against recuperation such as anæmia Apart from such factors we should expect the ordinary case of exhaustion to recover if he is given fluid, nourishment, sugar and the opportunity of ten hours sleep

Age is important, children stand up to bombing remarkably well What they do not resist is the contagion of panic and hysteria on the part of their elders It is easy to understand why this should be so The child's conceptual life has not yet been infiltrated by narcissistic susceptibility to a remote fear of death, but when it sees adults in a state of panic it succumbs to the idea that there must be something to fear in the loud noises, or even in the wail of the sirens Some old people react well, some badly

I recall two patients who came into hospital about the same time The one was a railway porter and the other a retired civil servant They were both in the late sixties The porter had experienced a fairly severe blast-concussion, the other was suffering solely from emotional effects The porter was anxious to recover and get back to his home, his wife and his grandchildren The civil servant had a history of a most imperfect, if not actually abnormal, sex-life which included marriage to a widow with a family and no children of his own There was plenty of evidence that the generative life of the porter had been full and normal as against the inadequacy and dissatisfaction of the civil servant's The porter made an excellent and rapid recovery the civil servant proved to be a senile narcissan of the most refractory type The two men belonged to recognisable groups, some of us will contrast them on the plane of their emotional histories, others will think of them in terms of endocrine normality and endocrine deficiency All that matters is that we should agree in attributing the recovery of the porter to normality of mind and body rather than to any ethical superiority, and in this normality I should include his parental status, for is not parenthood nature's incomparable solvent of narcissism? As far as arteriosclerosis went, the facts were in favour of the civil servant and not of the porter Nevertheless, circulatory disturbances of a degenerative kind are undoubtedly responsible for some of the worst cases among the aged

Other aspects of the generative life demand consideration The menstrual cycle is important, if for no other reason, because within that cycle there is always a point at which exhibitionism and therefore hysteria is at its maximum, and another at which these tendencies are at their minimum Similarly, the anxiety that can be associated with the menstrual cycle—based on fear of, or desire for, conception—may well furnish a conditioning factor in behaviour The climacteric is an epoch at which we never expect rational control of the emotional life to be at its best It is a period of transition in the endocrine balance, when the equilibrium between androgen and œstrogen hormones is being modified At the same time, it is a period of finality in the course of the generative emotions Reaction to bombardment on the part of the menopausal woman is likely to reflect those factors of instability attributable to these two causes Thus the subovarian childless woman may react relatively well, the hyperovarian woman with no children rarely, if ever, makes a good showing, the woman who has had a full married life and born a number of children may behave as normally as at any other time of her life, and the grandmothers of the community have, in general, reacted with impressive serenity

Another condition of theoretical interest is lactation I regret that no cases of this group have come under my observation Lactation is the epoch in which a woman's narcissism is most completely transformed by her relation of indispensability to her helpless infant, and by the instinctive impulse to give, apart from any reciprocation In fact, this is parenthood in excelsis, and the views already expressed should apply Here is an analysis of 47 cases of anxiety following bombardment treated as inpatients at a hospital in the London area

There may be little significance in any of the rest of the figures in the table, but the last line must surely command our interest It means that of 47 people o an average age of 38 4 years only 6 were leading married lives that could be called normal, 21 were unmarried, several were widowed, some were separated from thei spouses and others observing sexual abstinence or practising coitus interruptus

—	Males	Females	Total
Cases	29	18	4
Average age	42 4	31 9	38 4
Married	20	6	26
Av no of children (married patients only)	2 3	1 1	—
Married cases leading normal marital life	5	1	6

PATHOLOGICAL FACTORS

Apart from physiological conditions liable to exer their influence on conduct, some pathological condition are likely to condition behaviour in air-raids Among them is exhaustion of a degree that can no longer b described as physiological, and which demands treatmen on a different scale As a useful, if rough, index we ma take note of the interference with sleep A man "to tired to sleep" may be regarded as pathologicall exhausted We may consider such a state as being base in the main on the following factors blood-sugar at c below fasting level, low blood-pressure (perhaps mo accurately, lowered pulse-pressure), adrenal and glyc gen exhaustion, histamine poisoning What interes us here is the effect of these factors on behaviour T understand this we must at the same time consider th question of anoxæmia Theoretically, any physic factor which results in a reduction of oxygen supply the cells of the central nervous system inevitably caus a modification of behaviour Presumably this involv two factors general lowering of nerve potential, a differential lowering of cortical, as opposed to hyp thalamic, potential The former results in despondenc apathy, inertia and even mild confusion, while the latt results in some form or another of uncontroll behaviour, whether that be the restrained anxiety of th introvert or the unrestrained hysteria of the extraver This presumption, or some similar theory, is required help us to explain a case like the following

A man with a definite anæmia soon becomes exhausted his task of fire fighting, he is not terrified, he is weary a despondent, he finds rest and security in a shelter, he given fluid, nourishment and sugar, he becomes anxiou his apathy changes, he starts to tremble, he breaks out cold sweats, he groans quietly and later becomes restle pacing up and down the shelter We may ask ourselves wh has this man suffering from obvious exhaustion been tran formed into a typical anxiety case? Why did anxiety bes him only when he was in a place of safety and not when was exposed to danger? It is permissible to suppose that t exhausted man was apathetic and despondent by reason o lowered nerve potential that affected his entire central nervo system, and that when he was refreshed by rest and nouris ment the potential of his emotional centres was raised, witho a corresponding rise in cortical potential this latter fa might reasonably be attributed to the oxygen deficien resulting from his anæmia

THE PENALTY OF SELF-CONTROL

We can be clear at least about the primary instincti and biological sequence fear → adrenal response mobilisation of glucose → increased muscular tone pl enhanced aggressivity → fight or flight When troo are about to attack it is desirable that aggressivity shou be at its maximum When civilians are exposed to a bombardment fortitude, endurance and self-control a called for In the former case the instinctive purpose aggression is utilised, in the latter there is no oppo tunity for aggression and the alternative purpose of flig must be controlled In the first case we are working o an instinctive, in the second on a civilised, pattern conduct Hence it follows that in the presence of oppo tunities for retaliation a great deal depends on th emotional drive, in the absence of any such opportunit it is cortical control that is the deciding factor i behaviour

This situation can be clarified by reference to animal haviour The concomitants of fear in animals are miliar to all The rabbit's fear of death produces a ate of hyperglycæmia which finds expression in its ight from the predatory stoat, and thereby serves the urpose of self-preservation When the cat turns on e pursuing terrier with arched back and bristling fur s fear of suffering is transformed into an aggressive eaction When the lamb feels the pangs of hunger it leats and thereby appeals to the ewe to terminate its eelings of frustration When the duckling is separated rom its convoy it signals audibly its fear of isolation and nsures speedy protection Such are the simple reactions o instinctive fear which are shared with the animals by hildren and primitive people But when the child's education begins and when man becomes culturally controlled a new element enters in The infant's cry for the mother's breast was tolerated, but Tommy is told that he must not yell or shout for his tea—he must control himself till the bell rings The boy is called on to endure frustration and to refrain from any appeal for its termination The biological intolerance of instinctual frustration must be superseded by the cultural demand for controlled behaviour The maiden of a primitive tribe, beset by the pangs of sex-hunger, makes no secret of her feelings What we call modesty in civilised society consists in refraining from such conduct as can be interpreted as a solicitation of the potential mate—that is in refraining from any direct appeal for instinctual satisfaction Thus in a civilised community, fear of frustration—as of death and suffering—may be endured in a latent or overt way If it is latent it constitutes anxiety , if it is expressed we call it hysteria The important point to realise is that, in so far as all hysterical dramatisation partakes of the nature of an appeal for protection or satisfaction, so it drains off anxiety which has been accumulated by interference with the “ fight or flight ” mechanism

If we apply all this to air-raid reactions it is clear that in any shelter under bombardment we may encounter any of the following forms of behaviour ·

1 The crude manifestation of *pugnacity* in an aggressive type of individual who picks a quarrel with the shelter marshal or the police on wholly inadequate grounds Such people should, of course, be outside any shelter , they should be armed with hose and axe, or better still manning an A.A. gun

2 The equally inappropriate *flight reaction* I have known a highly intelligent and educated woman who rushed out of a shelter against advice to her own grave peril , and an elderly London taxi-driver who during a bombardment refused to go into a shelter and simply drove into the country till his petrol was exhausted. These two types represent the complete breakdown of cortical control the pure pattern of instinctive reaction to fear , their incidence serves to remind us how thin may be the veneer of civilisation

3 The *anxiety case,* silently trembling and sweating , perhaps pacing up and down, alert, taut and incapable of relaxing himself , hardly controlling himself as each gun fires or each bomb explodes

4 The *hysteric,* who by a hundred different forms of behaviour proclaims her need for protection, and, perhaps more, her craving for compassion, admiration or interest Her anxiety is completely socialised, and is therefore relieved by the knowledge that, in so far as security can be ensured, she will be the last to suffer

5 The case of *anxiety-hysteria,* maintaining only limited control of conduct, unable to refrain from a partial publicity campaign, and yet capable of enduring a measure of unrelieved fear In war-time, as in peace, this last mixed form is the one we encounter most frequently

In addition to these five groups of fear-determined reaction there are always the cases of pure blast-concussion which, as has already been pointed out, have no psychogenesis whatsoever

Anxiety, then, is the price man pays for a culture that demands inhibition of fear and hate reactions Anxiety is unrelieved fear, or, more fully, anxiety is the fear of death, suffering or frustration unrelieved by aggressive action, by flight to security, by instinctual satisfaction or by an appeal for protection or satisfaction We thus see the relationship between fear, opportunity for retaliation and attainment of security These factors represent the triangle of anxiety—anxiety worked off by dynamic action Fear possibility of human help, the dramatised appeal represent the triangle of hysteria—anxiety replaced by the dramatic appeal

ENDOCRINE AND SEPTIC FACTORS

All these cases may be considered from the point of view of instinctive emotion applied, consciously or unconsciously to an end in which cortical control more or less enters in Any somatic factors liable to influence either emotional pressure or cortical direction therefore deserve consideration. Two groups of causative factors are of special significance . endocrine and septic. Something has already been said of the endocrine conditioning of behaviour , but in contemplating the rôle of the adrenals in interpreting emotions of fear and hate we can never ignore the factor of the gonads As the adrenals of the male afford the necessary aggressivity for the sexual function so the testes contribute desire and potential fertility The eastern potentate of legend if not of reality, sated with years of satisfaction in his harem, becomes obese and loses all aggressiveness (or at least courageous aggressiveness) No doubt the endocrinologist would tell us that the man is the subject of pituitary degeneration Be that as it may, the practical import, as far as his conduct goes, consists in reduced adrenal resources On the other hand, in the woman of 50 who has mothered a sizeable family and led a full marital life aggressiveness has presumably increased as gonad function has begun to wane , and thereby she achieves a state of personal independence perhaps greater than she has reached in any previous epoch

But endocrine speculations, however intriguing, must be justified in practical therapy There is accumulating evidence that in desoxycorticosterone we have a synthetic hormone which has a direct influence on aggressiveness, and therefore, in certain cases, on potence in the male At the same time, the estimation of androgen and œstrogen hormones excreted gives us a fresh approach to the whole problem of endocrine function in relation to the conduct of the female

Turning to the question of toxæmia the problem is in the main one of anæmia, consequent anoxæmia and resultant lowering of cortical control No-one with an open eye and mind can fail to realise the all but universal incidence of the toxic factor in functional disability The psychotherapist who conducts a lengthy analysis without any examination of the patient's metabolic status will collect interesting information about œdipus reactions and breast trauma, but he will never know that his patient is suffering from a secondary anæmia and so will never doubt that the patient's ultimate improvement was exclusively due to successful analysis The fact that towards the end of the analysis the dentist extracted a molar with a large apical abscess even if known to him, will not shake his interpretation of therapeutic results

The following case is an example of synergic ætiology in relation to air-bombardment

A railway guard aged 48, married, with 2 children Had his house completely demolished by a bomb just after he and his family had taken cover in a public shelter A powerfully built man tending to obesity When seen was a mass of anxiety, trembling, sighing, restless and reluctant at first to remain in hospital He was the son of a dock labourer, the 5th child of 15 The father was consistently drunk and incredibly cruel “ E took a great 'obby in knockin' mother about ” He beat all his children fiercely and without any relation to justice The children were always ill-clothed and generally hungry At 16 the patient ran away to sea and at 18 enlisted At 22 he was a sergeant in a line regiment in France During the whole of the war he served in France He was never wounded nor had any trace of functional disability After the war he joined the railway At 39 he was in a collision, sustained a fractured arm and was three months off work, being badly troubled by his “ nerves ” At 40 another railway collision, this time a fractured leg and again trouble with his nerves A session of narco analysis with Pentothal produced much abreaction chiefly on two subjects his father beating him, and his wife calling him a coward for his behaviour in the shelter and for refusing to come out after the all-clear “ Why didn't they do me in in the last war ? What a coward I'm sorry, girl, I can t 'elp it , let me stop 'ere ·I m not going out . . All right, call me a coward . ” On the physical side the only abnormality of importance was dental sepsis which necessitated total extractions

This man was suffering from acute anxiety superimposed on a progressive toxic neurasthenia He had been in the line during most of the great war and apparently conducted himself with credit Our problem is to analyse the causative factors which produced so great a transformation The first point that strikes the medical psychologist is the factor of retaliation Owing to his upbringing at the hands of a savage father he reached manhood with extreme repressions of fear and hate for the overmastering father-figure In France during the great war he was rarely without opportunities to retaliate , his aggression could be worked off, and his emotional balance was thus preserved In both his collisions, and even more strikingly in the air-raid, he was helpless unable to retaliate and obliged to control his own aggression The pressure of the resultant anxiety was such that he developed some hysterical features as an outlet But in the air-raid the situation was complicated by his wife's scorn and impatience ; that would naturally divert aggression in her direction, and this tendency would render the task of passive endurance still more difficult But there were other factors to be taken into account In the great war he was leading a bachelor life (and indeed up to the time war broke out he was in strict training both for boxing and long-distance swimming) In the period covered by his two collisions and the air-raid he had been leading a marital life that could in no way be described as normal, and which involved a very considerable sense of guilt Finally the factor of sepsis was severe Indeed the teeth were so septic that the extractions had to be spread over a period of days It is easy to believe that this toxæmia dated back to the time of the first collision I submit then that the total clinical picture resulted from a definite toxæmia, from grossly traumatic experiences in childhood, and from a marital life charged with fear and guilt , it seems to me that the elimination of any one of these factors would appreciably have modified the character of the man's breakdown

SUMMARY

The blast effects of compression and suction acting on an elastic abdominal wall probably cause fluid to be violently displaced inside the skull This no doubt damages the function of the delicate and ill-supported cells of the brain Thus pure blast concussion has no psychogenesis

The symptoms developing will depend, however, not only on this mechanical factor, but on the psychological state of the patient when the blast knocks him out Thus the organic factor of concussion may be combined with the emotional factor of fear, just as each may occur independently

If the patient has also been wounded he will probably get rest enough to cure the effects of blast concussion If not, he may feel loss of prestige in being disabled without obvious trauma , thus the worst effects of blast concussion are seen in the unwounded

Fatigue, age, the biological epochs, arterial degeneration and an abnormal sexual and emotional life are factors influencing recovery Fatigue is associated with a fall in blood-sugar , indiscriminate sugar administration may convert fatigue apathy into anxiety

Pathological factors affecting recovery from blast-concussion include extreme exhaustion , anæmia and consequent anoxæmia , frustration—with resultant anxiety—of instinctive impulses towards aggression, flight, or an appeal for protection

Endocrine factors are still obscure, but there is evidence that desoxycorticosterone has a direct action in increasing aggressiveness

Toxic absorption from a septic focus can also influence recovery

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HOSPITAL CONTRIBUTORY SCHEMES —A new representative committee has been set up by the King Edward's Hospital Fund for London to increase and coordinate hospital contributory schemes Sir Kenneth Wigram, who is also connected with the Nuffield Hospital Trust, is to be chairman, and the committee includes representatives from the Voluntary Hospitals Committee, the Hospitals Savings Association, and the Hospital Saturday Fund It will examine the different schemes in the metropolitan area and the relationship of London hospitals to schemes in the provinces The secretary is Mr T W Place, for some years secretary of the British Hospitals Contributory Schemes Association

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DI-IODOTYROSINE IN TREATMENT O GRAVES'S DISEASE

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THE use of di-iodotyrosine in the treatment of Grave disease has not achieved much prominence in th country A list of references supplied by the man facturers contained, apart from the work of Haringt and Randall (1929), only one British reference to its u (Kean 1937) On the Continent, however, much expe mental and clinical work has been done with the drug

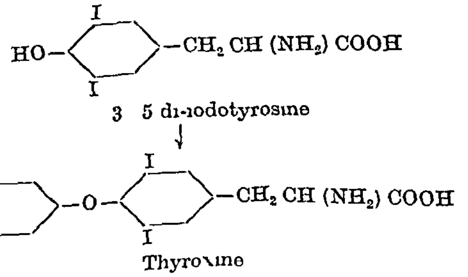
In view of the advantages claimed for this substan over iodine it was decided that a trial of its possibilit should be made Unfortunately it has been impossil to carry out any comprehensive investigation owing the relative lack of clinical material The large seri of cases available in the important American clini cannot be equalled in this country, and without reaso able numbers of cases and controls no conclusions ca be drawn from an investigation of this type. This wo therefore, is intended merely to stimulate further wo on the subject

The advantages claimed for di-iodotyrosine ov iodine in the treatment of Graves's disease are that remission of the disease is produced more rapidl satisfactory remissions are produced even after p longed administration of iodine , treatment can stopped and resumed at a later date, further remissio still being obtained , treatment can be continued o longer periods than with iodine without produci undesirable effects , and no secondary effects (iodis are observable as with inorganic iodine

CHEMISTRY

Di-iodotyrosine (*dl* 3 5-di-iodotyrosine) was isola by Harington and Randall (1929) from the acid-solu fraction after barium hydroxide hydrolysis of desiccat thyroid gland This acid-soluble fraction, yieldi di-iodotyrosine, was not physiologically active, while acid-insoluble fraction from which thyroxine was isolat showed active physiological properties These work claim that the whole of the acid-soluble iodine in thyroid gland is present as di-iodotyrosine and whole of the acid-insoluble iodine as thyroxine T total iodine content of the gland is roughly equa divided between these two fractions, but variatio occur which account for the lack of parallelism betwe the total iodine content and the physiological activi of the dried gland Thus in varying states of activi of the gland we find varying proportions of the tot iodine present as thyroxine and as di-iodotyrosine

Di-iodotyrosine is the immediate precursor of thyroxi an oxidative coupling taking place with the loss of o side-chain (Harington and Barger 1927) thus



3 5 di-iodotyrosine

Thyroxine

It is probable that the thyroxine formed in the glan is stored in the colloid in combination with globuli (thyroglobulin) which is broken down to thyroxine whe the latter is required

ACTION OF IODINE IN GRAVES'S DISEASE

A course of iodine in primary Graves's disease as a rul produces a remarkable remission This effect is maxima after 7–14 days when the drug is being administered fo the first time Second and third remissions wit peated courses of iodine are much less common and er prolonged exhibition of the drug it either ceases to ve any effect or produces a definite deterioration in e patient's condition In secondary Graves's disease odular toxic goitre and the so-called toxic-adenoma pes) the good effect of iodine is always less obvious, nd is usually absent altogether, sometimes iodine even ppears to affect the patient's condition adversely from he start

This striking difference in the action of iodine in the rimary and secondary types of Graves's disease was reviously interpreted as implying that the thyroid gland roduced different secretions in the two types of the isease It was argued that secondary Graves's disease was an example of simple hyperthyroidism and that the giving of iodine could only result in a further increase in the production of thyroxine Primary Graves's disease, however was considered as an example of dysthyroidism, the gland supposedly producing a "toxic" secretion, in such cases iodine was credited with the power of restoring this secretion to normal and thus producing an improvement in the patient's clinical condition No explanation was forthcoming to account either for the failure of continued improvement with continued iodine administration or for the failure of iodine to produce a remission when given for a second or third time There seems to be little or no evidence to support this hypothesis, and in the light of modern work both types of Graves's disease must be considered to be examples of simple hypersecretion of the thyroid gland

Many other hypotheses have been formulated to account for the action of iodine in Graves's disease but none has proved satisfactory. Slesinger (personal communication), however, has put forward an explanation which accounts for most of the established facts He argues that the exhibition of iodine does allow of increased production of thyroxine, but, whereas this was previously swept out into the circulation as fast as it was produced (as evidenced by the empty alveoli seen in microscopical sections of the gland), it is now formed in such quantity that supply exceeds demand Combination with globulin thus occurs and colloid storage in the alveoli now becomes possible With this storage of colloid the tension within the gland capsule increases considerably. leading to compression of the absorbing capillaries and lymphatics The vicious circle is now broken, the rate of absorption of thyroxine is lower the blood thyroxine falls and there is a parallel improvement in the clinical condition Thus the ultimate factor accounting for the beneficial effect of iodine is purely mechanical

There is ample evidence in support of this hypothesis The histological appearance of the thyroid gland after iodine administration shows the extent to which colloid storage takes place. The characteristic hardness of the iodinised gland on clinical examination is a measure of the increased tension within the gland capsule The disappearance of the systolic thrill and bruit over the gland signifies a decreased blood-supply and a lowered physiological activity. There must obviously be a limit to the degree of tension attainable within the gland and when this limit is reached no further improvement can be expected from continued administration of iodine, its work has been done in breaking the vicious circle In cases of secondary Graves's disease the thyroid gland is nodular, and the characteristic histological appearance is one of fibrosis with scattered areas of hyperactive thyroid tissue alternating with large colloid nodules In such cases iodine cannot be expected to exhibit an "elective affinity" for the hyperactive areas of tissue Moreover, since a large part of the gland is already in the colloid state, any increase in tension within the gland must be small compared with the effect produced in the large diffusely hyperactive gland of primary Graves's disease This is shown by the absence of clinical hardening of the gland and by the failure of iodine to produce a remission in this type of case

It may justifiably be stated that the careful use of iodine in cases of primary Graves's disease, especially as an immediate preoperative measure, has been the major factor responsible for the great fall in the mortality of the disease. Its use has become standardised and is on the whole exceedingly satisfactory. Occasional failures occur, however, and there is still room for improvements As the immediate precursor of thyroxine, di-iodotyrosine might be expected to allow of a more rapid formation and storage of colloid in the hyperactive gland and therefore, on Slesinger's hypothesis, of a more rapid improvement in the clinical condition

EFFECTS OF DI-IODOTYROSINE

Di-iodotyrosine "Roche" was the preparation used in this study It is made up in tablets each containing gr 1½ The recommended dose is ½–3 tablets daily, but in most of the cases under consideration the optimum dosage was found to be 2 tablets daily

A solution of di-iodotyrosine is also available for intravenous use, each ampoule contains 1 c cm of a 5% solution which is equivalent to half a tablet It was intended that these ampoules should be used in postoperative thyrotoxic crises, but no such crisis occurred during the period of study of these cases Moreover, the routine postoperative treatment of thyroidectomy patients with rectal iodine has proved so satisfactory that no opportunity arose for experimenting with intravenous di iodotyrosine In this series of cases, therefore, I have studied only the effects of oral administration of di-iodotyrosine, principally as a method of preoperative preparation

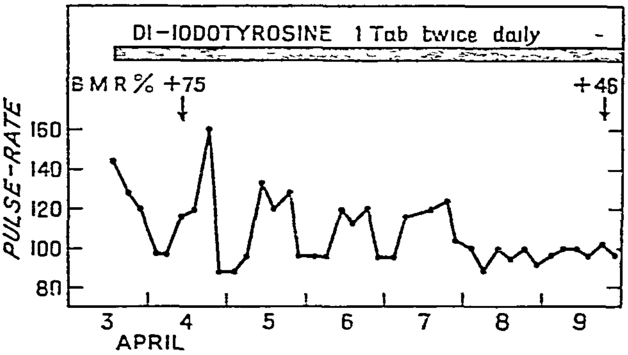


FIG 1—Four-hourly pulse chart of man, aged 33, with primary Graves's disease Remission obtained with di iodotyrosine

As a substitute for iodine—With the limited number of cases available it was realised that comparable control cases treated with iodine and with rest alone were unattainable. I therefore decided to put the new preparation to the strictest test available by confining its use to the most severe cases The criterion taken was a basal metabolic rate of +65% or over, all cases in this group were treated preoperatively with di-iodotyrosine, the remainder with iodine alone The results in this group confirmed the experimental (Abelin 1931) and clinical (Schurmeyer and Wissmann 1932) evidence that di-iodotyrosine produces a fall in the basal metabolic rate Of 10 cases investigated a satisfactory remission of the disease was obtained in 9, 6 of the 10 were subjected to subtotal thyroidectomy in one stage, and in 3 a two-stage excision was deemed advisable In the tenth case, in which no improvement in the patient's condition was obtained with di-iodotyrosine, preliminary ligation of the superior thyroid arteries was followed by successful two-stage subtotal thyroidectomy. There were no deaths in this group In the 9 cases showing remissions after exhibition of di-iodotyrosine the average fall in the basal metabolic rate was from +84% to +50% in 8 days The pulse charts in these cases showed a fall in rate together with disappearance of the hourly variation in rate which is characteristic of thyrotoxicosis A typical pulse chart (fig 1) does not differ in any way from that of a typical remission produced by iodine, and the time taken to produce the improvement was approximately the same as that taken by iodine The average fall in basal metabolic rate during this period was also similar to that obtained by the use of iodine in comparable severe cases. Only one opportunity arose for trying the effect of di-iodotyrosine in a case where iodine had failed to produce a remission The fact that such failures are rare speaks well for the value of iodine In this case the patient's pulse-rate failed to settle and the basal metabolic rate fell only 5% (+ 65% to + 60%) after a fortnight's treatment with Lugol's iodine, ℳ 10 t d s A further ten days' treatment with di-iodotyrosine (2 tablets daily) also failed to produce any improvement or stabilisation of the pulse-rate Preliminary arterial ligation in this case was followed by successful subtotal thyroidectomy in two stages

Iodine is almost universally successful in producing a satisfactory preoperative state in Graves's disease, and although di-iodotyrosine produced similar effects in the more severe cases of this series its results showed no definite advantage, either in degree or rapidity of action, over those obtainable with iodine alone There seems, therefore, to be no justification for recommending the routine use of the more expensive preparation In the rare cases where iodine fails to improve the patient's condition further work is needed to determine whether or not di-iodotyrosine will succeed

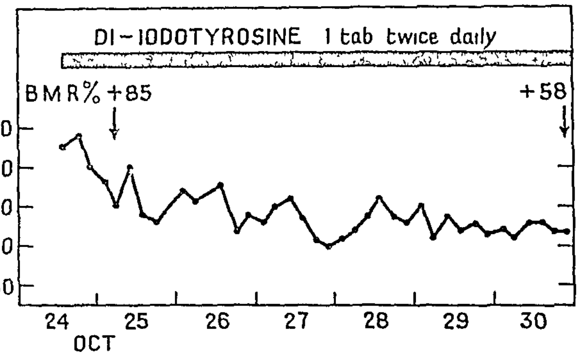


FIG 2—Four hourly pulse chart of woman, aged 42, with primary Graves's disease previously treated with Lugol's iodine continuously for six months Remission obtained with di iodotyrosine

After prolonged administration of iodine—One of the dangers of the beneficial effects of iodine in Graves's disease is that its use may be misdirected Since the maximal effect of iodine can be produced once only, many writers have advocated that it should not be used in the routine medical treatment of Graves's disease but reserved as a preoperative measure This is undoubtedly the correct attitude, for if the patient should ultimately come to operation the maximal effect of iodine would not be available at that stage and consequently the operative risk would be greater In spite of this teaching, however, it is only too common to have patients with Graves's disease referred to the consultant after the practitioner has been prescribing Lugol's iodine over a considerable period When the case is one for surgery this state of affairs gives rise to considerable misgiving The usual course taken is to omit the iodine for some time and to give it again for about ten days prior to operation, in the hope of producing some improvement in the degree of hyperthyroidism and of making the patient fit for surgery This is not entirely satisfactory for an adequate remission does not always occur A trial was therefore made of di-iodotyrosine as a preoperative drug in such cases During the period of this investigation there were 6 cases in which iodine had been taken regularly for from 4 to 7 months In all cases success was obtained with di-iodotyrosine, typical pulse-chart is shown in fig 2 Subtotal thy ectomy in one stage was performed in 3 of the cases the remaining 3 being subjected to a two-stage operation There were no deaths among these patients There of course no proof that by stopping the iodine for a time and then instituting a further course a similar satisfactory state of affairs would not have obtained, but the uniform success with di-iodotyrosine suggests that there may be a real use for the drug in this type of case At the same time the indiscriminate use of iodine in the medical treatment of Graves's disease is to be deprecated most strongly

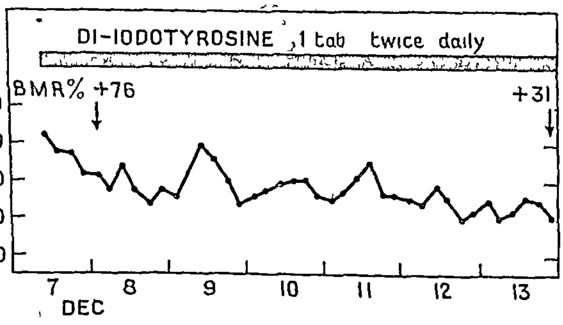


FIG 3—Four hourly pulse chart of man, aged 29, with primary Graves's disease, showing first remission produced with di iodotyrosine

Second courses of di-iodotyrosine—It is claimed for di-iodotyrosine that, if a remission has been obtained at a time when circumstances are unsuitable for surgical intervention, treatment can be stopped and then resumed at a later date when circumstances are more favourable There has been little opportunity to test this claim, but in 2 cases in which it was tried a successful second remission was obtained, allowing safe surgery to be performed in both cases The charts of one of these cases are shown in figs 3 and 4 If this finding can be substantiated it shows a definite advantage for di-iodotyrosine over iodine

Use over long periods—The use of iodine over long periods in the medical treatment of Graves's disease has been condemned It is claimed for di-iodotyrosine that such treatment is possible without harm to the patient, and that if surgery is required later further remission can be obtained by a combination of rest, sedatives and a further course of di-iodotyrosine or even iodine This claim is the chief recommendation for the use of di-iodotyrosine in the medical treatment of Graves's disease but I have made no attempt to investigate the pur medical treatment of the disease All the patients wh have come under survey have been those for whom surgery has been deemed advisable From the surgica point of view, however, there is a group of cases in which this claimed advantage of di-iodotyrosine might be useful Patients with Graves's disease often have to wait 6-9 months before they can be admitted to hospital fo surgical treatment In such patients the economi factor looms large and the ideal life of rest and freedom from domestic worries is far from attainable A drug which would keep the hyperthyroidism under contro during this waiting period and still allow of safe surgery at the end would be of great use It has so far only been possible to begin the investigations on this point A group of 12 outpatients have been treated in this way The regime adopted was to prescribe ½–2 tablets of di-iodotyrosine daily for three weeks according to the severity of the disease, then to omit the drug for a week repeating this cycle as often as necessary All 12 patients, when seen in the outpatient department, felt better for the drug and their pulse-rates showed a fall on successive visits In the 3 patients who were admitted to hospital during the progress of this investigation a satisfactory preoperative state was obtained by a further course of iodine (2 cases) or di-iodotyrosine (1 case) Subtotal thyroidectomy in one stage was safely performed in all 3 patients

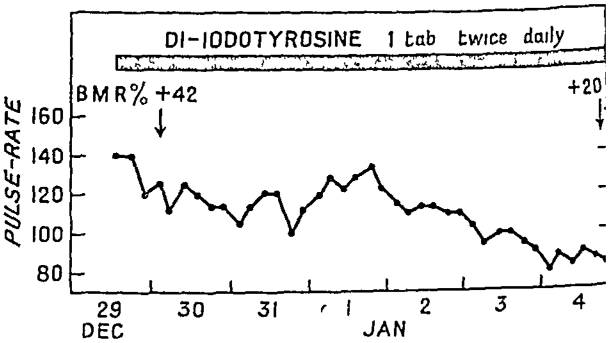


FIG 4—Four hourly pulse chart of the same patient as in fig 3 showing second remission produced with a further course o di iodotyrosine 16 days after conclusion of the first

Secondary effects—The administration of iodine to ne patients produces the syndrome of iodism, marked noises in the head, nasal catarrh and a rash The h is at first papular, later pustular, irritating and incon- nient, and as it often develops on the neck the opera- n field is involved Operation may have to be post- ned on account of it, so that the optimum period is ssed In 46 cases treated with iodine the only idence of iodism was a rash in 3 patients In all of ese potassium bromide had been administered as a dative concurrently with iodine Slesinger (1937) has inted out the undesirability of this combination In s experience rashes are much more common when romides are taken together with iodine, and he recom- ends Luminal as the best sedative for patients with raves's disease, to the complete exclusion of bromides n 31 cases given di-iodotyrosine there were no side ffects at all One patient was noticed to have a rash n the trunk several days after operation while still taking i-iodotyrosine, but this was diagnosed by a dermatolo- ist as pityriasis rosea No symptoms of iodism arose nd no iodine rashes were noted, even in cases to which romides had been given

CONCLUSIONS

Further work is required before the claimed advan- ages of di-iodotyrosine over iodine in Graves's disease an be accepted as fully substantiated It is hoped hat this paper will stimulate such work at other clinics Of the 70 cases of Graves's disease here studied 61 were perated on, and in most subtotal thyroidectomy was performed in one stage, a two-stage operation was per- formed in 6 cases on account of conditions arising during the first operation, in 2 cases only was preliminary arterial ligation considered necessary There was only 1 death in this series, postoperative pulmonary collapse leading to a fatal bronchopneumonia in one of the patients treated preoperatively with iodine There was no serious thyrotoxic crisis With such a satisfactory series it becomes even more difficult to assess the value of one method of treatment over another

SUMMARY

In previously untreated cases of Graves's disease, the use of di-iodotyrosine as a preoperative measure was restricted to the most severe cases In these it appeared to be entirely satisfactory, but showed no decided superiority over inorganic iodine

In patients who had had long courses of iodine before being referred to the surgeon, di-iodotyrosine produced remissions of sufficient degree to allow of safe surgery In this type of case the drug seems to produce better effects than can regularly be expected from iodine alone

In 2 cases a further remission was produced with a second course of di-iodotyrosine, but these figures are too small to allow of any definite conclusion

It seems to be possible to control the symptoms of hyperthyroidism by giving di-iodotyrosine periodically to patients awaiting operation, and still to get the patient into a good state for surgery when the time arrives In hospital practice the drug may be very useful in this way, and further work may prove it of value in the routine medical treatment of Graves's disease

No symptoms of iodism were produced by di-iodotyrosine

My thanks are due to Mr E G Slesinger and Mr Nils Eckhoff for allowing me access to their cases and for their encouragement and advice I am also indebted to Roche Products Ltd for providing the di iodotyrosine used in the investigation

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DIABETES MELLITUS IN ADDISON'S DISEASE

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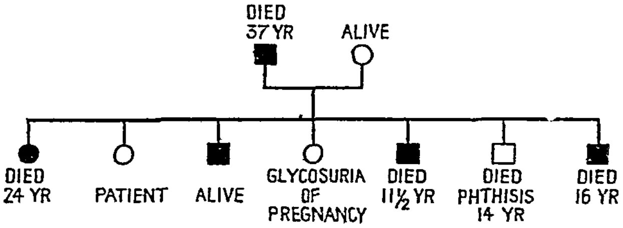
THE blood-sugar in Addison's disease is usually normal or occasionally subnormal (Kepler and Wilder 1938) and the occurrence of diabetes mellitus in association with Addison's disease is extremely rare Of 14 reported cases doubt has been cast on the diagnosis of 5 (Arnett 1927)

In 1926 Unverricht reported a case of diabetes and tuberculosis which later developed Addison's disease Arnett (1927) recorded the first well documented case of diabetes mellitus and Addison's disease A brief reference was made by Allen (1930) to 2 such cases seen at the Mayo Clinic, and another was reported by Gowen (1932) The onset of diabetes mellitus during the course of Addison's disease was described by Levy Simpson (1932), and by Crooke and Russell (1935) Rogoff (1936) reported a unique case of Addison's disease resulting from bilateral adrenal denervation in an attempt to cure diabetes mellitus

More recently an excellent description of the coincidence of diabetes mellitus and Addison's disease has been given by Bloomfield (1939)

CASE-RECORD

A housewife, aged 32, was admitted to the Royal Infirmary on July 25, 1939, complaining of dyspnœa, severe weakness and loss of energy which had gradually increased during the previous six months In the summer of 1938 she had noticed that her skin was darkening and becoming brown At first she thought it was sunburn, but the colour deepened throughout the winter She had lost over a stone in weight, but at no time had she any gastro intestinal disturbance Menstruation had always been normal There was no history of any previous illness She had been married eight years and had a healthy daughter, six years old A strong hereditary tendency to diabetes mellitus is shown in the family tree



Family history of patient Squares male, circles female Diabetics shown in black.

The patient was small, thin and very asthenic She was edentulous and weighed 7 st 2 lb There was generalised dark brown pigmentation of her body, particularly of her face, neck, dorsal surfaces of the forearms and hands, and the front of the knees The buccal mucous membrane was also pigmented A soft systolic murmur was heard at the apex of the heart, but there was no cardiac enlargement The blood-pressure was 102/62 , pulse rate 88, weak but regular There were no abnormal features in the lungs, abdomen or nervous system and no lumbar tenderness was elicited Urine albumin faint trace , sugar and ketones nil , deposit contained epithelial cells Blood sedimentation rate (Cutler) 15 mm in 1 hour , sugar 100 mg per 100 c cm , non protein nitrogen 34 6 mg per 100 c cm , chlorides (NaCl) 421 mg per 100 c cm , hæmoglobin 60% , red cells 4,130,000 , colour index 0 73 , white cells 6600 (neutrophil polymorphs 64%, eosinophils 5%, monocytes 2%, lymphocytes 29%) The blood picture was that of a mild hypochromic anæmia Fractional test meal and histamine test meal revealed complete achlorhydria Electrocardiogram and radiograms of chest and abdomen were normal

A diagnosis of Addison's disease was made, and the patient was given 5 mg of D O C A intramuscularly three times a week and ascorbic acid 100 mg daily The anæmia was treated with ferr sulph exsicc gr 3 and acid hydrochlor dil ℳ 30 three times daily She improved considerably and said she felt more energetic and less easily tired At the outbreak of war she was discharged from hospital She attended the outpatient department for a weekly injection of 5 mg of

Lancet

D O C A and continued to take ascorbic acid daily As she did not gain in weight her daily salt intake was augmented with 15 g of sodium chloride in cachets Her improvement was maintained and her weight increased, but she complained of backache and failing vision

On the night of June 13, 1940, she was readmitted to hospital on account of increased asthenia and persistent vomiting She said she had been quite well until the recent spell of hot weather but had been unable to attend the out patient department for a fortnight She had lost weight and the pigmentation had become darker She had no diarrhœa and micturition was normal On admission she was extremely asthenic and markedly dehydrated She vomited frequently and her breath smelled strongly of acetone Blood pressure was 58/40, pulse rate 112, regular , respiration rate 24 , temperature 97 8° F Urine sugar + +, acetone +, no diacetic acid Within the first 24 hours she received 25 c cm of Eucortone and 5 mg of D O C A intramuscularly and a litre of 5% glucose saline by intravenous drip In addition she was given intramuscularly 100 mg of vitamin C By the second day the vomiting had ceased and the blood-pressure had risen to 90/58 Daily treatment with 10 c cm of eucortone was continued and on the third day she was able to take 15 mg NaCl daily in cachets On June 20 the non protein nitrogen was 28 6 mg , chlorides 430 mg , sugar 660 mg per 100 c cm Urine sugar + , acetone and diacetic acid + , albumin trace

In view of the hyperglycæmia and glycosuria she was given 10 units of insulin morning and evening Glucose tolerance test gave the following result 0 hr 460, ½ hr 480, 1 hr 575, 1½ hr 600, 2 hr 565 , the dose of insulin was therefore gradually raised to 38 units in the morning and 22 units in the evening On June 26 her general condition had greatly improved and 5 mg of D O C A thrice weekly was substituted for eucortone The blood pressure now varied between 85 and 88 systolic and 56 and 60 diastolic, and the serum sodium had risen from 235 to 332 mg per 100 c cm Several attacks of hypoglycæmia ensued as a result of insulin treatment and the dose had to be reduced repeatedly A further radiogram of the chest and abdomen showed no abnormality A piece of pigmented skin was removed for pathological examination The report stated " Sections of skin show an increase of melanin pigment in the basal layer of the epidermis, but no evidence of iron in appropriately stained section "

By Aug 26 she had gained 5 lb , did not complain of any weakness, and was able to walk about the ward There was no change in her pigmentation and she had no recurrence of vomiting Her blood pressure was now well maintained at 92–94 systolic and 60–70 diastolic, and her serum sodium was 340 mg At this time her noon blood sugar level was 72 mg on the dose of insulin 28/20, and though at times there was mild glycosuria there was no ketonuria She was discharged on that date with instructions to take insulin 28/20 and to continue D O C A and salt treatment

As a result of a mistake in the dose of insulin given at home she was readmitted in the night of Aug 27 in a severe state of hypoglycæmia, and despite treatment with adrenaline and intravenous glucose she died in convulsions

AUTOPSY FINDINGS

Suprarenals —Both greatly reduced and each weighed 1 9 g The cortical cells in each zone were entirely replaced by fibrous tissue, which formed a fibrous capsule round the medulla The resultant width of the cortex was only a small fraction of the normal Round the periphery of the medulla there were some foci of lymphocytic infiltration Within the medulla were areas of focal necrosis in which the cells were large, swollen and stained pink and contained dark brown pigment granules in their cytoplasm In addition there were large focal collections of lymphocytes, but there was no evidence of tuberculosis Certain parts of the medulla were almost completely fibrosed

Pancreas —Slightly smaller than normal but no macroscopic changes on section Many of the islets of Langerhans were completely replaced by fibrous tissue Many of those still present were remarkably reduced in size and showed various degrees of atrophy and fibrosis No evidence of an inflammatory reaction

Pituitary gland —The anterior lobe was engorged and contained a small chromophobe adenoma about 3 mm in diameter There was obvious retention of colloid in the acini which were well formed and lined by chromophobe cells There were a few basophil cells in the acini Many of the chromophobe cells were larger than normal There was less than the normal quota of eosinophils, while the basophils were conspicuou few All three types of cells, however, appeared to be som what degenerated In Mallory-stained sections many of granular cells took on both the acid and basic stain, so th it was impossible to recognise transitional stages of the t types The posterior lobe presented no abnormal features

Thyroid gland —Smaller than normal, firm and devoid colloid The acini were lined by tall columnar epithelium an the histological picture was indistinguishable from that o Graves's disease

Thymus gland weighed 17 5 g and showed a considerab amount of fibrosis and fatty infiltration The remainin lymphoid tissue was hyperplastic

Skin and vaginal epithelium showed increase of melan pigment in the basal layer

Liver —Normal in size but flabby and pale owing to som fatty infiltration No hæmochromatosis

Lungs —Terminal bronchopneumonia No apical scars

The other viscera showed no significant changes

DISCUSSION

On her first admission our diagnosis of Addison disease was fully confirmed by the therapeutic respon to D O C A There was no evidence to show that t carbohydrate metabolism was disturbed at this stage the blood-sugar was normal and there was no glycosur or ketonuria, although the urine was examined on occasions In view of her history we diagnosed acu adrenal insufficiency on her second admission could attribute the ketosis to vomiting, but the glycosu and strong familial incidence of diabetes mellitus su gested the onset of diabetes Since her grave conditi would not permit delay for further investigation decided to treat the adrenal insufficiency immediate Some days later, when a diabetic response to the gluco tolerance test was revealed, the possibility of diabe coma or hæmochromatosis with ketosis was reconsider Although vomiting and dehydration, hypotension and low serum-sodium level are factors common to both ac adrenal insufficiency and to diabetic coma, the drama response to treatment with cortical extract is more favour of the former condition Indeed insulin was administered until nine days later, by which time patient had improved considerably Biopsy of the s disposed of the possibility of hæmochromatosis a further confirmation is provided in the autopsy rep

It is interesting to note that while the majority of authenticated cases of diabetes and Addison's dise developed diabetes first, our patient, despite the str familial tendency, presented diabetes only after Addiso disease had been established over a year A feature several of the cases has been " insulin hypersensitivit which has arisen with doses as small as 5 units insu In our case a maximum of 60 units of insulin per day administered before the first hypoglycæmic react occurred It seems worthy of note that, althou Bloomfield and Unverricht, whom he quotes, dem strated a decreased need of insulin as Addison's dise developed in their diabetic patients, we found t successful treatment of the suprarenal insufficiency not increase the insulin requirement of our patient

Much attention has been focused on the relations between the anterior lobe of the pituitary and the ot endocrine glands Numerous observations (Hewer 19 Kraus 1927, Harrop and Weinstein 1932) have been ma on the diminution of the basophil cells of the anter lobe of the pituitary in Addison's disease, and Crooke a Russell (1935) have suggested that this might accou for the hypoglycæmia The evidence presented by case does not seem to bear out their hypothesis , inde one of their own cases (case 9) is at variance with th deduction

SUMMARY

A case of Addison's disease is described in the cou of which diabetes mellitus developed Autopsy reveal atrophy of the suprarenal glands and of the islets Langerhans The pathological changes suggest th there is no relationship between the number of basop cells in the anterior lobe of the pituitary and the blo sugar level

We wish to express our thanks to Dr A Gurney Yates permission to publish the case, and to Dr L C D Hermi for the pathological report

References at foot of opposite page

PAIN IN ACUTE APPENDICITIS

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"The symptoms in the order of their occurrence may be mentioned as first, pain in the abdomen, sudden and severe, ollowed by (second) nausea or vomiting, even within a few hours, most commonly between three and four hours after he onset of pain, third, general abdominal sensitiveness, most marked in the right side, or more particularly over the appendix, fourth, elevation of temperature, beginning from two to twenty four hours after the onset of pain The symptoms occur almost without exception in the above order and *when that order varies I always question the diagnosis* If the nausea and vomiting or temperature precede the pain I feel certain that the case is not one of appendicitis "—Murphy [1]

"The first symptom in an attack of acute appendicitis is pain It is always pain, and never sickness or vomiting, nor malaise nor any other symptom whatever If pain should not be the inaugural symptom, in a case of acute abdominal illness, the possibility of the appendix being at fault may definitely be excluded "—Moynihan [2]

THUS Moynihan echoes the cry of Murphy with an added note of dogmatism, and this opinion is endorsed by many surgeons with wide clinical experience Zachary Cope [3] discusses the importance of the order of symptoms, which he gives as (1) pain (2) nausea or vomiting, (3) tenderness in the iliac fossa, (4) fever, and (5) leucocytosis While admitting that exceptions occasionally occur, he concludes that "if fever precedes the onset of pain, if vomiting accompanies or precedes the first bout of pain, it is generally not appendicitis with which we are dealing"

Recently we were almost persuaded to delay surgery in a case of acute appendicitis because pain was not the first symptom Within a few weeks we came across two other cases which departed from Moynihan's rule It is the purpose of this paper to suggest that while the order of symptoms is of importance in the diagnosis of acute appendicitis it is dangerously misleading to suggest that pain always comes first

CASE-RECORDS

CASE 1—A male clerical worker, aged 32 Admitted to hospital at 4 15 P M. on Dec 10, 1940, complaining of nausea, vomiting, dizziness and abdominal pain Before this illness he had had occasional indigestion but no previous attack of abdominal pain At about 9 P M on the 8th he began to feel "bilious," experiencing nausea and a desire to vomit He was inclined to blame some fish which he had eaten a little while before Half an hour later he started shivering, nausea returned and he tried to vomit He then went to bed After this the pain began, in the centre of the abdomen During the night it shifted to the right iliac fossa, where it remained until his admission to hospital He vomited three times in all His bowels opened twice after taking castor oil on the day before admission. He was seen by his doctor 24 hours before admission, when he made a tentative diagnosis of gastro enteritis The decision to come to hospital was made by a medical relative who had become anxious at the delay

He was well built and well covered, with a healthy complexion His tongue was coated and his breath fœtid The abdomen moved freely on respiration, and there was no rigidity or guarding of the abdominal muscles There was definite tenderness in the right iliac fossa, especially towards the loin On rectal examination there seemed to be a tender mass high up on the right The other systems revealed no abnormality Temperature 97 8° F, pulse rate 80, respirations 20, blood-pressure 120/80 Retrocæcal appendicitis was diagnosed

Operation under gas, oxygen and ether McBurney muscle splitting incision On opening the abdomen no free fluid escaped The appendix was retrocæcal, adherent to the cæcum and posterior abdominal wall It was delivered with difficulty and removed base first, without inversion of the stump A generalised ooze necessitated leaving in a rubber drain down to the stump The wound was closed with interrupted catgut and silk-worm gut The appendix was thickened and intensely inflamed with a large gland in the meso-appendix On section it was found to be full of pus

The post-operative course was uneventful Discharged on the 13th day Wound and sinus firmly healed by the 20th day (Dec 30)

CASE 2—Female factory worker, aged 19 Admitted to hospital on Jan 13, 1941, complaining of vomiting and pain There was no history of any previous alimentary upset or abdominal pain In March, 1939, she had been treated for a mild anxiety state Although this was related to conditions of work in the factory, other factors were involved Mild psychological treatment was arranged and considerable improvement resulted She began to experience nausea and general malaise 48 hours before admission Soon after this she vomited several times Some hours later she began to complain of colicky but not severe abdominal pain Several hours before admission this became greatly intensified and generalised over the whole abdomen

The patient looked ill Her breathing was entirely thoracic The abdomen was tender and rigid all over The flanks were dull to percussion The diagnosis lay between strangulation of uterine adnexæ, ruptured ectopic gestation or perforation of a hollow viscus

Operation under gas, oxygen and ether Right lower paramedian incision On opening the abdomen a large quantity of free fluid escaped The intestine was covered with flakes of lymph The appendix, which was distended, inflamed and perforated, was removed The pelvis was drained through the lower end of the wound

For several days she ran a swinging temperature accompanied by tenderness in the flanks and signs of fluid in the chest These last persisted for several weeks but later subsided She was discharged on Feb 18 The wound had healed and the chest signs had almost cleared

CASE 3—Housewife, aged 60 Admitted to hospital at 9 10 P M on Feb 2, 1941, complaining of vomiting and abdominal pain There was no history of previous indigestion, but on close questioning after the operation she admitted that she had suffered from short mild attacks of upper abdominal pain She did not remember when the last one had been She had never vomited or experienced pain anywhere else in the abdomen She was quite well up to 36 hours before admission The first symptom was malaise, followed by fainting and vomiting She vomited three times and fainted four times She then went to bed and slept She began to have twinges of colicky pain in the upper abdomen 19 hours before admission, and 6 hours before admission this pain suddenly became very severe and centred around the umbilicus, 4 hours before admission it shifted to the right iliac fossa There was no further vomiting The bowels had opened after a dose of salts which were taken after the onset of pain There were no other symptoms

She was a pale, frail, coöperative woman in no obvious distress The tongue was coated The lower abdomen was moderately distended There was some tenderness in the right upper quadrant and obvious tenderness in the right iliac fossa, with persistent but slight muscular guarding in the right lower quadrant On rectal examination no mass could be felt, but there was tenderness high up on the right Auscultation of the chest revealed coarse rhonchi Blood-pressure 140/70, temperature 99° F, pulse rate 90, respirations 20 The remainder of the examination was negative The diagnosis made was probable acute appendicitis, ? carcinoma cæci

Operation under gas, oxygen and ether Right paramedian incision With the patient's muscles relaxed it was possible to feel a mass high up in the right side of the abdomen at the level of the umbilicus, it was about the size of a tangerine and freely mobile On opening the abdomen the mass was found to consist of omentum and gut surrounding the appendix On gentle separation of the inflamed appendix a small abscess was opened This contained a fæcolith which was lying against the under side of the terminal ileum An area

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[1] Murphy J B *Amer J med Sci* August 1904 p 4

[2] Moynihan B *Brit med J* 1911, 1 reprinted in Essays on Surgical Subjects Philadelphia 1921

[3] Early Diagnosis of the Abdomen Oxford 1940, p 65

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in the wall of the ileum was ulcerated and almost perforated The appendix was gangrenous and the fæcolith had obviously come from a perforation at its base The appendix was removed, without inversion A drain was left in down to the region of the ulcerated ileum and brought out through a stab wound in the right iliac fossa

The postoperative course was complicated only by a small subcutaneous abscess in the upper part of the wound

On naked-eye examination of the appendices removed, those from cases 2 and 3 showed definite obstruction to the lumen with perforation In case 1 no localised organic constriction was demonstrable although the appendix was distended with pus

DISCUSSION

In case 1 nausea and shivering preceded the onset of abdominal pain by several hours This story, added to the patient's conviction that fish had upset him, probably encouraged his doctor to make the diagnosis of gastro-enteritis In view of the use of castor oil in early cases of gastro-enteritis, this point of differential diagnosis is extremely important At a later stage the absence of abdominal spasm, by no means unusual in retrocæcal appendicitis, even when well advanced, might have led to the institution of expectant treatment In case 2 the onset of pain was preceded by several hours of nausea, general malaise and vomiting There was no history of any previous attack Questioned after recovery, the patient seemed to be a reliable witness and the original story was confirmed The history of a mild anxiety state may or may not be relevant , psychoneurotics sometimes have a high threshold to the pain of an acute unfamiliar pathological process In case 3 pain was preceded by 17 hours of malaise, fainting and vomitin and it seems unlikely that perforation, abscess formation and ulceration of the ileum all took place in the tim which elapsed after localisation of the pain in the ili fossa—i e , 4 hours The appearances at operation wer more compatible with the 36-hour story

In only one of these three cases was there any histor of previous indigestion, and only in case 3 was there history of previous attacks of abdominal pain This i significant because many have maintained that recurren attacks of appendicitis are likely to be atypical and tha therefore the order of origin of symptoms as describe by Murphy is only of value in first attacks Neith Murphy nor Moynihan make any such differentiation

All three patients were carefully questioned aft recovery, and all insisted that pain was not their fir symptom In case 2, laparotomy was clearly indicate whatever the diagnosis Cases 2 and 3, however, cou justifiably have been treated conservatively if appendi itis could have been excluded This we believe to the danger of a too rigid acceptance of the Murph Moynihan dicta

SUMMARY

In 3 cases of acute appendicitis here described pa was not the first symptom, and it is concluded that t dictum that pain is always the first symptom is misleadi and may lead to dangerous delay in operation

We have to thank Mr A K Henry for his interest a advice, Mr Douglas for permission to make use of t particulars of case 2, and Dr Allon Daley, chief medi officer of the L C C for permission to publish the three cas all of which were treated in Hammersmith Hospital

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Reviews of Books

Abdominal Operations

By Rodney Maingot, F R C S , senior surgeon to the Southend General Hospital and the Royal Waterloo Hospital London D Appleton Century Company 2 vols Pp 1385 £5

This book is planned on the same lines as Moynihan's well-known volume It is a comprehensive work dealing not only with the general surgery of the abdomen but with such rare procedures as partial pancreatectomy, and for these valuable references to the original sources of information are given Every aspect of abdominal surgery is included—the preparation for operation, the advisability of operation, the difficulties of the actual task, the details of each stage, the after-treatment, the likelihood of success, the complications which may arise, and the causes of failure—so that the book is both a guide to the actual operation and a thoroughly useful work of reference to novice and experienced surgeon alike When there are several methods to choose from one is always wisely labelled as the standard operation There are very few omissions, none of generally recognised procedures , those few which can be noted seem to have been made deliberately as the result of Mr Maingot's experience In the account of the abdomino-perineal resection of the rectum the pathology insisted upon by Miles is accepted without reserve, and the operation made needlessly extensive in consequence It is generally agreed now that in the stage of resectability there is no lateral and downward spread of the malignant growth But it seems hardly necessary to have included accounts of cholecystogastrostomy, or of simple excision for gastric ulcer, since these procedures, condemned by the results, are no longer employed The illustrations are extremely well drawn and reproduced, and have the welcome quality of depicting clearly the meaning of the text

An Agricultural Policy for Britain

and a Policy for British Agriculture By G Goddard Watts London G Allen and Unwin Pp 38 1*s*

This well-written booklet is calculated to hold the attention of the reader whether he is agriculturally minded or not In this it fulfils one of its main objects, which is to educate public and political opinion in the importance of preserving a thriving agricultural community after the war , and it demonstrates to farmers that they can win over the townsman by dispelling t view that all farmers are grumbling inefficients who a never satisfied with their lot, however much the Gover ment may do for them The author has many sensi suggestions to make on the maintenance of soil fertili He examines the changes which have taken place agriculture since war broke out, and pleads that t extended use of the plough is a thing worth keeping when peace comes He has the same hope about so of the improved marketing and educational syste which have recently been adopted It would hardly possible to get unanimity on such a controversial s ject as a policy for agriculture , it is evident that so of Mr Watts's arguments are open to criticism a would not meet with approval from some agricultu economists Occasionally he makes claims which would be hard to substantiate, such as " It is a tradit that three generations away from the soil will exha the vitality of the family and that for re-vitalisati that family must leave its urban surroundings a re-establish itself in rural life " But if he is somewh opinionated, he has clearly had wide experience in bo educational and farming circles, and is entitled to expr definite views

Office Clinical Chemistry

By Emanuel M Abrahamson, M D , adjunct attendi physician, Jewish Hospital of Brooklyn , assista attending physician and chief of the diabetic clin Greenpoint Hospital London Humphrey Milfo Oxford University Press Pp 245 25*s*

As its title suggests this book is primarily for the u of practitioners who wish to carry out their ow investigations in clinical chemistry It is compact a simple enough for the beginner to follow easily, but nevertheless comprehensive and successfully covers mo of the standard tests Dr Abrahamson introduces tw ideas which the unpractised reader will find particular helpful one is the presentation of methods of analysi step by step, in illustrated form , the other is a chapt devoted entirely to the preparation of each reage mentioned throughout the book Many of the we known methods have been modified by the author fro his own experience The changes are all towar simplification of technique and economy in the use apparatus The field to be covered is so wide that the are bound to be some omissions—for example, there is mention of fæcal analysis Nevertheless the book will a stand-by to doctors interested in clinical chemistry

THE LANCET

LONDON SATURDAY, JULY 12, 1941

PREMARITAL AND PRENATAL TESTS

Legislation in the United States requiring comulsory examination to exclude venereal disease in andidates for marriage and expectant mothers has ivided American doctors into heatedly opposed amps Oddly enough it is the experts who are the main opponents of state interference They point out that legislation has put too much reliance on blood-tests, for many patients with positive reactions may be congenital syphilitics or have passed into the non-contagious state They cast doubts on the hundred-per-cent reliability of any particular test or combination of tests, and suggest that healthy people may be thus penalised They hint that the mere suggestion of compulsion may drive treatment underground They talk of hasty legislation, the liberty of the subject and professional secrecy On the other hand, public-health authorities have pointed out that any case of unsuspected syphilis discovered and treated is a gain to the nation, and theoretical objections should therefore take second place The statistics are difficult to interpret and liable to gross error, since only positive reactions and not proved cases of syphilis can be shown, and the number of infectious cases is not indicated But certain facts do emerge[1] Out of nearly 680,000 examinations during the years 1936–40 in thirteen states, 9000 were positive, a proportion of 1 3% At first a large percentage of those found to give a positive reaction were not aware of their syphilitic taint, and it became noticeable that the proportion of positives diminished yearly with the increased awareness of the implications of the tests, suggesting that those suspecting they might give a positive reaction avoided examination In West Virginia, for example, during the first six months after legislation became operative there were 4 2% positives in 1600 cases, whereas in the next twelve months the percentage dropped to 2 4 Opponents of legislation seized on these figures eagerly To the credit of legislation, it was found in New Jersey that of 206 candidates for marriage who gave positive reactions and were refused certificates 71 gave up marriage, 18 married outside the state, and 135 were found three months later to be undergoing treatment for the condition Prenatal tests are carried out in nineteen states under varying conditions which De Porte summarises on another page, the responsibility resting in some on the medical attendant, in others on the patient There are no penalties for non-compliance, the requirements as to time and manner vary considerably, and no figures are likely to be available for years as to the preventive results gained It is, however, a very important experiment if carried out with any thoroughness, for syphilis in women is much more serious for the next generation than syphilis in men A man treated adequately is almost certainly not a transmitter A woman treated adequately and giving a negative blood reaction is still capable of transmitting the disease to the next generation unless treated again during each succeeding pregnancy Syphilologists are probably inclined to take too rigid a scientific view of compulsory examinations owing to their preoccupation with the individual, public-health authorities are inclined to ignore the psychological reactions of individuals There is much to be said on both sides But the public conscience is slowly awakening to the less obvious perils of venereal disease, and it is unlikely that attempts to remedy known perils by legislation will diminish These experiments by individual American states are likely to become more and more elaborate, and we in this country will watch them with the keenest sympathy

RASPBERRY-LEAF TEA

Infusions have always found an honoured place in the pharmacopœia of the lay public, and across the Channel there is a *tisanerie* attached to hospital dispensaries where leaves and flowers are made into pleasant drinks. Herbal teas are legion, and include such favourites as elder, camomile, peppermint and dandelion, the selection depending mainly on the flora of the district In general, the physician grudgingly ascribes whatever pharmacological actions herb teas possess to their contained volatile oils, and their curative action, if any, to the water The beneficial effects of the treatment are held by herbalists to be directly proportional to the volume of fluid consumed, and the unbeliever urges that when allowance is made for the salutary effects of intermittent douching of the stomach, and for the dietetic restrictions which usually accompany this form of therapy, there is little need to claim special virtue for the vegetable basis Moreover, the patient is likely to benefit from the holiday he must allow himself in order to cope with the resulting diuresis But doctors have been too much inclined to sit in the seat of the scornful Instances are not lacking to show that the old wife's tale may have a germ of truth in it William Withering did not disdain to take an interest in the medical folklore of the midlands, and out of the crudities of the unsophisticated he fashioned one of the masterpieces of medical literature The case of ergot is on a different plane, but the same principle is apparent For many years practitioners continued to use the liquid extract of ergot in childbirth and as a preventive against postpartum hæmorrhage, despite the assertions of pharmacologists that the preparation must be inert because it contained little or no ergotoxine The subsequent isolation of a new alkaloid, ergometrine, vindicated the practical obstetrician In our columns last week Prof J H Burn and Mr E R Withell described a substance in raspberry leaves which relaxes uterine muscle This paper is obviously merely a beginning of the research which will follow on the pharmacology and therapeutics of the active principles of *Rubus idæus* Controlled observations on the human subject will be necessary before we can say whether raspberry leaf does in fact make parturition "easy and speedy," as the herbalists maintain The findings of Burn and Withell justify thorough clinical trial If raspberry leaf, which apparently causes relaxation of plain muscle, proves to be effective in shortening labour, we shall be faced with the paradox of an ecbolic action in a drug which diminishes uterine tone Much depends on whether

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[1] See Sheppe, W M *J Amer med Ass* 1941, 116, 2006

it has a relatively stronger action on the lower than the upper uterine segment It seems possible that the popular claims on behalf of raspberry leaves are only partly justified, the mother of a large family is apt to remember her labours as either "difficult" or "easy," by which she means painful or not painful, rather than in terms of their length This work opens up the whole question of the obstetric use of drugs which relax involuntary muscle Thus, if the active principle of raspberry leaves is in fact therapeutically valuable by virtue of its power to cause muscular relaxation, other drugs having the same pharmacological action may prove to be even more effective, and it might be useful to study the effects of the slowly acting nitrites, the Trasentin group of compounds and even the almost forgotten essential oils

NON-INFECTIVE LEUCOCYTOSIS

WE all know that polymorphonuclear leucocytosis accompanies many infections, but the fact that it occurs in other states is less familiar These non-infective leucocytoses are characteristically short-lived and before dealing with them the question of daily variation must be mentioned Opinion now inclines to the view of HARVEY and HAMILTON,[1] that although there are daily variations they are insufficient to upset the usefulness of the ordinary leucocyte count SHAW[2] has shown that there is a definite diurnal leucocytic "tide," setting towards a flood in the afternoon or evening and an ebb in the early morning, there are other small oscillations but they are unimportant One of the earliest observations on the leucocyte count was the rise after food—the digestive leucocytosis—but the afternoon tide, which occurs whether food is taken or not, probably accounts for most of this Transitory leucocytoses have been described after experimental meals, especially if unusually hot or cold or irritant, but the cause here is hardly digestive, and individual variation is considerable Exercise causes rapid leucocyte variations Short bouts of severe exercise, or prolonged efforts like Marathon races, may increase the polymorphonuclears as much as 300% and the count may not return to resting level for some hours afterwards MEDLAR[3] has found, however, that mild ordinary exercise does not cause variations outside the normal range, so that it is unnecessary, for example, to rest a patient for half an hour before taking a leucocyte count because he has walked up a flight of stairs Epileptic convulsions may be followed by counts of 40,000 cells per c mm, mostly polymorphonuclears A curious leucocytosis is that which may accompany emotion, and WITTKOWER[4] was able to induce it by suggesting joy, sorrow or rage to hypnotised patients even when the patient remained quite still COHEN and WARREN[5] induced artificial fever in relatively normal patients for periods of 4–21 hours, this was accompanied by a definite polymorphonuclear leucocytosis that declined rapidly when the fever was allowed to subside The fact that adrenaline causes a leucocytosis might provide a partial explanation of these changes The leucocytosis produced by adrenaline is less exclusively polymorphonuclear than in exercise and was thought to be due to contraction of the sp expelling cells into the blood-stream, but furth experiment in man and animals showed that leucocytosis appeared just the same when the sp had been removed The exceptional rise in ly cytes has been traced to an increased flow of lym and possibly to contraction of lymph-glands

GARREY and BRYAN[6] came to the conclusion th the common factor linking these various causes leucocytosis was that they all involved changes the distribution of leucocytes among the tissu There is now a good deal of evidence to show th leucocytes collect in the capillary blood vess especially those of the lungs and liver and to a l extent the spleen Here they may lie in the marg of the blood-stream and remain to all intents out the circulation, this mechanism, when exaggerat has been shown to account for the leucopenia allergic and allied states[7] The granulocyte form tissue of the bone-marrow plays no part immature cells do not appear in the blood—grad replenishment rather than quick mobilisation is function of the marrow Exactly what calls leucocytes from their resting-place in the capilla and to what site of action they are hurry is not yet clear and it is hard to deduce answers from studies of changes in the blood str alone

Perhaps the most important, from the pract point of view, of these non-infective leucocytose that which accompanies labour and is prolonged some days into the puerperium It has been kn for nearly 90 years, and WOLFF,[8] in a re re-examination points out that it follows a def pattern, the rate of increase of the leucocytes b related to the uterine contractions, and the prog of labour, reaching a maximum at delivery leucocytosis is greater in primiparæ than multip Counts of 20,000 per c mm are common and u 40,000 have been recorded, but after about a week count returns to normal The practical importa of this leucocytosis, as GIBSON[9] has remarked, is in the puerperium single white-cell counts show a high number of polymorphonuclear cells do indicate infection The count must be repeated if it is rising or maintained infection should be loo for, but if it is falling a high count may wel physiological WOLFF attributes this leucocyt of labour to the uterine contractions, but other fac must also be considered Labour involves cont tion of voluntary as well as smooth muscle, t must be considerable circulatory readjustments, emotional changes are surely present As we l seen, all of these can cause leucocytosis, but transient leucocytosis limited to their period of act whereas the leucocytosis of labour is continued the puerperium and takes days to subside GIB therefore suggested that the hormonal changes kn to be prominent in pregnancy and after labour affect the leucocytes and are at least partly res sible Support for this view is given by the occasi presence of immature granulocytes, the slight le cytosis of pregnancy, and the fact that the b marrow shows hypertrophy of the granuloc ing tissue during pregnancy[10] All observers have d that when uterine contraction is weak the rise hite cells is slow, and if uterine inertia develops leucocyte level rises no further There is thus ence that the leucocytosis of labour is related to other non-infective leucocytoses we have men-ied, but it stands in a class by itself as being partly to redistribution and partly due to true increased mation of leucocytes in the bone-marrow

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[1] Harvey W F and Hamilton, T D *Edinb med J* 1934, 41, 465
[2] Shaw, A F B *J Path Bact* 1927, 30 1
[3] Medlar, E J *Arch intern Med* 1936, 57 367
[4] Wittkower, E *Klin Wschr* 1929 8, 1082
[5] Cohen, P and Warren, S L *J clin Invest* 1935, 14 423
[6] Garrey W F and Bryan W R *Physiol Rev* 1935 15,
[7] *Lancet*, April 5 1941 p 451
[8] Wolff J R *Amer J Obstet Gynec* April, 1941, p 611
[9] Gibson, A *J Obstet Gynæc* 1937 44 500

THE WATCH ON THE THAMES

THE last war gave London chlorinated water It worth looking back to that time, for the advances ide then have served us well for more than twenty-e years At one time it was suggested that ondon should get its water from the mountains of ales, following the example of Liverpool and rmingham, and of Manchester watered from airlmere, and Glasgow from Loch Katrine But orrowed water for the population of London would ave been no small draft on the resources tapped , nd it was decided more fairly that London should rink from the Thames and the Lee, from its own eep borings into the chalk, and from those streams nd springs of Essex which were led together as nother river, the New River Undoubtedly a pure ource is best, but if this is not available the aim must e to make a polluted supply safe and 80% of the ondon water-supply is derived from rivers either irectly or indirectly polluted with sewage and likely to become still further polluted with the increase of population In 1916 London was drinking river water purified by standing in huge reservoirs and then passing through filter beds The raw waters of the Thames and Lee contained coliform bacilli in undesirable numbers, but fæcal streptococci were rarely found and pathogenic bacteria were so few that there was no chance of them surviving the sequence of storage and filtration which removed 98% of suspended bacteria The method was thus perfectly satisfactory , but the war was in progress and the price of coal rising To pump 70–80 million gallons of raw Thames water daily into reservoirs was not only costly but was using coal needed for other national ends The Metropolitan Water Board was faced with a problem and an opportunity , HOUSTON rose to the occasion and boldly experimented with large-scale chlorination He proved that by adding chloride of lime (bleaching powder) to river water it was possible, without providing for settling, to obtain water as bacteriologically pure as that stored in Staines reservoir During the summer of 1916, the 75 million gallons were treated in this way The cost of introducing 0 5 part of available chlorine into 1 million parts of water was 3*s* , compared with the 13*s* which was the cost of coal to pump the same amount of water into reservoirs , this meant a saving of £260 a week Since that time London has drunk chlorinated water and liked it

In this war the board has faced and overcome the problems of mains damaged by high explosive and has shown how mobile chlorinators could be used to deal with local contamination The amount of chlorine needed was as much as 10 parts per million, but the results were effective and there has been no epidemic of the enteric group of fevers in London during the past winter The Londoner in fact feels so safe about the purity of his water, whatever he may feel about his milk or his beer, that he is quite content to leave it to the Metropolitan Water Board, asking no questions But there are very good reasons now why all the health authorities in the area should be water-conscious and prepared not only to meet but to forestall any alarms and excursions that may await us For this reason Lieut -Colonel E F W MACKENZIE, director of water examination, has asked the board to arrange for a consultative medical committee to be set up to bring about a closer liaison between himself and the medical profession, and to advise on matters of broad policy The committee, which will have Lord HORDER as chairman, will include representatives of the London School of Hygiene, the local branches of the Society of M O H 's, the Royal Sanitary Institute, and the medical profession in London The committee is appointed in the first instance for the war period, but we may hope that such cooperation will survive into the peace

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Annotations

NATIONAL WHEATMEAL

A NOTICEABLE feature of public announcements by the Government during this war is their advisory as distinct from compulsory nature If it is desirable that people *should use less of some commodity they are asked not* commanded, to dispense with it Only in the last resort is compulsion used, and then only if there is a reasonable prospect of obtaining more that way than by the continued application of gentle persuasiveness A time does come however, when in the common interest it may be advisable to compel the slack and the listless to come into line with good citizens That point has not yet been reached in the campaign against diphtheria, but the Ministry of Health may well feel they are in a stronger position as custodian of the nation s nutrition Lately the Ministry in circular 2407 has called the attention of hospitals to the " desirability on nutritional grounds of making available to patients and staffs within the Emergency Hospital Scheme and to inmates and staffs *of any other residential institution under the control of* local authorities, bread made of national wheatmeal flour " The circular goes on " The Minister has been in consultation with the Minister of Food on this matter and he is advised that national wheatmeal flour is now available to bakers " We all know that the national wheatmeal is advisable on grounds of saving shipping space and of the welcome increases it would bring of our intakes of the vitamin-B complex, vitamin E and iron Its only drawback is its inhibiting effect on calcium intake, which can be remedied by adding calcium carbonate, though, as Kent Jones pointed out in our columns,[1] there may be some technical difficulties to be overcome there Whatever the Minister of Health is advised, however, any member of the public could tell him that there has been some stop somewhere in the supply of national wheatmeal flour Whether the obstruction lies with the milling industry, the master bakers or the public there is no doubt that in many places wheatmeal flour is not " available " , the stuff is not there Is it not time for the Minister to see that it is ?

HETEROGENOUS GRAFTS

AT one time it was thought that the difficulties of replacing damaged tissues by grafts from another person or animal were simply ones of technique and that as soon as a circulation could be established between the implanted tissue and the host heterogenous grafting

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Pitts, H H and Packham, E A *Arch intern Med* 1939, 64, 471

[1] *Lancet*, June 7, p 731

would become a practical procedure But the work of Loeb,[1] Little and Johnson,[2] Bittner,[3] and Gorer[4] has made it clear that the main obstacle in the way of obtaining persistent grafts is genetic incompatibility between donor and host which results in an antibody response on the part of the host, it is this reaction that is responsible for the destruction of the graft The number of antigenic factors that may work in this way is very large, and when an attempt is made to graft tissues within a genetically heterogenous population it is like giving a blood transfusion if there were some thousands of groups instead of four Soviet experiments have lately given a new impetus to this work Filatov[5] has claimed great success with grafts of cornea, and it is possible that a really persistent graft may be obtained in some cases The substances released during the destruction of the graft may, however, have a strong stimulative effect on tissue regeneration, and Miagev and Tushinov have given evidence to support the idea that so far as endocrine organs are concerned this stimulant effect may act more or less specifically on a depressed or undeveloped gland The fact that replacement of a limb by transplantation is not impossible from a purely surgical point of view has been shown by Shwind in America and by Lapchinski,[6] a pupil of Filatov, both of whom worked with rats Lapchinski obtained some striking results with grafts between young litter mates, but although he did not use pure lines of rats it must be borne in mind that laboratory animals are much more inbred than any civilised human community, the odds against obtaining a really successful graft in human surgical practice are very great indeed

TRANSMISSION OF ANTIBODIES FROM MOTHER TO CHILD

THE infant acquires antibodies from its mother either during intra-uterine life through the placenta or after birth through the colostrum, and the relative importance of these two routes in different species of animals varies according to the number of layers of tissue interposed in the placenta between the maternal and fœtal circulation Mason, Dalling and Gordon[7] summarise the facts as follows —

Species	Layers between maternal and fœtal circ	Importance of—	
		placenta	colostrum
Pig	5	–	+ + +
Ruminants	4	–	+ + +
Carnivores	2	+ –	+
Rodents, apes, man	1	+ + +	+ –

In man, therefore, the colostrum plays a minor rôle in transmission, and according to Kuttner and Ratner[8] its ingestion does not increase the antibody content of the blood stream in the human infant at all Lately Liebling, Youmans and Schmitz[9] of Chicago have studied the occurrence of diphtheria antitoxin in the human pregnant mother, newborn infant and the placenta In 11 non-immunised, Schick positive mothers no change was found in the antitoxin titre of the serum during the course of pregnancy, and they gave birth to infants who were Schick positive and whose anti level was as a rule equal to that of the mother On other hand, 17 non-immunised, Schick negative (or some instances "partial positive") mothers all rise in the antitoxin content during pregnancy, the in titre may be attributed to the small amount of in the Schick dose acting as a "secondary stimulus" immune or potentially immune people[10] The antitoxin level of the infants of this group was always higher th the preliminary antitoxin level of the mothers In 1 non-immunised, non-Schick-tested mothers there was rise in antitoxin titre during pregnancy From the observations it is clear that when the mother posse natural antitoxin its transfer through the placenta wi provide her newborn infant with a temporary pas immunity Further, the mere Schick testing of th pregnant mother possessing natural antitoxin will usuall act as a stimulus to increased antitoxin production and may provide a greater and more prolonged protection to the infant after birth In another series of experiment made by Liebling and his colleagues, 14 Schick positive and 20 Schick-negative (or partial positive) expectant mothers were actively immunised with diphtheria toxoid and almost all of them showed a satisfactory response in the formation of antitoxin Most of the infants born to these actively immunised women gave negative Schick tests and had an antitoxin titre equal to that of their mothers at term It is thought that the transfer of an enhanced titre from an actively immunised mother to her infant will provide a more lasting passive immunity in the newborn, but the Chicago workers are uncertain whether they have succeeded in the active immunisation of the fœtus in utero by actively immunising the pregnant mother, they hope to learn more about this question by following the antitoxin titres of the infants for one or two years Finally they estimated the antitoxin in placental extracts (prepared by McKhann's method) of 8 non immunised Schick-positive, 13 non-immunised Schick negative, 13 immunised Schick-positive, and 16 immunised Schick-negative mothers Very little diphtheria antitoxin was detected in any of these titrations and what there was could usually be accounted for by the retention in each placenta of a small amount of fœtal and maternal blood They therefore suggest that the protective value of the placental extracts now used extensively in the prophylaxis of measles, may depen merely on the residual placental blood, which, a McKhann[11] directs, must not be removed from th placentas before extraction Liebling and his colleague apparently did not encounter the well-recognised ski insusceptibility of infants to various toxins to whic attention has been directed by Okell[12] and others, an which leads to serious discrepancies between the result of skin tests and the presence of antitoxin in the blood in children under six months

Most of the evidence for the placental transmission of antibodies has been obtained from the study of diphtheria and scarlet fever antitoxins in man, but all other antitoxins and protective substances (e g, whooping cough antibodies) are probably also transferred by this route More work needs to be done in man and animals on the duration of passive immunity, maternally conferred and thus of homologous type Experiments on guineapigs indicate that in them the loss is 25% per week and that the titre reaches 1/10 of the original value eight weeks from birth It is noteworthy that the serum of certain animal species—ruminants, for instance—is deficient in globulin, and this deficiency may be associated with the inability of the antibody-forming aratus to respond adequately to an antigenic stimulus ing the earliest period of life. In man, Blum,[13] ne Jakobkiewicz and others have noted the compara- e failure of young infants to produce diphtheria ntoxin after the injection of toxoid and this is one son why diphtheria immunisation is not recommended a general rule till after the sixth to ninth month. hooping cough vaccine is seldom administered in the nited States till the seventh to tenth month, although S Wilson,[14] being impressed by the high mortality nder six months, advocates beginning the course at the d of the second or third month. In view of the certainty of response at this early age it would perhaps e wise to insist on further injections of vaccine in later fe for these children, to re stimulate their antibody- roducing mechanism.

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[5] Filatov V P *Lancet* 1937, 1, 1395

[6] Lapchinski A G *Surgery, U S S R* 1940, No 10 p 15

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[11] McKhann, C F, Green, A A and Coady, H *J Pediat* 1935, 6, 603

[12] *Lancet*, 1932, 1, 815

IMPROVING BLOOD-GROUPING

WAR-TIME activity in blood-grouping has drawn ttention to the lack of uniformity in nomenclature and echnical methods in use among those making the tests. paper by the Imperial Serologist in India and his olleagues[15] teems with suggestions for revising and tandardising practice. A worker adopting their pro- osals would have to revise his methods drastically nd his new methods would not necessarily be better han his old, but his diagnoses of blood-groups would lmost certainly be much more accurate because he vould determine not only the antigen content of a erson's red cells but also the antibody in the serum. None of the authorities omits, unless he must, the check- est offered by examination of the serum, for following-up ny anomaly should prevent all errors in diagnosis of the ABO system. Before the war nearly all clinicians used the Moss numerical classification, but more and more of them are taking up the international alphabetical ABO nomenclature, and the use of letters for the antigens and of "anti-A" and "anti-B" for the agglutinins seems satisfactory and logical. To get established workers in a field to adopt a new terminology is difficult, as anatomists and bacteriologists know; and, since the great advantages of letters over numbers are being recognised and letters are being used, nothing should be allowed to interfere with the adoption of the international classification as it stands. Some major alterations in the alphabetical notation suggested by the workers in India would not be improvements. The use of the lower case "a" and 'b' for the antibodies is reactionary and was rightly condemned years ago. The Greek α and β for the antibodies are said to be unnecessary—and indeed they do not appear in the recommendations of the League of Nations Committee responsible for the international classification—but well-known workers in the field use them and would miss them, and they have no obvious disadvantages. The terms "isogen" and "isonin" proposed for the isoagglutinogens A and B and their isoagglutinins might be accepted by some, but "hæmogens" M and N for the antigens of the M N system of groups would be hard for anybody with a regard for etymology to tolerate. Much has been written mostly in America about the harm that may theoretically befall a transfused patient if the antigen in his red cells meets corresponding antibody in great strength in the donor's plasma. The practice recently introduced of treating shock with transfusions of large amounts of blood serum or plasma or with concentrated serum or plasma, has similar possibilities. It is difficult to discover from the literature how real and how great this danger is, but the workers in India attach considerable importance to it, and believe that accidents following indiscriminate transfusion with group O have escaped detection. In their technique the strength of the antibodies in the sera of O donors is determined and the donors are classified accordingly; quite a large proportion are not accepted as universal donors because the antibody content of their serum is considered to be dangerously high. Colonel Greval strongly advocates direct tests of the reactions between the blood of the recipient and that of a prospective donor, whether of the same or of another group. He is right in urging that there is room for improvement in grouping procedure; more should be demanded of a technique than that it should be rapidly and easily performed.

POSTURE AND THE T WAVE

THE T wave, that problem child of electrocardiography, has in recent years taken one of its excursions into the realm of clinical and physiological research. We are still more or less ignorant of its significance and cause, but information is accumulating. One of the earliest facts known about it was that it altered with changes of posture, becoming inverted when the subject stood up. This inversion has been attributed by some to orthostatic anæmia of the heart, or to a faulty myocardium, while others regard it as normal. Scherf and Weissberg[1] have been at the puzzle again. Of the 35 subjects, aged 20–30, with normal cardiovascular systems whom they investigated, nearly all showed an inversion of T in one or more leads on assuming the erect position; this change was most consistent in leads 2 and 3. It made little difference whether the electrocardiogram was taken immediately on the assumption of the erect position or after standing for 12 minutes; and in 28 instances in which an electrocardiogram was taken as soon as the subject lay down the T wave immediately returned to its original height and configuration. This last observation suggests that the changes are not due to orthostatic anæmia or coronary insufficiency; moreover the T wave became higher after exercise in the erect position and lower after the administration of nitroglycerin. On the other hand they found that the inversion of T produced on standing was exaggerated at the end of full inspiration while with full expiration in the same position the inverted wave became smaller. They suggest, with good evidence, that inversion of the T wave on standing up is due to the change in the position of the heart in relation to the diaphragm and neighbouring tissues. This means that the position of the patient while electrocardiograms are being recorded is important; unless the patient is lying down inversion of T, especially in leads 2 and 3, may be found even where the cardiovascular system is normal. The routine adoption of the supine position would reduce considerably the number of cases in which inversion of T leads to confusion in diagnosis. The relationship between these electrocardiographic findings and postural hypotension—the condition in which a sudden fall of blood-pressure accompanied by loss of consciousness occurs on standing up—is worth considering. According to Stead and Ebert[2] the primary factor in this condition is a loss of the reflex vasoconstriction which normally maintains the arterial pressure when people stand up. By experiment they have shown that three patients with postural hypotension did not pool more blood in the lower part of the body on standing than normal subjects, but that pooling of the normal amount of blood caused an abnormal fall in blood-pressure. They suggest that the primary lesion lies in the sympathetic nervous system, though whether centrally or peripherally remains indefinite. On the whole they think that the lesion is likely to be in the sympathetic centres, or their efferent tracts in the central nervous system. Their results run counter to the suggestion of Maclean and Allen,[3] that postural hypotension is due to an inadequate return of venous blood to the heart It would have been of interest to know the electrocardiographic findings in Stead and Ebert's patients, even though Scherf and Weissberg found that in their cases the T wave changes and the blood-pressure were not correlated It is perhaps improbable that any correlation would be found in patients with postural hypotension, yet if a change of position of the heart can cause electrocardiographic changes in the normal subject it might well affect even more decidedly the chemistry, electrical potentials and functioning of the myocardium in patients with an autonomic disturbance

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[13] Blum J Med Off 1932 47 245 Jakobkiewicz J Rev Immunol 1937, 3, 70

[14] Brit. med J 1941 1 593

[15] Greval S D S Chandra S N and Woodhead L S F Indian J med Res. January, 1941 p 231

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PAROXYSMAL TACHYCARDIA IN INFANTS

To count the pulse accurately in young infants is notoriously difficult This may well account for the paucity of case-reports of abnormally rapid pulse rates due to abnormal states of cardiac function Thus J P Hubbard[4] of Boston, was able to find only 19 reported cases of paroxysmal tachycardia or auricular flutter in infants less than one year old in whom the rates were established by polygraph or electrocardiographic records He reports 9 cases of his own, however, 6 of which were observed in one year, and the graphic clinical picture he draws should enable others to detect this interesting abnormality In all 9 cases the ventricular rates varied from 220 to 305, demonstrated electrocardiographically, in 7 of them the age of onset was within the first month of life, one case being noted on routine examination of a baby aged ten days on its discharge from a maternity unit Cases have in fact been reported of abnormal rates noted before birth The tachycardia may be associated with some other illness, possibly birth trauma, or may start for no obvious cause If it continues, congestive failure develops with symptoms which may first draw the attention of the parents or doctor to the fact that the baby is ill The clinical syndrome is characteristic vomiting occurs and may be severe enough to suggest pyloric stenosis, the baby becomes limp and has a dusky, greyish colour The heart is found to be beating at a rate which is often too fast to be counted and the radial pulse is as a rule imperceptible The heart enlarges rapidly, severe dyspnœa ensues with a respiratory rate which may mount to 150–160 per minute The liver becomes engorged and its edge may be felt as low as the iliac crest Œdema of dependent parts may develop The temperature usually rises and there is a leucocytosis The attack may stop spontaneously, but is likely to proceed to a fatal termination unless digitalis is given promptly Hubbard uses Digifoline, giving an initial dose of 0 05–0 1 g intramuscularly and repeating it until the desired effect is obtained One baby, weighing 9 lb, required 0 3 g of digifoline in the course of two days before the cardiac condition was controlled Once digitalisation is achieved the heart promptly returns to a normal rate and rhythm The temperature and respiratory rate also return rapidly to normal, the heart decreases in size and the liver edge shrinks back to the costal margin There is often considerable diuresis with consequent loss of weight, the colour and general condition of the child usually show a striking improvement Hubbard's electrocardiographic records show a tachycardia of supraventricular origin, in no case was there evidence of auricular flutter After effective treatment there were short recurrences in a few cases, but eventually these ceased, as far as a relatively brief period of follow-up (six months at least) showed there was no tendency for the condition to persist Attacks similar to those described might be mistaken for pneumonia or an acu infection, but complete examination should establish t rapid onset of heart failure with severe tachycardia, th response to digitalis should clinch matters

ANOTHER USEFUL SULPHONAMIDE

SULPHAMIDOTHIAZOLE (Cibazol or Ciba 3714), a nea relation of sulphapyridine, has lately been recommended for a variety of infective conditions by a group of Sw workers W Brunner and E Schläpfer[1] have used th compound in powder form in the local treatment of 10 potentially infected wounds of various types Of these 106 healed by first intention, there were no alarming inflammatory or other reactions in any instance, nor did healing appear to be retarded Necroses and hæmatomas were rarely observed in the wounds Amounts of the powder varying from 0 3 to 3 8 grammes were usually instilled, and in some cases, where there was no obviou risk of infection, a depot of the powder was established in the wound Apart from this the treatment was of the simplest surgical character and no attempts were made either to excise the wound or to secure immobilisation in the healing stages Portions of tissue excised for bacteriological examination before and immediately after the instillation of cibazol showed a pronounced falling off of positive cultures in the latter Cibazol has been given by mouth or by intramuscular or intravenous injection in obstetric and gynæcological cases by H Winzeler[2] As a prophylactic agent in normal childbirth the result were inconclusive, but in 40 patients in whom manipulative interference complicated childbirth the results suggested that, when started immediately after parturition, this form of medication was of definite benefit, the criterion of usefulness being the temperature chart In th secondary febrile complications of pregnancy, such a puerperal endometritis and mastitis, the effects wer unconvincing Winzeler observes that, in a total of 20 treated cases, doses of up to 60 g are well tolerated especially when given by mouth No harmful reaction were noted even after intramuscular and intravenou injections Laboratory analyses showed no damage t either the renal or hæmopoietic systems J Flagg an P Koenig[3] have applied cibazol locally in the form flexible pencils containing 10% of the sulphonamide f cervical endometritis In 23 cases of varied ætiolog which received regular treatment the discharge ceased improved in the majority *It is not clear from the repo whether these good effects were maintained after th* cessation of treatment, the series is too small to affor conclusive results but suggests the desirability of furth investigations Lastly A Schnieper[4] records the ben ficial effects of cibazol as an ointment, containing 5 of the active agent, in pus-coccal infections of the ski He found it especially valuable in the treatment of th commoner forms of impetigo, in 15 cases of which th eruption cleared up within 5–10 days and improvemen was obvious within 12–24 hours of starting treatment

DR PAUL FILDES, F R S, has been appointed a membe of the governing body of the Lister Institute, in plac of the late Prof William Bulloch

SIR WILLIAM WILLCOX, consulting physician to St Mary's Hospital, Paddington, died at his London home o July 8 We also regret to announce the death on July of Dr DOUGLAS STANLEY, emeritus professor of pharma cology and therapeutics in the University of Birmingham Professor Stanley was at one time editor of the *Birminghan Medical Review*, which has this week lost one of its mos stimulating writers through the death of Dr F G LAYTON on July 3

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[3] Maclean, A. R and Allen E V *J Amer med Ass*, 1940, 115, 2162, and see *Lancet* March 22, 1941, p 387

[4] *Amer J Dis Child* 1941, 61, 687

[1] *Schweiz med Wschr* March 8 1941 p 213

[2] *Ibid* p 217 [3] *Ibid* p 220 [4] *Ibid*, p 222

Special Articles

THE JIGGER FLEA

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M D DUBL , SC D , F.P C.P , D.P H , D T M
ESSOR OF ENTOMOLOGY AND PARASITOLOGY AT THE LIVERPOOL SCHOOL OF TROPICAL MEDICINE

THE jigger flea (*Tunga penetrans*) has long been known cience The first printed mention of this troublesome st is probably that of Oviedo, who in 1525 described occurrence in South America

'Besides these wormes and vermin whereof we have oken there is another little mischievous worme, which we ly number among the kinds of Fleas, this Pestilence the dians call Nigua and is much less than a Flea it pearceth e flesh of a man, and so lanceth or cutteth the same (while the meane time it can neither be seene nor taken) that om some it hath cut off their hands and from others their te, untill the remedy was found to anoint the place with le and scrape it with a rasor '

om this time onwards there are numerous references it in the literature , it was not until 1867, however, at Bonnet, working in French Guiana, wrote a full count of its appearance and life-cycle Since then umerous papers have appeared on the morphology and abits of the adult fleas, but there have been few accounts the early stages of the flea and this is the more markable since the control of the pest is dependent on knowledge of its life-history Newstead, Dutton and odd published a brief description of the eggs and larvæ 1907, but it was not until 1930 that the early stages ere fully described by Hicks

WANDERING OF THE FLEA AND ITS RAVAGES

It is only natural that so common and insistent a pest s *Tunga penetrans* should have acquired a host of local ames according to the region in which it occurs ; of hese the chigoe which is the West Indian name, and igger which is its English synonym, are the most ommon As Sir Harry Johnston (1897) has pointed out his is probably the origin of the sailor's oath, " Well, 'm jiggered

The jigger was at first confined to South America and rom there it spread to the West Coast of Africa, arriving t Ambriz in Angola, by a ship the *Thomas Mitchell*, n 1872 Its invasion of Africa appears to be accurately ssociated with this ship the crew of which were eported to have been suffering from jiggers and probably pread the infection when walking bare-foot on shore ther accounts say that the *Thomas Mitchell* contrary to regulations dumped her sand ballast on the foreshore and it was from this sand that the infection originated Whatever may have been the exact source of the infection the pest spread rapidly, downwards to the Gold Coast and inland across the continent by trade routes and by expeditions such as Stanley's expedition of 1888 which introduced the flea far into the interior (Stanley 1890) Sir Harry Johnston records its appearance in Karonga, Nyasaland in 1891 and from there it spread across East Africa appearing at Chinde on the coast of Mozambique in 1895 Once again it crossed the sea and is recorded by Blanchard in Madagascar in 1899 apparently introduced there by the tirailleurs senegalais From this date onwards it has threatened to invade the whole of Africa. The first description of its appearance in the Anglo-Egyptian Sudan is to be found in the report of the Wellcome Research Laboratories for 1906 Adam records it in the Transvaal in 1912 and its unwelcome visitation to the Seychelles in 1914 was officially reported (Addison 1915) but it was not until 1924 that Anderson noted its arrival in Kenya Having invaded two continents it was only natural for it to appear in a third and actually this ubiquitous flea has travelled from Africa to India, where according to Castellani and Chalmers (1919), it was first introduced in 1899 by the 4th Bombay Infantry Coates (1899), writing from Calcutta draws attention to the dangers of its introduction into India—a wise and necessary warning—but fortunately none of the widely varied climate of India appears to have suited the jigger and it has never become firmly established there

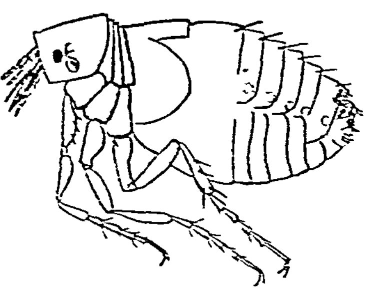

FIG 1—*Tunga penetrans* Female before entering skin (× 50)

There is a dangerous tendency among Europeans living in the tropics to regard the jigger as a trivial affliction, but experienced observers know that it may cause much suffering and loss of man-power and that " it is a pest not to be trifled with " (Patton and Evans 1929)

Charles Waterton (1825) repeats the warning of Oviedo when he says, ' There is some credit in facing a rattlesnake, killing a jaguar, or in braving the many dangers of tropical travel, but there is none in becoming the victim of a flea, though the apparently insignificant enemy may, unless its attacks be properly repelled, cause the loss of a limb, or even of life " The rôle of the jigger flea in incapacitating troops and travellers has been confirmed by numerous writers Sir Harry Johnston (1897) writes " At first it caused terrible suffering amongst our naked-foot soldiers, policemen and postmen, many of whom became lame by its bites It caused the administration to go to great expense in providing boots for all these people " Decle (1898) gives a vivid description of the havoc wrought by this insect pest ' At Fort Raymond the garrison consisted of 160 askaris (soldiers) and 70 porters , out of this number of men 72 askaris and 30 porters were absolutely unfit for service through ulcers brought on by jiggers, and 30 more men were lame At Fort Grant the proportion of invalids through jiggers was over 50% I was in charge of the Medical Department—having volunteered to help Major Owen during the War—and never in my life have I seen such awful ulcers Some of the men had the bone of their big toe protruding fleshless for more than an inch, others had quite a square inch of the bone of the heel exposed " The Official History of the War (1923) records that in the operations in the Cameroons " about 346 of the minor septic admissions were due to chiggers, some 5% of the total, but this percentage did not represent the prevalence of this pest in certain areas of the Cameroons, where its serious effects upon those native soldiers who had no experience of this minute burrowing insect or how to extract it without leaving a small sore where it burrowed, caused at one period serious military inconvenience The Northern Nigerian troops employed with the western column were crippled at one time by chiggers and were only rendered fit by the combined employment of sandals and frequent foot inspection "

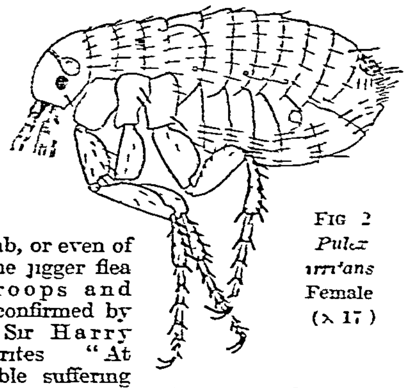

FIG 2 *Pulex irritans* Female (× 17)

LIFE-HISTORY

The adult *Tunga penetrans* (fig 1) which belongs to the family Sarcopsyllidæ in general resembles the fleas belonging to the family Pulicidæ (fig 2) which we are accustomed to see in this country but it is smaller and does not possess the same jumping powers Captured specimens can easily be identified if they are placed in a drop of pure carbolic, allowed to clear for a few hours and then examined under the microscope In the pulicidæ the head is rounded and helmet-shaped, in the sarcopsyllidæ it is angulated , in the pulicidæ the three thoracic segments are more or less rectangular in shape, whereas in the sarcopsyllidæ they are telescoped at their upper margin and tend to be triangular The life-history and habits of the male jigger flea closely resemble those of the common human flea (*Pulex irritans*) in this country, but the female furnishes a remarkable example of a free-living blood-sucker becoming for the latter part of her life a fixed parasite She jumps from the ground on to the bare foot of the person attacked, and having obtained her blood meal burrows into the skin, usually on the under surface of the toes or the junction of the nail with the skin

As Waterton (1825) remarks, "A knowing eye may always perceive when the feet of negroes are the abode of the Chigoe They dare not place their feet firmly on the ground, on account of the pain which such a position would give them, but they hobble along with their toes turned up, and by this you know that they are not suffering from tubboes (a remnant of yaws), but from the actual depredations of the Chigoes"

The female flea ceases to burrow when the last abdominal segments are almost level with the skin surface, the fertilised ova now develop with great rapidity and distend the abdomen to a relatively enormous size, so that the flea, which was originally a minute flattened creature only 1 2 mm in length, becomes within little more than a week a globular object, often 6 mm in diameter (fig 3) From now on the eggs are steadily discharged from the vagina, which protrudes from the skin, and fall on to the floor or ground one by one The process of egg-laying lasts for a week to ten days, during which time 150–200 eggs are deposited Once the parent flea has completed her function of egg production, she dies, and her shrivelled carcase is eventually sloughed out of the wound in the skin The egg is a minute oval body less than 0 5 mm in length, and from it, in three to four days, the larva emerges (fig 4), this it does by means of the so-called "egg breaker," a chitinous structure on the head with which it slits the eggshell from end to end, as though using a tin opener The larva which emerges resembles a tiny caterpillar and seeks shelter in some shaded corner, where it feeds voraciously on the organic matter found in the dust of its environment Bonnet (1867) failed to rear the larvæ except on the corpse of the parent, but Hicks (1930) has shown that such organic matter as dried blood vegetable oil and dried insect remains provide a satisfactory food-supply Unlike the larva of most other fleas, that of *Tunga penetrans* only passes through two larval stages, the pupa being formed about a fortnight after the larva has emerged from the egg In order to protect itself during this resting stage, the larva constructs a silken cocoon, which it weaves with its mouthparts from a liquid secretion emitted by the silk glands in the head, and as it weaves it mixes with the threads of silk particles of grit and rubbish from the dust, so that the cocoon, when finished, is difficult to detect Within this cocoon it casts its second larval skin and becomes a pupa (fig 5), the perfect flea emerging after a minimal period of about a week It is not known whether the jigger flea shares with the pulicidæ the remarkable power of remaining dormant in the pupa for long periods In the pulicidæ the adult flea only emerges from the cocoon when some vibration supplies the necessary stimulus, so that people entering a house which has been unoccupied for many months are often attacked by hoards of newly hatched fleas, it is probable that *Tunga penetrans* behaves similarly, since there are records of jigger infestations occurring after troops have entered long-evacuated villages

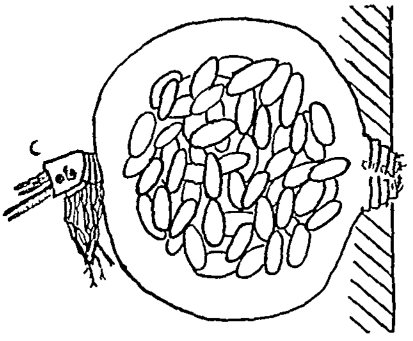

FIG 3—*Tunga penetrans* Female distended with eggs, embedded in skin

PROPHYLAXIS AND TREATMENT

The prevention of jigger infestation and the treatment of the infection when acquired are simple when once the life-history and habits of the insect are understood For this reason it is all-important that troops, before going to the tropics, should be warned about the dangers of this devastating pest and told how it may be avoided An old African school-teacher was once asked what people in his country were most liable to contract jigg He replied without hesitation, "Little children, lun and Europeans" It is only the helpless and the igno who are likely to acquire the infection in its most sere form Since the larvæ need shade and feed on the d found in the dust, rooms which are kept clean and fre exposed to sunshine do not tend to harbour th Clean, airy rooms and a clean camp unquestio reduce the risk of infection Spraying the floors with an insecticide kills not only the larvæ but also the adults An appropriate preparation can be made as follows

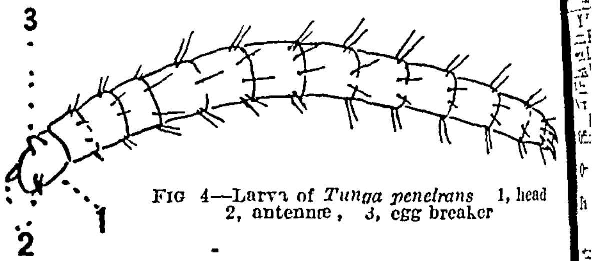

FIG 4—Larva of *Tunga penetrans* 1, head 2, antennæ, 3, egg breaker

Three parts of soft soap are thoroughly melted by heat in *15 parts of water*, and while still hot 70–100 parts of oil (petroleum, kerosene or paraffin) are added gradually, with much shaking and stirring The proper emulsification depends upon the *gradual* addition of the oil and thorough agitation The final mixture should be white and creamy, with no free oil For use dilute 1 part with 20 or even more parts of water (Waterson 1937)

As fleas go, the jigger is not a good jumper, and she seldom attacks the skin above the dorsum of the foot Hence, footwear is the most important safeguard against infection, and anyone visiting the tropics should make it a rigid rule that he does not walk about in bare feet—a maxim which, if followed will protect him not only against jiggers but against many other tropical infections In addition, it is essential that the feet should be regularly inspected in order to detect the presence of the flea in its early and comparatively harmless stage With native troops it is often impossible to supply footwear, or even when footwear is available to persuade them to make use of it, in such circumstances regular foot inspections are the chief safeguard These enable the medical officer to detect a spreader of the infection—a person whose feet harbour the "ripe" jiggers, which are discharging eggs and will spread infection throughout the camp—and also to perceive the early infections, when the jigger has only just penetrated the skin and when the eggs have not begun to develop *Tunga penetrans* parasitises other hosts than man, pigs are especially liable to attack, and these animals should be kept at a safe distance from the camp

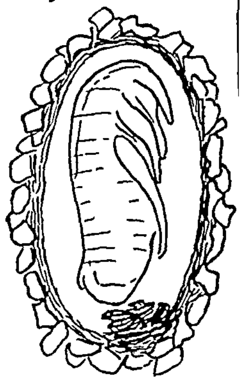

FIG 5—Pupa lying in cocoon, outer surface of which is covered with particles of sand Dark object below pupa is discarded skin of larva

Treatment consists in removal of the flea at the early stage when the only evidence of its presence is a slight itching, which may be traced to a tiny dark spot representing the point of the abdomen of the buried flea At this stage the insect can be easily and painlessly extracted with a needle The extraction of the fully developed pregnant flea, which is as large as an ordinary pea, is a much more difficult and painful matter, especially as it is usually complicated by secondary infection When there are large numbers of cases among troops it is impossible for the medical officer to attend personally to all the extractions, and he will find it more satisfactory to gather together a number of intelligent natives who have been accustomed to the technique of extraction since childhood To this skilled knowledge of the process of extraction, the medical officer must add some simple rules regarding the observance of asepsis, he must teach his first-aid squad how to clean the needles used for the extraction and the skin on which they are g to work Having done so, he will find that these can rid the sufferers of their jiggers with a skill and erity which he himself could acquire only by weeks actice

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HOSPITALS AND AIR-RAIDS

ORGANISATION OF A CITY CASUALTY HOSPITAL

IT is the aim of our war-time medical services to provide th as little delay as possible, albeit in the face of new, rying and often difficult conditions, the best possible itial treatment and the fullest possible restoration to alth and efficiency of each individual casualty resses and numbers may sometimes necessitate but ust not become an excuse for lower standards Planng in advance can achieve much, but plans must be astic and susceptible of quick change Mistakes must freely admitted and experiences constantly shared hose severally responsible for the collection, transport id treatment of wounded should have a proper underanding of each other's tasks and difficulties More tensive aerial bombardment may yet await us

In these notes the organisation of a city hospital for e reception, treatment and evacuation of casualties id associated duties is briefly reviewed The notes are ised on experience gained at a London teaching spital working as a casualty clearing station and ssessed therefore of the advantages of an ample udent personnel for the provision of dressers, clerks, retcher-bearers, runners, &c The assistance which udents have given can scarcely be overstressed It fully appreciated that, with their different constitution id the prevailing shortage of civilian male personnel, her types of hospital must needs employ alternative easures The suggestions outlined, however, with cal variations, should be generally applicable to most rge city hospitals equipped for the direct admission of isualties on a large scale It is well worth considering plication to local scout organisations for the night-time rvices, in return for supper and breakfast, of squads of over Scouts to assist with such duties as stretcherarer, tally clerk (for stretchers and blankets) or nner For help as well as training the presence of St. hn Ambulance men can also be arranged As many heel-trolleys as possible should be accumulated to ghten the work of the bearers

In hospitals serving cities already bombed or liable to bombed, provision must be made for (1) reception of ses from the ambulance, (2) preliminary inspection of juries in the receiving room followed by administration A T S (unless it be decided to make a routine of ving it in the theatre when the patient is under the æsthetic), the sorting of cases into categories according severity, and the recording of particulars, (3) suscitation, (4) operation, (5) subsequent treatment,) evacuation to a "base" hospital, and (7) mortuary entification and disposal

PERSONNEL AND THEIR DUTIES

Ideally the personnel required on duty at night during aid in a hospital capable of receiving up to or over a ndred casualties should include—

1 A medical officer in charge of staff rank
2 A senior member of the surgical staff to supervise the surgical decisions of the resuscitation ward, the theatre and the surgical wards generally
3 Operating surgeons sufficient for the available tables, say from three to five, preferably men of surgical registrar standing and sometimes including members of the general or specialist surgical staff
4 A staff physician in charge of the resuscitation ward and for consultation with the surgeon in cases of wound-shock or chest or neurological injuries
5 A receiving-room officer, either a member of the specialist staff or an experienced senior house surgeon
6 Anæsthetists, of whom one should if possible be of staff and one of junior staff rank
7 A radiologist or experienced radiographer
8 House officers
9 Matron, sisters, nurses and almoners
10 Engineering and domestic staff, porters, stretcherbearers and fire-watchers

The medical officer in charge has numerous functions to perform during an air-raid He should be assisted by a responsible secretary or telephonist and a runner, the first of these at his office or night control room, the second either at the control room and kept informed as to his moves or accompanying him on his rounds He must keep an eye on the number and rate of admissions, and when the hospital's capacity from the point of view of efficient surgery is nearing saturation must make contact by telephone (when possible) with controls or through the local police with the ambulance service or with a neighbouring hospital, stating his desire to divert convoys In practice direct communication in any case with the neighboring hospital is valuable in order to maintain a friendly reciprocity and to discover how far its staff may be working under stress or able and willing to receive If other means of communication fail messages should be sent by a returning ambulance He must tour the wards frequently during the raid to see that all is well and reassure and encourage nursing staff and patients It may be necessary for him to visit other parts of the institution or to look into some reported incident or difficulty. He may have to order the evacuation of a ward which has sustained damage or had its windows blasted, or to call up extra personnel to deal with incendiary bombs, or he may have to summon the fire brigade He must keep in touch with the matron and with the hospital engineer who is one of his most valuable lieutenants and under whose direction the fire-watchers and their reliefs should usually be disposed He must see that operating surgeons and theatre and resuscitation ward staff are relieved without undue delay after an all-night session He must consult with the surgical O C on matters of policy and particularly in regard to the pressure of work and the evacuation of casualties on the following day

The surgical O C visits the resuscitation ward (which should be a separate unit but as conveniently situated as possible both for the theatre and other casualty receiving wards) as soon as it begins to fill He should there keep the personnel to a reasonable minimum to avoid congestion and the "too many cooks" tendency When the first admissions have been attended to and have begun to benefit from the rest and warmth he should make a systematic tour of inspection, dictating a statement of the injuries in each case, ordering in consultation with the physician in charge (who remains in the ward) a transfusion here, a dressing or a dose of morphine there; marking up cases for examination with the portable X-ray plant and entering against the names of the operating surgeons on a conveniently placed black board at the entry to the ward the bed-numbers of the cases selected for them in order of need and having due regard also for the skill and experience of the individual surgeons He has the same functions to perform in respect of the ward or wards to which the less severe cases are admitted and from which cases are drawn for the theatre pending the resuscitation of the more severe The graver cases may be conveniently returned after operation to the resuscitation ward to ensure continuity of treatment He may at intervals give advice in the theatre, and when admissions are few or his other tasks are done he may elect to take a table himself for a selected case or cases Operating should never, however, be considered his prime function On the morning after a raid he should help his operating colleagues and their house-surgeons with the selection of cases for immediate evacuation and may here need to be guided by the situation and bed-state as put to him by the medical officer in charge It is most important for him to establish communication with surgeons responsible for special lesions in special centres with regard to consultations on or transfer of cases of neurological, thoracic or facio-maxillary injury

The physician in charge of the resuscitation ward has a special responsibility on the spot for all the more serious cases and (with a transfusion officer or experienced resident to help him) for the transfusion of blood, plasma or other fluids or the withholding of these He directs the sister in charge of the ward in the matter of fluids to be given by mouth or rectum, the administration of oxygen, and the undressing or movement of patients—decisions of considerable moment with the badly shocked cases He should supervise the keeping of records with full notes of pulse, blood-pressure, hæmoglobin estimations, vomiting, blood-loss, &c in all grave cases, and should assist his surgical colleague with the difficult decisions as to the optimum time for operation, decisions which his closer and more continuous contacts will materially assist When the admissions are few he should take the opportunity of making detailed continuous observations on a selected case or cases with a view to increasing his own and the general body of information on the varied manifestations composing the picture of traumatic shock and to advancing treatment In this work valuable guidance may be obtained from the shock committee of the Medical Research Council His judgment should be sought in the case of thoracic wounds and cranial or other neurological injuries It has not been found necessary to arrange for separation of the sexes in the resuscitation ward , uniformity of administration and treatment and valuable economy in time and skilled personnel can thus be secured

The receiving-room officer, who should be assisted by a sister and nurse and where available by a junior house-officer or by students, and also by the almoner's clerical staff and a sufficiency of stretcher-bearers, should make only a very superficial examination of the casualties, his aim being to decide whether they should be admitted to a resuscitation or a general ward in the case of stretcher casualties, or to a general ward or rest room for discharge in the morning in the case of the walking wounded At this stage it is quite impossible to form any considered judgment of extent of wounding, operability and so on Approximately ten minutes per ambulance load of 4 stretcher cases for his inspection and decision, for the administration of A T S (if given at this stage) and for the taking of particulars, should suffice once his team is trained He may judge that a case is too bad for any of these formalities and pass it direct to the resuscitation ward , in this event it is the duty of the almoner's clerical staff to follow and secure the particulars later He should err in the direction of sending lighter cases for resuscitation rather than in that of burdening the other wards with serious cases Among admissions will be many not requiring operation—concussions, severe bruisings, fractured ribs, simple fractures and the like It has been found that about 50% of all admissions require operation Upwards of 25% of all admissions may require resuscitation A resuscitation ward in a hospital equipped for 100 or more casualties should therefore, when possible, accommodate between 20 and 30 patients and include a side-room for necessary equipment

Out of consideration for the patients and to lighten the task of the stretcher-bearers and preserve quiet and diminish traffic in wards and passages, radiography by night should be carried out with the portable apparatus Cases requiring a fuller examination will generally be in a fitter state for this on the following day

IDENTIFICATION AND OTHER MORTUARY DUTIES

Unless the mortuary is conveniently situated and commodious, separate accommodation must be set aside for cases brought in dead or dying during the night With an admission of 100 cases there may be from 10 to 20 cases dead on arrival or dying soon afterwards A most unpleasant but very important duty is that of cleaning up these pitiful victims to make them presentable for those who come to identify them later in night or in the morning, of carefully collecting making an inventory of their belongings and p them in a bag, of discovering identity cards (which commonly lacking and in addition to which the ge use of identity discs is much to be desired), and of s ing for physical marks or other evidences which assist what is sometimes a very difficult task of re tion At one teaching hospital student volunteers ha been found to carry out these duties while a kindly tactful sister and a medical officer of junior staff interview relatives The usual mortuary assista should report as early as possible on the morning af the raid to arrange the bodies which have receiv initial attention during the night, to assure the clea ness of the viewing room and to give other assista pending removal of the bodies to the public mortuary elsewhere A proper liaison should be established w the local authority to ensure the removal of bodies to t public mortuary within twenty-four hours Trestles a a supply of old stretchers should be kept in the mortua in order to free the standard stretchers for cleansing a further use in the hospital When permission can obtained, it is of real importance, for the advancement knowledge, to carry out post-mortem examinations certain types of injury Up to date various difficult and delays have tended to thwart such inquiries

EVACUATION AND RELIEFS

When casualties by night have been numerous, complete an evacuation as possible will be necessary the morrow to clear the wards for further admissio The medical officer in charge will have obtained directi from his hospital or group officer as to the destinati of casualties including those requiring transfer to spe centres A house-physician or other house officer has not been actively engaged during the night sho superintend the loading of ambulances and hand over lists and notes to the nurses allocated by the matron accompany them It will rarely be possible to start evacuation before 2 P M , by which time the night surg and other staff should have retired to rest One of most difficult things to cater for is the filling in of E M S forms and the duplication of the fuller permanent clinical notes for retention by the hospital transfer to the " base " respectively For the comfor the more serious cases in transit to the " base " m layers of blankets are necessary to serve as mattre Where money or gifts are forthcoming there can b better benefaction than a set of a dozen Sorbo mattre with washable covers to fit the standard metal stretc These must be checked and returned with the ambul conveying nurses and equipment on the return journ

Relief surgical teams, when not available from a v ing staff, should come from peripheral hospitals T should work to a rota After a raid the teams " on c should communicate with or be warned by the hospit group officer If, however, all communications broken down they should proceed to the hospital w they serve without instructions The night teams sh stop working as soon as possible after 8 A M , and reliefs be ready for action by 10 A M When arrangem for the diversion of ambulances have been satisfac it has been rare for the admissions to one hospital t so numerous that the necessary theatre work could be finished by the midday or early afternoon followi night raid As the honorary staff in the case of voluntary hospitals have many other calls on their t a rota should be arranged for night duties by the surge physicians and anæsthetists or others available least one surgeon, one physician and one anæsthe should be on duty in the hospital during a raid Th necessary since it is unfair, when they live at a dist to summon them during the course of the raid Furt more communications may break down and the approa to the hospital become difficult When, however, t live close to the hospital it should be reasonable for t to regard an alert as the indication to go on duty large city hospital in a danger zone and lacking a med superintendent should be without the services of member at least of the senior staff during the night ho

OTHER ADMINISTRATIVE POINTS

Practices and lectures should be arranged at inter for stretcher-bearers, the decontamination and ment units (male and female) and fire-watchers e long winter evenings a weekly lecture on general s concerts and debates make a useful contribution ie maintenance of a good morale and good feeling serve to bring together as one family the workers in y departments which otherwise carry on from day to almost in ignorance of each other's functions e in the institution as a unit and in its efficiency is as ortant for the successful working of a civilian war ital as it is for a battalion in the field The medical rintendent and hospital engineer must ensure that e is a sufficient provision of sandbags and buckets at strategic points and that hoses are in order and nguishers are regularly inspected

canteen, running all night and preferably situated e to the receiving room plays an important part ing a raid as a place of meeting and physical and ntal refreshment for internal staff, roof watchers tcher-bearers, ambulance drivers and sometimes for ice or firemen working in or near the hospital If rating has started in the earlier part of the night the ole theatre staff should have at least half an hour off refreshment between midnight and 3 A M

n spite of frequent damage by bombs or fire, the jority of the large hospitals in London and the other ies affected have thus far been able to carry on their rk as casualty clearing stations without serious erruption to their essential work Certain lessons ve, however, been learned The windows of all portant offices and services should be bricked up , ese should include the night operating-theatres, receiving-room, resuscitation-ward and connecting passages ne blasting of windows, apart from the dangers of oken glass, immediately cripples or altogether prevents ork owing to the claims of the blackout and the ingress f cold air in winter-time The theatre in use by night ould not be above the ground floor and wherever possible the same rule should apply to the resuscitation and ther casualty wards Reserve water-supplies and ghting should be provided for and since gas is especially able to fail, reserve heating provisions in the shape of rimus or oil stoves are also necessary

All the alternative routes of exit from wards and the ospital should be in good order and carefully studied by he medical officer in charge and should be known to isters, house-officers and stretcher-bearers Plans of vacuation from each occupied ward should be arranged nd practised

SOCIAL SECURITY IN NEW ZEALAND

A CORRESPONDENT writes · Regulations were gazetted on April 24 and the benefits came into operation on May The chemists had little information before the latter date, and even at the time of writing (May 9) innumerable points remain to be cleared up Any chemist in business in the ordinary way may contract to provide the benefits, and it is expected that most, if not all, will do so They are to be paid by the government at their own rates less 2½%, and seem well satisfied, despite the work of costing each item in a prescription It is doubtful whether modern "medicamenta vera" such as vitamins, hormones, liver preparations and sulphonamides will be available The published tariff is limited to substances appearing in the B P. 1932 and addenda 1934/40 and the B P Codex 1934 It expressly excludes "any preparation or substance (except insulin) that is prescribed by reference to any trade-mark or trade-name or by reference to a particular maker . any serum, vaccine or antitoxin, etc" But further elucidation is forecast Medical benefit is not faring well According to B M A information only 29 out of some 600 eligible doctors are undertaking the work The bulk of the 29 work in rural areas The people are apathetic—perhaps preoccupied with events in Greece and elsewhere The government remarks from time to time that the scheme is going well The Minister of Health publicly urges trade-unionists and others to use every possible means to coerce the doctors, including threats to refuse payments of bills It is said that doctors in mining districts have been offered handsome rewards to join the scheme. The B M A has appointed a committee of three to consider an alternative scheme based on "payment per service rendered", but on the whole the doctors do not seem much interested, and are mostly overworked

In England Now

A Running Commentary by Peripatetic Correspondents

YEARS and years ago, before we had all become vitamin conscious, I was trying to track down the source of the highly unsaturated oils which (we thought then) constituted the value of cod-liver oil This took me to the Biological Station at Port Erin where I fished the plaice from the station's tanks and estimated the iodine values of their food (mussels), their livers and their muscles Naturally I heard from the biologists of the station about plankton, those floating crustacea and what not which make the Manx kipper what it is or at any rate used to be—a succulent mass of pungent oiliness As naturally I thought of investigating plankton as a source of the important ingredients in cod-liver oil Clearly I was a mutt at collecting plankton for though I was under the eye of Sir William Herdman himself I rarely got enough in my nets to make an analysis worth while And I sniffed audibly when I read Sir John Graham Kerr's letter in the *Times* about the possibility of using plankton direct as human food, for I imagined that I knew a thing or two about the human effort necessary to catch 10 g of plankton and that I would prefer to leave the nekton (i e the animals that swim—isn't it a lovely word, beloveds ?) to do my work for me Rather the herring than I, I thought Obviously I was wrong, for it seems that fifty years ago Sir William Herdman fed a breakfast dish of plankton to his yachting party without much trouble and Dr. George Clarke of Woods Hole has pointed out (*Science*, 1939) that the fisherman need not sweep the sea for his quarry he can let the tidal flow bring it into his net Prof A C Hardy suggests the long, narrow, bottle-necked Scottish lochs as ideal for the purpose But is the stuff worth all this trouble ? It was, I believe, the German biological institute at Heligoland that told us that plankton was equal to the best meat in food value It contains 20% of carbohydrate, presumably glycogen, an oily fat ranging from 7 to 19% of the dry weight, with a high percentage of protein and "ash" Even if four-fifths of the catch is water it must contain many units of vitamins A and D, a good dose of calcium and iodine, and for those who like it some roughage in the form of chitin. And nourishing in fact it is for the great rorquals, born 23 ft long, reach a length of 75 ft in only two years from birth In that time they multiply their birth-weight 27 times, and all on a diet of plankton This is a testimony to the value of plankton as food—for whales But would the British public eat it ? Next year shall we all be eating a "spread," with the flavour of shrimp paste and emulating the contour of the great rorqual ? I'm game to try anything once

* * *

Seated at his table in the Home Guard headquarters, the commanding officer moved his bony index-finger slowly across a large-scale map until it came to rest on a long, narrow wood about a mile to the west of the village "You will hide yourselves in the wood," he said crisply "We will give you quarter of an hour's start, and then the rest of the platoon will make for the wood and try to capture you Your job will be to evade the attacking force by any means you can devise" Then, looking up he suddenly bawled, "Is that clear ?" All three of us sprang to attention and exclaimed "Yessir !" simultaneously, correctly divining that the question was tantamount to dismissal

Having arrived at the wood we dispersed and I saw my fellow parachutists disappear among the trees I had made up my mind on the way that I would climb a suitable tree as I felt that even a Nazi would be original enough to become a tree-dweller until nightfall After stumbling along over the rough ground for a few minutes I came to a huge beech tree in full leaf which would suit my purpose, but obviously it would be unwise to climb the tree and depend entirely on its foliage for cover I therefore decided to camouflage myself still further Slinging my rifle on a dead branch of an adjacent fir I walked among the smaller trees and broke off leafy twigs and branches with which I bedecked my uniform Even the sidepieces of my spectacles were pressed into service and supported luxuriant tufts of beech leaves While I was putting the finishing touches to my make-up I heard the sound of breaking twigs Someone was approaching It seemed too soon for the "enemy," but playing for safety I crept back to my beech Altogether I was well pleased with my appearance as I swung myself up into the bifurcation of the old tree My ascent had to be interrupted for a couple of violent sneezes, but only a professional acrobat or a tabetic could have replaced his handkerchief in his trouser pocket more deftly than I did. About 25 ft above the ground I found I could recline comfortably against the tree trunk and dispose my sprouting extremities among the main branches The sound of footsteps on the dead leaves and twigs was now accompanied by the voices of children, but soon these died away I was alone The sun shone brightly among the topmost branches but it brought little warmth The minutes passed The leaves rustled in the wind, and the tree swayed gently to and fro My khaki was dappled with the pattern of leaf shadows that waxed and waned bewilderingly as small clouds drifted across the face of the sun On one side I commanded a view of the open country beyond the wood, and in a meadow on the other side of a low wall a pair of rooks performed graceful gliding manœuvres out of sheer enjoyment of life The clock in the orphanage half a mile away jangled the quarters and then drowsily delivered itself of a litter of eleven Suddenly, as though the beech tree were their rendezvous, the air became alive with chaffinches The fledglings among them were creating a continuous uproar, flitting hither and thither The reason for this clamour was soon apparent, the parent birds could be seen coming and going with food in their beaks Many of the younger birds perched on branches only a few feet away from me, and this was eloquent testimony to the success of my camouflage The covey disappeared as suddenly as it had arrived My next visitor was a blackbird He was near enough for me to study the expression on his face, and it seemed so plainly to disapprove of the hullabaloo created by the previous tenants that I could not withhold a chuckle The blackie promptly fled with a shriek of consternation

The time wore on The clock chimed the quarters with cumulative emphasis The hum of flies continued monotonously I began to review the possible pathological effects of prolonged ischæmia over bony prominences If I were to shift my position, I reflected, I should almost certainly be spotted by one of the platoon slinking stealthily along the wall No, I decided, I mustn't spoil the show, I would remain in this attitude, reminiscent of the postencephalitic state of flexibilitas cerea Then I became aware that something unusual was happening in the wood The birds were becoming increasingly uneasy, and in a few moments the cause announced itself, there was the noise of men's voices, and as they grew louder I recognised first one and then another member of the platoon A sudden shout signalled the discovery of parachutist number 2 who had gone to earth among the roots of a fallen woodland giant "There's only the doctor now!" I heard one of them exclaim, exulting in the success of the comb-out I sniffed contemptuously at the implied assertion that it was all over, bar shouting They would have to be pretty smart to spot me, I thought, especially as the exercise was due to finish in five minutes Now I could see them moving forward, lined out to cover every yard of the wood Nearer and nearer they came until one man was right underneath me Then he stopped He beckoned to the others There was some muttering and then a loud peal of laughter which brought the rest of the platoon at the double "Aye," shouted one of them, pointing up at me, "there he is!" Aching in every limb and as stiff as a board, I slid down the tree "I thought my camouflage was fairly good," I murmured wearily, as I looked round at them "My dear Popplethwaite," replied my section leader, "the arboreal effects are perfect, but with threequarters of your handkerchief hanging from your trouser pocket nobody could have missed you, and next time, old man, don't leave your rifle pointing at the tree you're hiding in"

* * *

Last week I did a locum for an old friend in the wilds of Norfolk His practice goes into 27 parishes and he had not had a day off in the war I did between 30 and 40 miles a day, some 25 visits, and was up on 4 night can understand these practitioners envying those are called up One thing that struck me was the tion of these country folk to bombing, of which they a good deal, for they are between aerodromes and travels much further when not interrupted by no tall houses Quite a number of them sit up all n and one woman with a bad heart hadn't had her c off at night since last November—this in spite of fact that no-one has been hurt in all these villages B B C, which to the country cottage is vox dei, or at rate the highest available authority, is responsible, that talk about shelters and safety in the lower st intended for town people, has been taken literally many in the country Not fear, but English abidingness causes these clustered and nocturnal ha ings in the kitchen An element of convention comes into it too, at the back of my heart-patie mind, I'm sure, was an idea of facing her Maker, or a other catastrophe, decently apparelled The BB should correct this In the village, they should procla bombs are about as dangerous as thunder, alw provided that two or three watchers guard against the lightning of incendiaries

One contrast I bring away from this week An o couple who had lost their boy at sea, nearly home after long voyage, his ship torpedoed, picked up by one of t boats, but lived only three hours, buried at Stornaw Jimmy wouldn't come home again—for King a country Yes, the parson and the schoolmaster h called, there was bit about him and his picture in t paper, but Jimmy wouldn't come home again That fa was slowly branding itself on their minds They show me his last fo'c'sle-written, jerky letters and a thum stained one from a mate who had survived I read the while they stared into the fire Not far away was a ver old doctor with whom I spent an evening He had n relations in the war and seemed remote from the love and hates of men He smoked a churchwarden which like judge's wig gave him an air of authority "If two bo fight, it may be true to say that one is a pugnacious litt bully and the other a nice lad, but it may also be true t say that the cause of the fight is overfeeding or under feeding or incorrect feeding This war is Nature's revol against industrialism, for which man is unfitted and which is having a disastrous effect on his physique and breeding After every war there is an intense individual desire t grow things, to resume rural life I doubt if industria man can survive 500 years"

One little problem of immunity I bring away with m A woman, talking about her husband who had a habit to bronchitis and whom I had advised to shun a perso with a cold like the devil "The funny thing is t never catches a cold from me, however bad a one I have but if he goes near the grandchildren when they have colds he always gets it"

* * *

Over the imposing gateway of the municipal building in the provincial town where I am stationed then recently appeared the legend "Ministry of Food Tow Hall Restaurant," and after giving it a week or two to get going I went to lunch there taking with me a female colleague as an expert observer The place was cheer fully decorated in bright colours with posters on the wall, the tables and chairs of pleasant design and the crocker definitely non-institutional in type We queued for our "discs" at the pay desk and then queued again at the servery to obtain the food Soup 2*d*, main dish 7*d*, sweet 3*d*, with tea 1*d* or coffee 2*d* provided a large repast Even at the rush hour—just after 1 P M —then was little delay in passing the two bottle-necks, and the food was reasonably hot though not hot enough for my companion We were fortunate in having as the main dish the celebrated "Woolton Pie," a little too spiced for my palate, but I enjoyed its mixed vegetables after a slight initial prejudice because my portion of pie crust was lifted on by the fingers of the server We omitted the sweet and had coffee, which was both good and hot I would have liked a peep behind the scenes, but I had a clinic to get back to and they were at their busiest tim in the kitchen Only one or two criticisms occurred to us There were several voluntary workers in the servery which seems a pity for two separate reasons, in the first place, I had been given to understand that the whole ur was on a strictly business footing, and use of untary labour obviously plays havoc with that and re may be difficulties about having paid and unpaid kers side by side , secondly, some voluntary workers not get rid of the Lady Bountiful attitude when they dle food I ignorantly omitted to collect my spoons l forks at one stage in the queue and I was shouted in such a way that I felt the complete refugee I was o disappointed by the lavatory accommodation It too much to hope that the democratic principles volved in a communal restaurant will lead to the labels "Men" and "Women" instead of the habitual Gentlemen" and "Ladies", and in any case that is a fle But I was shocked to find that absence of soap d towels prevented the exercise of elementary hygiene—mely, the washing of the hands before meals, especially ter urination and defæcation Surely liquid soap and ssibly paper towels could be provided

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Reforms happen when people really care, so one is forced to the conclusion that those who could bring them about have not cared enough In this connexion is the medical profession blameless? Are we not too ready to leave nurses to fight their battles alone? A more general coöperation both as to present needs and to the planning of future services is surely desirable The government committee of 1938/39 which was taking evidence on the nursing situation ceased working when the war started This should begin again on a combined call from the medical and nursing sides of both the voluntary and statutory hospital services

Beaconsfield ESTHER CARLING

RASPBERRY-LEAF TEA

SIR,—Professor Burn and Mr Withell are to be congratulated on their success in isolating an active substance from infusions of raspberry leaves where former investigators have failed There is a deeply rooted and widespread tradition that raspberry-leaf tea, taken during pregnancy, helps to give a painless labour Certainly in a good many cases in my own experience the subsequent labour has been easy and free from muscular spasm Somewhat shamefacedly and surreptitiously I have encouraged any expectant mothers, who felt so inclined, to drink this infusion although I have been obliged to ascribe the good results more to faith than to anything else It seems however, that the faith was reinforced by the physiological action of the active principle and this result is of the greatest interest to obstetricians

That the active substance causes relaxation and not contraction of the uterine muscle is the result which might have been expected on clinical grounds More labours are held up by spasm caused by muscular and nervous tension than are delayed by muscular weakness There is interesting work to be done in the future in a series of cases with the necessary controls It is pleasant to find a rational basis for traditional remedies, and parturient women may have cause to be grateful to Professor Burn and Mr Withell

Kensington W 8 VIOLET RUSSELL.

SAVING ON DRUGS

SIR,—Dr Pappworth deplores the neglect by hospitals and practitioners of the M R C War Memorandum No 3 It may interest him and your readers to know that after reading his paper and your leading article of Jan 4 one small hospital of 84 beds took the following action The drug committee approved a "War Pharmacopœia," prepared by its chairman, containing exclusively drugs in class A The medical committee unanimously adopted it for use in the wards and outpatient department Typed copies were distributed to all concerned, and the dispenser was instructed that class B drugs and any prescriptions not included in the war pharmacopœia are to be dispensed only when the order is signed by an honorary physician or surgeon Thus even such ordinary drugs as cascara, squill and liquid paraffin cannot be used thoughtlessly or as a routine

The amount saved is perhaps a drop in the ocean, but *necesse est minima maximorum esse initia*

G M WAUCHOPE,
Chairman of the Medical Committee

New Sussex Hospital,
Brighton

STATE MEDICAL SERVICE

SIR,—A meeting of general practitioners, mainly from the Islington area but including several doctors from adjoining boroughs, took place at the Royal Northern Hospital on June 24 Altogether 58 doctors were present A scheme for a state service was discussed at length, and a good deal of criticism was expressed of the B M A Planning Commission, because general practitioners were not represented on it in proportion to their numbers

The following resolution was passed by 35 to 4 —

> That this meeting of North London medical men, having discussed the question of a state medical service, is in favour of this , considering that it will be in the interest of the public and of the medical profession It is resolved that the success or failure of such a scheme depends on the adequate representation of the general practitioners of the country We therefore demand that the general practitioners should by free election appoint their members to form a majority on a planning board for the institution of a state medical service

A committee was elected to implement the decisions arrived at, and to link up with practitioners in other areas who hold similar views

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Holloway Road, N 19

PEMPHIGUS NEONATORUM

SIR,—The outbreak described by S D Elliott, E H Gillespie and Eardley Holland in your issue of Feb 8 (p 169) was helpful to me in the investigation and control of an outbreak in a maternity ward in Barnsley in which ten babies were affected I was particularly interested in the typing of staphylococci described by a member of the pathological department of the Royal Berkshire Hospital, Reading, who was also good enough to type the cultures obtained from the Barnsley cases All cases which were tested from lesions of the babies were of the same type—namely, *Staphylococcus aureus* type III

Among the features common to both outbreaks was the discovery of a nurse suffering from whitlow, from which *Staph aureus* was recovered in pure culture But in the Barnsley occurrence the organism was not typable, and was of a different strain to the organisms from the pemphigus lesions, although of the same family of *Staph aureus* It would seem, therefore, that the organism was not responsible for the outbreak Prior to the advent of the technique of typing staphylococci one might have assumed that, as organisms from nurse and patients were all *Staph aureus*, the cause of the outbreak was obvious I think a negative result is worthy of report as the circumstances of the outbreak were superficially similar to the outbreak described in your issue of Feb 8, but probably entirely [illegible] nature

Other means of infection swabbing of nose and throat showed that 40% were carriers was also evidence of a cloud of origin manifesting itself in im was putting the finishing touches to my make-up I heard the sound of breaking twigs Someone was approaching It seemed too soon for the “ enemy,” but playing for safety I crept back to my beech Altogether I was well pleased with my appearance as I swung myself up into the bifurcation of the old tree My ascent had to be interrupted for a couple of violent sneezes, but only a professional acrobat or a tabetic could have replaced his handkerchief in his trouser pocket more deftly than I did About 25 ft above the ground I found I could recline comfortably against the tree trunk and dispose my sprouting extremities among the main branches The sound of footsteps on the dead leaves and twigs was now accompanied by the voices of children, but soon these died away I was alone The sun shone brightly among the topmost branches but it brought little warmth The minutes passed The leaves rustled in the wind, and the tree swayed gently to and fro My khaki was dappled with the pattern of leaf shadows that waxed and waned bewilderingly as small clouds drifted across the face of the sun On one side I commanded a view of the open country beyond the wood, and in a meadow on the other side of a low wall a pair of rooks performed graceful gliding manœuvres out of sheer enjoyment of life The clock in the orphanage half a mile away jangled the quarters and then drowsily delivered itself of a litter of eleven Suddenly, as though the beech tree were their rendezvous, the air became alive with chaffinches The fledglings among them were creating a continuous uproar, flitting hither and thither The reason for this clamour was soon apparent , the parent birds could be seen coming and going with food in their beaks Many of the younger birds perched on branches only a few feet away from me, and this was eloquent testimony to the success of my camouflage The covey disappeared as suddenly as it had arrived My next visitor was a blackbird He was near enough for me to study the expression on his face, and it seemed so plainly to disapprove of the hullabaloo created by the previous tenants that I could not withhold a chuckle The blackie promptly fled with a shriek of consternation

The time wore on The clock chimed the quarters with cumulative emphasis The hum of flies continued monotonously I began to review the possible pathological effects of prolonged ischæmia over bony prominences If I were to shift my position, I reflected, I should almost certainly be spotted by one of the platoon slinking stealthily along the wall No, I decided, I mustn't spoil the show , I would remain in this attitude, reminiscent of the postencephalitic state of flexibilitas cerea Then I became aware that something unusual was happening in the wood The birds were becoming increasingly uneasy, and in a few moments the cause announced itself , there was the noise of men's voices, and as they grew louder I recognised first one and then another member of the platoon A sudden shout signalled the discovery of parachutist number 2 who had gone to earth among the roots of a fallen woodland giant “ There's only the doctor now ! ” I heard one of them exclaim, exulting in the success of the comb-out I sniffed contemptuously at the implied assertion that it was all over, bar shouting They would have to be pretty smart to spot me, I thought, especially as the exercise was due to finish in five minutes Now I could see them moving forward, lined out to cover every yard of the wood Nearer and nearer they came until one man was right underneath me Then he stopped He beckoned to the others There was some muttering and then a loud peal of laughter which brought the rest of the platoon at the double “ Aye,” shouted one of them, pointing up at me, “ there he is ! ” Aching in every limb and as stiff as a board, I slid down the tree “ I thought my camouflage was fairly good,” I murmured wearily, as I looked round at them “ My dear Popplethwaite,” replied my section leader, “ the arboreal effects are perfect, but with threequarters of your handkerchief hanging from your trouser pocket nobody could have missed you , and next time, old man, don't leave your rifle pointing at the tree you're hiding in ”

* * *

Last week I did a locum for an old friend in the wilds of Norfolk His practice goes into 27 parishes and he had not had a day off in the war I did between 30 and 40 miles a day, some 25 visits, and was up on 4 nights
can understand these practitioners envying those v
are called up One thing that struck me was the re
tion of these country folk to bombing, of which they h
a good deal, for they are between aerodromes and n
travels much further when not interrupted by rows
tall houses Quite a number of them sit up all nig
and one woman with a bad heart hadn't had her clot
off at night since last November—this in spite of
fact that no-one has been hurt in all these villages T
B B C , which to the country cottage is vox dei, or at a
rate the highest available authority, is responsible ,
that talk about shelters and safety in the lower stor
intended for town people, has been taken literally
many in the country Not fear, but English l
abidingness causes these clustered and nocturnal hud
ings in the kitchen An element of conventional
comes into it too , at the back of my heart-patie
mind, I'm sure, was an idea of facing her Maker, or a
other catastrophe, decently apparelled The B B
should correct this In the village, they should procla
bombs are about as dangerous as thunder, alw
provided that two or three watchers guard against
lightning of incendiaries

One contrast I bring away from this week An
couple who had lost their boy at sea, nearly home afte
long voyage, his ship torpedoed, picked up by one of
boats, but lived only three hours, buried at Stornaw
Jimmy wouldn't come home again—for King a
country Yes, the parson and the schoolmaster h
called, there was bit about him and his picture in
paper, but Jimmy wouldn't come home again That fa
was slowly branding itself on their minds They show
me his last fo'c'sle-written, jerky letters and a thum
stained one from a mate who had survived I read th
while they stared into the fire Not far away was a ve
old doctor with whom I spent an evening He had
relations in the war and seemed remote from the love a
hates of men He smoked a churchwarden which lik
judge's wig gave him an air of authority “ If two bo
fight, it may be true to say that one is a pugnacious lit
bully and the other a nice lad, but it may also be true
say that the cause of the fight is overfeeding or und
feeding or incorrect feeding This war is Nature's rev
against industrialism, for which man is unfitted and whi
is having a disastrous effect on his physique and breedin
After every war there is an intense individual desire
grow things, to resume rural life I doubt if industr
man can survive 500 years ”

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Among the features common to both outbreaks was the discovery of a nurse suffering from whitlow, from which *Staph aureus* was recovered in pure culture. But in the Barnsley occurrence the organism was not typable, and was of a different strain to the organisms from the pemphigus lesions, although of the same family of *Staph aureus* It would seem, therefore, that the organism was not responsible for the outbreak Prior to the advent of the technique of typing staphylococci one might have assumed that as organisms from nurse and patients were all *Staph aureus*, the cause of the outbreak was obvious I think a negative result is worthy of report as the circumstances of the outbreak were superficially similar to the outbreak described in your issue of Feb 8, but probably of an entirely different nature

Other means of infection coexisted Extensive swabbing of nose and throat of all staff and patients showed that 40% were carriers of *Staph aureus* There was also evidence of a cloud of infection of *Staph aureus* origin manifesting itself in impetigo sinusitis and other minor infections among the general public I was unable to get these organisms typed so that precise proof of the outbreak is lacking Once we were assured by bacteriologists of the validity of typing of staphylococci it would be of public health value, in investigating the many infections (apparently growing both in number and in epidemic importance) caused by the staphylococcus, for wider facilities of typing to be available Facilities for typing streptococci are general, but it was only after unsuccessful requests to a large number of laboratories that I was able to get the cultures of *Staph aureus* typed

J L BURN,
Barnsley Medical Officer of Health

THE MEDICAL DIRECTORY

SIR,—To maintain the accuracy of our annual volume we rely upon the return of our schedule, which has been posted to each member of the medical profession Should the schedule have been lost or mislaid we will gladly forward a duplicate upon request The full names of the doctor should be sent for identification

104, Gloucester Place, W 1 J & A CHURCHILL LTD

Parliament

War-time Agriculture

IN the debate on agriculture in the upper House on July 1, noble lords eloquently defended the farmer's livestock Lord TEVIOT said that if the farmer was to go on producing food he must keep the land in good heart, and he should be allowed to keep some of his crops to feed the pigs and poultry who maintained its fertility Too much artificial fertilisers "doped" the land

Lord DAWSON said that milk was all his song and made his plea for the dairy herds Unfortunately, he said, increasing consumption of milk existed side by side with decreasing production Last February the consumption of milk increased by five million gallons, and the consumption of people who had prior needs reached ten million gallons per month But production had been falling since 1939 and was still falling On official evidence the provision of a pint of milk daily for children under 16, and half a pint for adults, would in the winter months exceed our total milk production by half During 1939–40 Germany had increased her production of liquid milk Lord Dawson urged that, after vegetables, potatoes and leguminous foods the dairy herd should have the next claim on home-grown food Although we were not justified in spoiling the land to feed the country, we were justified in straining the land, if such temporary strain would provide essential nourishment A reduction of milk consumption in the coming winter would entail risks The meat ration could be curtailed within reason and even our share of that essential food cheese could be curtailed, so long as the milk-supply was not tampered with, for it was the keystone of the nutrition problem Milk was as important as munitions, for with the rationing of foods it contributed more to the maintenance of the efficiency of our adult working population than anything else This was doubly true of sedentary workers, who needed lighter foods In many people stress and anxiety produced digestive disorders For them milk was also important They carried on, but unless they were carefully fed their ailments would become illness, and illness meant incapacity and a consequent weakening in the war effort If necessary, enough powdered milk should be introduced to carry us through the coming winter Lord Dawson hoped that every effort would be made to avoid the rationing of milk

LORD ADDISON agreed that it might be necessary in this crisis to capitalise the dormant fertility of the land, while Lord BALFOUR of BURLEIGH stressed the need for a synthesis between the often conflicting claims of industry and agriculture He suggested that nutrition might provide a good starting-point for post-war discussions

The Duke of NORFOLK, parliamentary secretary to the Ministry of Agriculture, said that the Government wished to raise the food production from our land to the maximum, and to ensure foodstuffs were produced of the kind and in the quantities we needed The Government was anxious to keep up the milk-supply, and he could assure Lord Dawson that in the culling of dairy herds no cow should be killed that was not diseased or unthrifty The total was not expected to exceed 5%

QUESTION TIME

Social Reconstruction Survey

In answer to a question Mr ARTHUR GREENWOOD, minister without portfolio, stated that the committee of the Social Reconstruction Survey consists of members appointed by the committee of Nuffield College as follows Mr G D H Col (chairman), The Master of Balliol, The Principal of Lady Margaret Hall, Prof A G B Fisher, Prof D H Macgregor, Prof A L Bowley, Sc D, Mr R C K Ensor Miss A Headlam-Morley, and Mr C H Wilson Th committee have coopted Mr C S Orwin, D Litt, Mis Margery Perham, Mr G Montagu Harris, and Pro Patrick Abercrombie, F R I B A The terms of reference o the survey are, briefly, to inquire into the redistribution o industry and population brought about by the war and th extent to which this redistribution is likely to persist in th post war period, into the effects of war conditions on th working of public social services (other than the hospita service), into the changes in conditions of living due t evacuation and similar measures taken to meet the wa situation, and into the bearing of all these factors on th general problem of national reorganisation after the war I addition to the chairman, the senior staff of the central offic of the survey consists of five full time research workers an one part time research worker There is also a clerical sta of five The survey employs, in different areas of the country 21 chief local investigators, two of whom are members of th senior staff of the survey To assist them chief local investigators have appointed a number of assistant investigator The work of all local investigators, except those employe on the central staff of the survey, is part time, and most loca investigators are giving their services free The bulk of th expenses of the survey during the current financial year will b borne by the independent resources of Nuffield College, bu the Government have undertaken to meet a grant not exceeding £5000, to be borne on the Treasury Vote, towards the expenses of the survey in that year

New Prison Dietary Scale

Mr W THORNE asked the Home Secretary if he could giv any information in connexion with the Dartmoor convic trouble, how many of the prisoners were injured, an whether he would have circulated the prison daily dietary —Mr O PEAKE, under secretary to the Home Office, replied Disturbances which took place not at Dartmoor but at Parkhurst Prison on June 3, arose out of complaints about a mea

WEEKLY RATION PER MAN

	oz		oz
Bread	140	Rice or Barley	7
Meat, fresh or preserved	12	Flour	14
Bacon	4	Dried fruit	4
Potatoes	112	Margarine	8
Jam or syrup or treacle	2	Fish, salt or fresh	20
Fresh vegetables	24	*Tea*	1
Root vegetables	14	Cocoa, Admiralty	5
Dried vegetables *	9	Cheese	1
Sugar	8	Milk	pts 2
Oatmeal	21		

* Split peas, beans or marrowfat peas

MEALS FOR A DAY BASED ON RATION SCALE

Breakfast

	oz		p
Bread	8	Porridge (*a*)	1
Margarine	½	Tea (*b*)	1

(*a*) 3 oz oatmeal, 2–4 oz milk as procurable
(*b*) ¼ oz tea, 1½ oz milk, no sugar

Dinner

	oz		o
Bread	2	Rice or barley	1
Potatoes	16	Dried vegetables	
Meat (*c*)	4	Flour	
Root vegetables	4	Cabbage	6

(*c*) Boil the beef and cut up in thin slices, issue in bottom tins Clean and cook vegetables With rice or barley add dried vegetables, season and thicken with flour, also in bottom tins Cabbag and potatoes in top tins

Supper

Bread	10 oz	Cocoa (*d*)	1 p
Margarine	½ ,,	Cheese (*e*)	1 o

(*d*) ¾ oz cocoa 1½ oz milk, no sugar
(*e*) Once a week

Each prisoner will be issued with 1 oz of sugar a day with th supper meal hich the convicts refused to eat They were given another eal instead, but some of them refused to go to their work or o return to their cells A few had to be removed with the elp of prison officers brought from the neighbouring prison of amp Hill No one was hurt These disturbances had othing to do with the new dietary scale which the Minister as approved as an experimental measure for three months he scales are to be reviewed shortly, though it is unlikely that will be possible to introduce any fundamental changes, since he scale is based on the rationing scheme applicable to the eneral public

National Health Insurance

Mr Rhys Davies asked the Minister of Health whether, in rder to avoid unfair competition among approved societies, e would insert in the new Health Insurance Bill, already romised, a provision whereby a legal contract of membership f the society should not be valid prior to the entry into nsurable employment of the applicant —Mr E Brown eplied As employed persons become entitled to, and may require, medical benefit as soon as they enter insurable employment, I think that the amendment suggested would operate to their disadvantage because under the arrangements envisaged by him delay in securing medical benefit would be inevitable

School Milk at Morecambe

Mr Gordon MacDonald asked the President of the Board of Education whether a satisfactory plan for the provision of milk in schools had been adopted in Morecambe, and what steps he was taking to ensure the provision of an adequate supply of milk to the schools in that borough — Mr Herwald Ramsbotham replied The local education authority resolved to adopt the milk-in-schools scheme as long ago as Nov 18, 1940, but they have not yet implemented this decision Difficulties in obtaining a supply of milk may have accounted for the delay during the early part of this year The Milk Marketing Board at the request of the Board of Education are giving all possible assistance I am informed that the authority have taken no steps to secure milk from one supplier who is known to have an adequate supply of satisfactory quality, and that an alternative but insufficient supply is also available No contract has been placed I view the authority's delay with very grave concern and I am pursuing the matter with them

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Public Health

Tuberculosis Death Rate Rising

Figures published by the Registrar-General for Scotland show that under war conditions there has been some rise in the deaths due to tuberculosis (*Lancet*, June 21st, 1941, p 809) Corresponding figures for England and Wales have unfortunately been lacking, the 1938 tables of the Registrar-General being still the latest available, though Dr Percy Stocks in his review of war-time mortality (*Lancet*, 1940, 1, 725) showed that the deaths from tuberculosis in London during 1939–40 were in excess of the number expected Recently, however, some broad data were provided by the Minister of Health in reply to a question in the House of Commons, and, using the Registrar-General's returns for earlier years, it is possible to study the trend of mortality over the pre-war years and up to the end of 1940 The figures below set out the position as shown by the absolute numbers of deaths since 1934 Except for an occasional break in the first half of influenza years (e g 1937) the well-known decline in tuberculosis mortality was continuing satisfactorily The war has clearly produced a set-back In the last quarter of 1939 there was a slight rise in the number of deaths of males, though not of females In 1940 there was a distinct rise for both sexes throughout the year Compared with the immediate pre-war year 1938, deaths of males increased by somewhat over a thousand, or by 8%, deaths of females by somewhat under a thousand, or by 7% Roughly, we have slipped back 4 or 5 years This relative rise has, however, been less than in Scotland where the male and female deaths in 1940 were 18 and 15% respectively in excess of the 1938 figures, but without knowledge of the population at risk—and vast changes have, of course, taken place in its distribution—it would be unwise to stress the difference

DEATHS FROM TUBERCULOSIS (ALL FORMS) IN ENGLAND AND WALES

—	1934	1935	1936	1937	1938	1939	1940
MALES							
1st and 2nd quarter	9743	9204	8836	9022	8292	8550	9238
3rd quarter	3530	3349	3373	3326	3257	3112	3204
4th ,,	4086	4020	3920	3898	3575	3664	3861
Total for year	17,359	16,573	16 129	16,246	15 124	15,326	16,303
FEMALES							
1st and 2nd quarter	7189	6785	6481	6658	5840	5940	6541
3rd quarter	3025	2803	2658	2640	2540	2417	2558
4th ,,	3161	3079	2956	2985	2672	2593	2744
Total for year	13,375	12 667	12,095	12,283	11,052	10,950	11,843

THE SAME FIGURES EXPRESSED AS PER CENT OF 1934

MALES							
1st and 2nd quarter	100	94	91	93	85	88	95
3rd quarter	100	95	96	94	92	88	91
4th ,	100	98	96	95	87	90	94
Total for year	100	95	93	94	87	88	94
FEMALES							
1st and 2nd quarter	100	94	90	93	81	83	91
3rd quarter	100	93	88	87	84	80	85
4th ,,	100	97	94	94	85	82	87
Total for year	100	95	90	92	83	82	89

From the Annual Reports

ST MARYLEBONE AND HACKNEY

Dr H A Bulman, in the west of London and Dr G H Dart in the north-east are faced with differing problems, and these are independent of locality, efficiency of health administration, or natural causes of variations in health Hackney (205 100) has nearly twice the population of Marylebone (104,173), its birth-rate in 1939 was 13 1 and death-rate 11 8, against the western borough's 9 1 and 12 6 The infantile mortality of Hackney was 40 9, that of St Marylebone 60 6 Among legitimates the rates were 39 3 and 48 5, and amongst illegitimates 82 5 and 161 respectively It must be remembered that Hackney is one of the London boroughs which has a low illegitimacy rate (3 5% in 1939) whereas St Marylebone (10 4%) has one of the highest That the mortality of illegitimate infants in Marylebone should be nearly double what it is in Hackney can be explained by social factors, explained, not excused The death-rates given, 11 8 and 13 respectively, are corrected by the comparability factor and therefore suggest that the people of St Marylebone are either less healthy or shorter-lived than those of Hackney, but the comparability factors are old and the movement of populations owing to war conditions renders them obsolete Tuberculosis notifications were 213 pulmonary and 34 non-pulmonary in Hackney and 111 pulmonary and 15 non-pulmonary St Marylebone The deaths were 109 and 15 in the former and 57 and 5 in the latter The higher non-pulmonary incidence in Hackney is explained by the higher proportion of children in the population Cancer mortality was distinctly higher in Hackney than in St Marylebone (344 deaths again 139) and so was mortality from diabetes (42 deaths against 14), but that from cerebral hæmorrhage was less (56 deaths against 54) This might mean that the people of Hackney are later in seeking treatment for cancer than are those of St Marylebone and less persistent in the treatment of diabetes

ILFORD

Dr A H G Burton's report of an unusually healthy year in a typical working-class outer-ring borough gives a picture of the best health conditions which could be expected with the amenities, knowledge and administrative capacity and energy available at the outbreak of the present war Within living memory Ilford was a village, it is now a section of London with 169,800 inhabitants The rapidity of its growth can be gauged by the fact that its population has doubled since the census of 1921, this increase is mainly by immigration, for its birth-rate in the past five years has averaged about 14 and its death-rate 9 In 1939 infantile mortality was 33 9 and maternal mortality 1 75 The latter is a low record, attained by the reduction of fatal infection , in 2307 births there was only one death from puerperal fever Prevention of serious puerperal infections had got to a very satisfactory state by 1937 and then the introduction of the sulphonamides gave us a powerful remedy to combat failures of prevention Of the 1450 deaths which occurred in Ilford in 1939, more than half (763) were of people over sixty-five , 31 were aged 1–15, and 47 aged 15–25 The 78 deaths of these immature people were made up as follows 13 from violence and 2 from suicide , 13 from pulmonary tuberculosis (12 in people over fifteen) , 5 from other tuberculosis , 7 from heart disease (all over fifteen) , 3 from appendicitis , 4 from acute endemic infections , 7 from acute respiratory infections, and the remaining 24 from various causes

There are approximately 42,900 inhabited houses in Ilford of which 16,312 were inspected in 1939 , bug-infestation was found in 49 There might be a few more infested houses which were not inspected, but the number would be small Other nuisances were detected in 1167, or roughly in 1 house of every 15 inspected The distribution of nuisances in houses not inspected naturally varies greatly with the energy of the sanitary inspector and his staff, but also with the nature of the property and the habits of the people To abate the nuisances detected 836 informal notices were served resulting in 707 abatements, and 312 statutory notices resulting in 253 abatements Of the statutory notices 258 were to provide dustbins

Infectious Disease in England and Wales

WEEK ENDED JUNE 28

Notifications —The following cases of infectious disease were notified during the week smallpox, 0 , scarlet fever, 840 , whooping-cough, 5437 , diphtheria, 909 , paratyphoid, 74 , typhoid, 37* , measles (excluding rubella), 8820 , pneumonia (primary or influenzal), 666 , puerperal pyrexia, 121 , cerebrospinal fever, 192 , poliomyelitis, 3 , polio-encephalitis, 0 , encephalitis lethargica, 5 , dysentery, 78 , ophthalmia neonatorum, 82 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on June 25 was 1526 , including scarlet fever, 168 , diphtheria, 301 , measles, 238 , whooping cough, 469 , enteritis, 18 , chicken pox, 62 , erysipelas, 30 , mumps, 6 poliomyelitis, 1 , dysentery, 5 , cerebrospinal fever, 40 , puerperal sepsis, 8 , enteric fevers, 11 , german measles, 8 , encephalitis lethargica, 1 , other diseases (non infectious) 67 , not yet diagnosed, 93

Deaths —In 126 great towns there was 1 (0) death from scarlet fever, 4 (0) from enteric fever,* 22 (2) from whooping-cough, 9 (0) from measles, 18 (0) from diphtheria, 26 (2) from diarrhœa and enteritis under 2 years, and 5 (0) from influenza The figures in parentheses are those for London itself

Blackpool, Manchester Birmingham and Newport (Mon) each reported a fatal case of enteric fever There were 4 deaths from whooping cough at Liverpool

The number of stillbirths notified during the week was 194 (corresponding to a rate of 41 per thousand total births), including 13 in London

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* In Weekly Return No 26, for the first time ever, paratyphoid and typhoid are listed separately in table 4 (Notification of Infectious Diseases) In table 2 however (Deaths) they are still pooled under a common heading which we have hitherto rendered as Enteric Fever

BEFORE the days of the sulphanilamide compounds quinine had a wide following in the treatment of respiratory infections, and in the minor ones it still has In the last few years it has been demonstrated that many infections are accompanied by an increased utilisation of vitamin C Messrs ORGANON LABORATORIES have now introduced a compound of quinine and ascorbic acid, Orgaknine, which they suggest should be tried in the pneumonias, influenza and colds when specific bactericidal therapy is withheld or has failed Orgaknine is made up in ampoules for intramuscular injection and in tablets for administration by mouth

Obituary

GEORGE FREDERIC STILL

K C V O , M D CAMB , LL D EDIN , F R C P

Sir Frederic Still, whose unexpected death wa announced last week, was born in Holloway, in Februar 1868, the son of George Still, surveyor of customs H had his schooling at Merchant Taylors , thence to Caiu College, Cambridge, where he took a first in the classica tripos and was Winchester prizeman In 1893 he qualified from Guy's Hospital, where as house-physician he came into the sphere of influence of James Goodhart, to whose teaching and example he owed his leaning to the study of disease in children From Guy's he went to the Hospital for Sick Children, to which institution he remained devotedly attached during all his active life There in various offices, beginning as house-physician, he worked happily for nearer forty than thirty years Other hospital appointments he held—when King's College Hospital opened a children's department Still was appointed physician in charge of i and of the academic chair created in 1906—and i time he had a great success as a consulting physician i the diseases of children, but no other work lay so nea his heart as that at Great Ormond Street

from a portrait by Mr Gerald Kelly R A

His scientific reputation preceded his professiona success, for quite early in his career at Ormond Street h did two pieces of work which made his name well known one established the entity of a chronic rheumatoi arthritis peculiar to childhood (" Still's disease "), th other identified the organism responsible for the affectio described many years before by Gee and Barlow a posterior basic meningitis Gee had no great influenc on Still—he had left Ormond Street before Still wen there—but Barlow became the loved and admire inspiration of Still's career With Goodhart he collaborated in the later editions of that physician's successfu textbook on children's diseases, and then he produce several further editions of the work unassisted H published articles, papers and lectures, nearly all on th more strictly clinical aspects of disease , many of thes have permanent value, for he was an acute and accurat observer His industry was astonishing to his younge contemporaries , but he had little to distract him, fo unlike most men he had no wish for the relaxation o social gatherings or sport, and the time which he might have spent on these he devoted solely to subjects connected with medicine Indeed it was with a somewhat amused surprise that in later life his friends learnt that he had become an ardent, though, as he often said, an extremely inefficient dry-fly fisherman, and later still enjoyed and added to the social amenities of the College Club

The passage of years gave him an almost unique position as a children's consulting physician, and at one period it was difficult to find a child of well-to-do and anxious parents who at some time had not been taken to see Still The International Pædiatric Congress which met in London in 1933, over which he presided, at once set the seal on his reputation and revealed even to his own profession the width of his learning, the geniality of his address and his fame among our foreign visitors For twenty years Still was the indefatigable chairman of the National Association for Prevention of Infant Mortality and when he retired in 1937 he received the K C V O It would be idle to enumerate the medical honours which fell to his lot, and all the varied responsibilities which he cheerfully assumed in public and private work He took his full share of both and relished both Suffice it that he had of later years ripened into a wider and mellower intellectual life than had in his earlier seemed probable At Cambridge he had been a notable classical scholar and the love of the classics returned to him with reasing power His enthusiasm for good literature ver failed, and he was quick to recognise and generous praise sound writing

In his early years Still, whether because of his sole votion to the work on which he happened to be gaged, or because of an innate reticence which made n outwardly irresponsive and unsympathetic, was not easy person to become intimate with His fellow-ikers admired his industry, his talents, his learning, clinical acumen, but recognised with difficulty the man being in the accomplished physician This pect entirely changed as one grew into a closer know-lge of the man, and in later intercourse nobody could more eager to get into sympathetic touch with his ends, and few could be more delightful or more urteous in conversation or genial controversy For ill held his opinions firmly, and though even an timate might never know, nor ever inquire, his political inings he would not be surprised to learn that these had arcely altered from youth up It was part of his charm a friend that you could rely implicitly on his steadfast-ss and unchanging quality

JAMES HILL WILLIAMSON LAING

M A, B SC ST AND, M B EDIN

Dr Laing, who died at Blairgowrie on June 26 in his 0th year, was for many years medical editor to the xford University Press Physician, man of letters, otanist, art critic, and not least as friend and corre-pondent, Laing had endeared himself to a large circle by s personality and by the merit of scholarship, seldom ore lightly assumed Born at Tayport an early interest biology led him to forsake the mercantile tradition and e took a science degree at St Andrews and qualified in edicine at Edinburgh University with first-class honours 1889 He was a house officer in the Royal Infirmary, ssisting the professors of clinical medicine Grainger tewart then urged him to specialise, but deferring to s mother's wishes he settled down as a general practi-ioner in Dundee, devoting his scanty leisure, often uring busy rounds in carriage or car, to the study of ooks, particularly on painters Publishers and authors egan to receive letters in which, very gently, errors were ointed out and suggestions made which, they realised, ould only come from a man of rare attainments Thus ere laid the foundations of many friendships, among hem one with Sir Algernon Methuen, for whom Laing as to edit a series of books on art Never robust his ealth proved unequal to the strain of practice and after he last war he moved to London where, after valued ervice in the LANCET Office in preparing articles for ublication, he became editor of Oxford Medical Books Iany a contributor to that series will remember his elpful criticism, his unerring eye for verbal errors, and is flair for indexing Latterly his health compelled im to winter abroad but to the last he maintained his onnexion with the University Press One of his associ-tes there writes of him "His declining years were roubled with increasing ill health, and a succession of evere surgical operations obliged him, some years efore his final illness, to relinquish almost every form f work, but Laing remained until the last keenly inter-sted in the progress of medical science, and indeed in all ntellectual pursuits A ripe scholar, excelling in lassical literature, proficient in several modern tongues including the peculiar dialects of the Mediterranean eoples of which he made an intimate first-hand study), n enthusiast for the fine arts of which he possessed more han a dilettante's knowledge, he preserved his mental lertness even in retirement through his wide circle of orrespondents in nearly every European country The nterruption brought about by the present war was a reat grief to him, as he had striven long and earnestly for better understanding of the British point of view in nany things But for the handicap of persistent ill ealth it is hard to put bounds to the height he might ave attained not only in his chosen profession but in ny walk of life Yet it is rather for his personal qualities hat he will dwell in the memories of his friends Com-assionate and forbearing, moved to rare anger only by a ale of wrong, ever ready not merely to respond to an ppeal for aid but to initiate the offer, and withal of esolute character, uncompromising in any matter where e deemed a principle to be involved, James Laing is assured a place on the roll of those men whose unobtrusive example has maintained the honourable standing of the liberal professions"

WILLIAM PARRY MORGAN

M D CAMB, B SC LOND, M R C S

Dr Parry Morgan, who died at Pontypridd on June 14 at the age of 66, was for more than twenty years in charge of the county public health laboratories at Cardiff The son of a well-known Cardiff solicitor, he received his early education in that town, going on to Cambridge where he was 16th wrangler in the mathematical tripos of 1898 He turned to medicine for a career and qualified from St Mary's Hospital in 1906, but mathematics remained one of his chief interests After qualifying he served on the staff of the Therapeutic Inoculation Department at St Mary's, where he acquired much of that deftness in technique and inventiveness in the matter of laboratory appliances that were the admiration of his friends He served on a mission investigating the incidence of epidemic pneumonia amongst the miners of the Rand In 1919, after retiring from the R A M C with the rank of captain, he returned to his native town as bacteriologist, and before his retirement in 1939 had become one of the best known and esteemed of Cardiff medical men Under his direction the county laboratory prospered, exercising a wide and beneficial influence in its district, not only as a centre for bacteriological diagnosis, but as a source of sympathetic help and advice to practitioners His early researches were mostly in the sphere of bacteriology and immunity, but the work in which he was most deeply interested was in the treatment of pulmonary tuberculosis by artificial pneumothorax Nearly thirty years ago he demonstrated the possibility of achieving by partial pneumothorax all that it was hoped to gain by complete collapse of the lung, and it gave him great satisfaction in his later years to see his doctrine, which had long been ignored, becoming accepted practice in many parts of the world

Parry Morgan was modest and retiring in character, but he was a man of strong principles, and his sincere pursuit of truth sometimes led him to take up an uncompromising attitude Nevertheless he was kindly and lovable, and he was held in high regard by his medical colleagues He leaves a widow and one daughter

WILLIAM WATSON PIKE

K C M G, D S O, F R C S I, MAJOR-GENERAL, LATE A M S

Major-General Sir William Pike, who died at Lincoln on June 29 at the age of 81, had a long and honourable record in the practice and administration of military medicine He had served in three continents In South Africa he took part in the relief of Kimberley, and in 1914 on the outbreak of war he sailed from India to act as D D M S of the Indian Cavalry Corps in France His work quickly won recognition and when he was promoted surgeon general in 1917 for distinguished service in the field he was already D M S of an army His earlier experience in Africa stood him in good stead when he was sent later in the same year on a special mission to East Africa to advise on the medical problems of that campaign, and the following year he was again chosen when a mission on medical administration was sent to India He retired from the Army in 1920 Pike was a genial, handsome Irishman Born in co Mayo he obtained the Irish conjoint qualification in 1880 and was given his commission two years later At this time he was playing rugby for Ireland, and was also a keen hockey player and a good shot In any capacity in life he was at the top of his form

ANDREW ST LAWRANCE BURKE

L R C P I

Dr Burke, who died at Kenilworth aged 74, was well known in Coventry where for thirty years he was a medical officer to the provident dispensary and became chairman of the board of guardians Son of a Galway lawyer he qualified from the Irish Royal Colleges in 1895 and filled varied surgical house-appointments ending with senior R S O at the City of Dublin hospital Before settling in Coventry he had some experience of general practice at Wolverhampton Early in the present for its birth-rate in the past five years has averaged about 14 and its death-rate 9 In 1939 infantile mortality was 33 9 and maternal mortality 1 75 The latter is a low record, attained by the reduction of fatal infection, in 2307 births there was only one death from puerperal fever Prevention of serious puerperal infections had got to a very satisfactory state by 1937 and then the introduction of the sulphonamides gave us a powerful remedy to combat failures of prevention Of the 1450 deaths which occurred in Ilford in 1939, more than half (763) were of people over sixty-five, 31 were aged 1–15, and 47 aged 15–25 The 78 deaths of these immature people were made up as follows 13 from violence and 2 from suicide, 13 from pulmonary tuberculosis (12 in people over fifteen), 5 from other tuberculosis, 7 from heart disease (all over fifteen), 3 from appendicitis, 4 from acute endemic infections, 7 from acute respiratory infections, and the remaining 24 from various causes

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His scientific reputation preceded his professional success, for quite early in his career at Ormond Street he did two pieces of work which made his name well known one established the entity of a chronic rheumatoid arthritis peculiar to childhood ("Still's disease"), the other identified the organism responsible for the affection described many years before by Gee and Barlow as posterior basic meningitis Gee had no great influence on Still—he had left Ormond Street before Still went there—but Barlow became the loved and admired inspiration of Still's career With Goodhart he collaborated in the later editions of that physician's successful textbook on children's diseases, and then he produced several further editions of the work unassisted He published articles, papers and lectures, nearly all on the more strictly clinical aspects of disease, many of these have permanent value, for he was an acute and accurate observer His industry was astonishing to his younger contemporaries, but he had little to distract him, for unlike most men he had no wish for the relaxation of social gatherings or sport, and the time which he might have spent on these he devoted solely to subjects connected with medicine Indeed it was with a somewhat amused surprise that in later life his friends learnt that he had become an ardent, though, as he often said, an extremely inefficient dry-fly fisherman, and later still enjoyed and added to the social amenities of the College Club

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Notes, Comments and Abstracts

PREMARITAL AND PRENATAL TESTS FOR SYPHILIS *

By J. V. DePorte, Ph.D.
DIRECTOR OF THE DIVISION OF VITAL STATISTICS, NEW YORK STATE DEPARTMENT OF HEALTH

On Jan. 1, 1941, premarital tests (for syphilis only, or for syphilis and other specified conditions) were required by 20 states in the U.S.A., prenatal tests for syphilis by 19 states, and both tests by 12 states.

Premarital and prenatal tests		Premarital test only	Prenatal test only
California	New Jersey	Connecticut	Delaware
Colorado	New York	New Hampshire	Iowa
Illinois	North Carolina	North Dakota	Louisiana
Indiana	Pennsylvania	Oregon	Maine
Kentucky	Rhode Island	Tennessee	Massachusetts
Michigan	South Dakota	Virginia	Oklahoma
		West Virginia	Washington
		Wisconsin	

PREMARITAL EXAMINATION

In all of the 20 states both partners must have a premarital examination for syphilis and in 8 states the examination covers all venereal diseases. In addition, North Carolina requires an examination for epilepsy, insanity and tuberculosis, and Oregon requires one for chronic alcoholism, drug addiction and feeblemindedness. The examination must be made within a period which varies from 10 to 40 days before the issue of the marriage licence. The blood-test must be standard and recognised, and must be made in an approved laboratory. All applicants for a marriage licence must submit a doctor's certificate. The state of Virginia is unique in that *it allows people with syphilis in the communicable* stage to marry without a court waiver, because it is considered "that by allowing infected individuals to marry more cases will be brought to light and treatment, and fewer persons will leave the state to marry or resort to illicit relationships because of fear of being prohibited from marrying." The Virginia law also provides that if the report is positive the doctor must take a thorough medical history, make a physical examination, and have another blood-test made. If there is no doubt that the applicant has syphilis he must be informed and if he still wishes to marry the doctor must inform both parties of the fact and of the possibility of the transmission of the disease. If both still wish to marry, they must sign a statement to that effect and agree to take treatment so long as such treatment is deemed necessary by the state health department. Virginia already had on its statutes a law penalising people who knowingly transmit venereal diseases. In 16 states people with infectious syphilis or with syphilis which is likely to become communicable, may in an emergency or extraordinary circumstances marry with the permission of a court. The issue of a marriage licence is governed in 17 states by the doctor's opinion as to whether the disease is or is not likely to become communicable. In Illinois, Michigan, Oregon, South Dakota, and Wisconsin the law specifically requires that the doctor's opinion with regard to freedom from syphilis shall be accepted only if the blood-test is negative, and the issue of a marriage licence in these states (except South Dakota) depends on the approval of the state department of health. Only 3 states provide for an appeal in cases where a marriage licence is refused. The fees for laboratory tests and physical examinations vary greatly. In 8 states tests may be obtained free and in 4 others no charge is made for those who are unable to pay. In North Dakota the fee must not exceed 50 cents, in Oregon $5, and in Wisconsin $2. In 6 states positive reports must be filed with the department of health or health office. In all but one state (Colorado) penalties for the violation of the law are provided. These consist of fines ranging up to $1000, sometimes with prison sentences as well.

PRENATAL EXAMINATION

In all of the 19 states which provide for prenatal examination it is confined to blood-tests for syphilis. In North Carolina the responsibility for having such a test made is placed not only on the professional attendant but also on the pregnant woman, while in the other states it is the professional attendant who is legally responsible. In 10 states the blood of every pregnant woman must be tested for syphilis; in 7 others a test must be made only at the request or with the consent of the pregnant woman; in Massachusetts the attending doctor need not make a blood-test if one has already been made during the pregnancy by another doctor; in Indiana the test is waived if the pregnant woman is opposed to medical examination for disease. The laws of 9 states require that a blood-test shall be made at the first professional visit or within 10 or 15 days afterward; Indiana specifies "at time of diagnosis"; Iowa within 14 days; Maine "during gestation"; North Carolina "upon request of woman"; Rhode Island within 30 days after the first professional visit. Provision for tests without charge is made in 11 states, in 2 others the tests may be made free if the patient is unable to pay. California is the one state in which the law provides that if the accuracy of the test is questioned the state department of health must accept a specimen for checking. The laws of California, Iowa, Kentucky and Maine provide that the results of tests must be filed with the state department of health. The Michigan law lays down that the results are not public records but are available to local health officers and to doctors treating the patient. As a rule birth certificates must show whether or not a blood-test for syphilis was made, and if so its date, but in 11 states the law specifically provides that the birth certificate shall *not* show the result of the test. None of the 19 states provide penalties if the pregnant woman refuses to have a test made.

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[*] Based on a summary of recent state legislation prepared by Anita E. Bowden, Ph.D., of the U.S. Public Health Service.

STATE CONTROL OF HOSPITALS AND MEDICAL SERVICES

A SAMPLE OF PUBLIC OPINION

Public attention is today turning to the possibility of extending the scope of central government activity to embrace the medical services. This results perhaps from two main war-time developments:—

(i) The incursion of central government into realms hitherto thought private matters.

(ii) Realisation of the importance of matters affecting personal health and medical treatment, made acute by air-raid casualties, food rationing, disturbed sleep, evacuation of children, and the like.

Public sentiment is of obvious importance for planning post-war reconstruction or adapting our social organism to war-time needs.

The British Institute of Public Opinion, an independent organisation engaged in sounding this opinion on matters of social and political interest, has recently surveyed public sentiment on the question. A balanced sample of the population was asked by the institute's investigators to state its preference for one of the following three proposals:—

(*a*) All doctors and hospitals under State control with their services free as education now is.—*Yes*, 55%

(*b*) An extension of the panel system to include everybody.—*Yes*, 30%

(*c*) *Having a private doctor whom you pay for his* visits and medicine.—*Yes*, 15%

It will be noted that the three proposals are graded so that the second (*b*), though not excluding the possibility of private voluntary hospitals, yet expressed a desire for an extension of State organisation to pre-hospital treatment.

THE METHOD

The method of investigaton is well known and regularly used by scientists. It consists in recording the reactions, in the matters under inquiry, of a balanced sample of the population. The sample used is based on careful statistical and social analyses of the population, and due weight is given to the principal groupings into which all century the Coventry dispensary which had become very popular was criticised for its canvassing of the public and Dr Burke with two of his colleagues brought a successful action in the High Court against the British Medical Association for professional boycott Dr Burke who was proud of being able to trace a family tree to Norman times had a pretty taste in equipage, and later developed a conservative attachment to cars which had served him well He was a good judge of old prints He leaves a widow and a daughter

Acting Squadron-Leader **David Alan Hope Robson**, who lost his life in an air crash on June 26, was born in 1908 and graduated M B from the University of Edinburgh in 1933 After holding house-appointments at the Children's Hospital and City General Hospital, Sheffield, he spent four years in general practice at Wallington, Surrey, where he was also hon medical officer to the Carshalton and Beddington War Memorial Hospital He entered the medical branch of the Royal Air Force on a short-service commission in 1939, and from the outbreak of war until April, 1940 he served in France On his return he was posted to an operational unit Robson qualified as a pilot this year, he was particularly interested in research problems in connexion with flying at high altitudes He lost his life when a new type of aircraft crashed

Flight-Lieutenant **Denis William Mahon** was seriously injured in a flying accident on June 9, and died shortly afterwards at the age of 26 He qualified M R C S in 1938 from the London Hospital where he was a member of the O T C He demonstrated at the medical college in applied physiology, histology and applied pharmacology, and after holding house-appointments at Poplar Hospital, and the Royal Berks Hospital, Reading, he was commissioned in the R A F Volunteer Reserve in November, 1939 From February till June last year he served in France, when he was appointed medical officer to a bomber squadron

Dr **A Lasnet**, news of whose death on Dec 14, 1940, has been received from the International Office of Public Health, was delegate for Indo-China and later for Algeria on the permanent committee of the office Lasnet had had wide experience in every French African colony and in Indo-China and was in charge of the health services of the French Army of Occupation on the Rhine until 1924, when he became inspector-general of the French colonial medical services In 1924 he joined the committee of the office and in 1936 he undertook a mission to Spain to investigate the epidemic and sanitary situation on behalf of the health committee of the League of Nations In 1937 and 1938 he was in charge of one of the three health units sent out to China by the League His works include many studies on epidemiology, hygiene and social medicine and he took especial interest in yellow fever and in the Mecca pilgrimage

Medical News

Royal College of Surgeons of England

Election to the Council —On July 3 four fellows were elected to fill the vacancies caused by the retirement in rotation of Mr Burgess, Mr Souttar and Mr Cope, and by the death of Mr R C Elmslie The result of the poll was as follows —

	Votes
Arthur Henry Burgess (Manchester)	608
Henry Sessions Souttar (London)	604
Vincent Zachary Cope (St Mary's)	528
Ernest Frederick Finch (Sheffield)	492
Philip Henry Mitchiner (St Thomas's)	480
Sir Harold Gillies (St Bart s)	467
Reginald Martin Vick (St Bart's)	429

In all 1097 fellows voted , in addition 7 votes were found to be invalid Mr Burgess, Mr Souttar and Mr Cope are all elected for the full period of eight years, and Mr Finch acts as substitute member for the late Mr Elmslie until July, 1946

Society of Apothecaries of London

D A Ogden, St Mary's, having completed the final examination, has been granted the diploma of the society, entitling him to practise medicine, surgery and midwifery

University of St Andrews

On June 27 the following degrees were conferred —

M D —R Y Dunlop and Jean L Hallum

M B , Ch B —Nancy Young K G Lowe, A W K Main E L McQuitty, Laeticia J W Douglas Anne M Wood, an Gwendoline M Sturrock (with commendation) , Mary O Adams Margaret C Barnet, Elizabeth S Bayne Samarendra C Chatterj Francis E Clynick, Angus Everard, Joyce M Fleming, R Flynn, J O Forfar, Philippa E Gaffikin, Sheila Graham, J Law, Alexander MacKenzie, R S MacKenzie, Alexander MacLear F A Macrae, J M S Manson, N D Paton, J M Robertson Kathleen Robertson, Constance F Ross, A E D Sanjana, Agnes C Swales, K A Swales, and A K Tulloch

University of Manchester

At recent examinations the following were successful —

M D

P R Evans, and J A Hobson

FINAL EXAMINATION FOR M B , CH B

S S Rose (with second class honours) , E P Abson R G Bal John Ball, E A Cachia, D M Coates, B O Dowdell, B I Eame Jeanne M Edwards Elozor Feinmann, Alan Glass J C Greenwoo P G Griffiths, E G Hall, Frances A Hepburn, Margaret Jacque R P Jepson, Susanne M Lempert, D C Little, F S Moone T E Parry, John Thompson, Vera Waine, F R Wilde, Lion Wise, Basil Wolman, and P B Woolley

University of Liverpool

At recent examinations the following candidates we successful —

M D

F C Deller

FINAL EXAMINATION FOR M B , CH B

N B Jones (first class honours) , B B Evans, and N O I Gibbon (second class honours)

Part III —Katharine E Ainsworth, G M Ardran, W W Aslett, Aileen M Barry, W H Berry R S Cook, R T Davie J A Donnellan, C V Donnelly, B K Ellenbogen, J J Ennit H E D Flack, H W Forshaw, G L Gamble, A J Goldma H R Gray, J J Hargadon, I J Harris, J H Hughes, Lillie Jackson Katie H Jones, Mair E Jones, W J Jones, Mary Jorda A C Kirby, C A Kovachich, C C Laird, T E Lamb, D Lesli T B McMurray, M Makin, Lucy D Meyrick, E L Moore, Moorhouse, P P Newman, J A B Nicholson, J D F Norma C N Partington, D E Paterson, H C Percy Hughes, G Pimblett, Joan E M Potts, A G Rickards, F S Rickards Rosenthal, C N Samuell, G D Scarrow, G L Shatwell J Swithinbank, W G Taaffe E Walker C W Walton, A S White head, J K Wilson, J Winter, and F J Zacharias

Part II —G W Gibbs, F E D Griffiths, and R B McConnel

Part I —Mary A R Allan, A S Beadel, R A Blyth, W Canning, J F Ferguson, E N Hugh Jones, E D G Kirkwoo Jean C Miller, E W Parry, J S Redfern, J V Shepheard, G Thomas, K B Thomas, and Doreen M Watt

University of Dublin

On July 2 at the school of physic, Trinity College, th following degrees and licence were conferred —

M D —Alphonsus Dolphin, E G Fox, Sheila Kenny, Mont Toohey and J D Whiteside

M B B Ch , B A O —Maude F P Bigger, W G D Caldwel G B Gibson, C R Griffin, J L Handelman, A C M Hobso E D Kerr, Harvey Lesselbaum, D R McCaully, S T McCollun J J Martin, Henry Michael, D J Naughton, G S Prince, H Robinson, Elizabeth D L Simpson, P C Smyly, M J M Solomon Myer, Steinberg, N H Stewart, Helen S Watson, J C Watso M E Weiner and B W Wyllie

B Dent Sc —E T Clark and A W D Cowan

L Med , L Ch —T H Downes

Royal Society of Tropical Medicine and Hygiene

The annual general meeting of this society will be held a 26 Portland Place, London, W 1, on Thursday, July 17, a 4 30 P M At 4 45 P M Dr G W M Findlay will read paper on the present position of yellow fever in Africa

Biochemical Society

The next meeting of this society will be held in the phy siology department of the University of St Andrews, a University College, Dundee, on Friday, July 18, at 2 30 P M

Association of Clinical Pathologists

The summer meeting of this association will be held at th department of pathology of the University of Cambridge a 10 A M on Saturday, July 19 Further information may b had from Dr C H Whittle Brookfield, Trumpington Road Cambridge

British Institute of Philosophy

Sir David Ross, provost of Oriel College, Oxford, wi deliver to the institute an address on the war and philosoph The meeting will be held at University Hall, 14, Gordo Square, London, W C 1, at 1 45 P M , on Tuesday, July 22 Cards of admission can be had from the Director of Studie at the same address

◆

ORIGINAL ARTICLES

THE QUANTITATIVE ADMINISTRATION OF ETHER VAPOUR

R R MACINTOSH,
D M OXFD, D A

K MENDELSSOHN,
PH D BERLIN

Nuffield Department of Anæsthetics, University of Oxford

AN anæsthetic which is in the gaseous state at N T P can be administered in any desired quantity or concentration by regulating the measured rate of its flow The object of the work to be described in this and the following papers was to devise means by which the anæsthetist shall be able to control in a similarly simple and accurate manner, the composition of a mixture containing the vapour of a liquid anæsthetic The fact that a liquid anæsthetic is stored in the liquid state and administered in the gaseous state confers great advantages of portability and compactness At the same time this fact makes the problem of its quantitative administration more difficult because an intermediate process of vaporisation is necessary

A method of historic interest of administering the vapour of a liquid anæsthetic quantitatively is that of Snow, who in 1849 introduced a measured quantity of liquid chloroform into a large bag, sufficient when the bag was filled with air to form a mixture containing 4% of chloroform vapour The method proved cumbersome and was abandoned, because, said Snow (1858), " it seemed necessary to sacrifice a little of absolute perfection to convenience " The method was revived for a short time by Clover (1862) More practical methods of administering chloroform dosimetrically were introduced by Vernon Harcourt (1903), Levy (1905), and more recently by Rowling (1932), but for reasons which will be apparent later none of these methods is suitable for ether, of which a much larger volume must be evaporated in order to obtain a corresponding degree of anæsthesia

In order to explain the present method by which this problem has been dealt with, it is necessary to refer briefly to the physical laws governing the vaporisation of liquids The concentration of vapour in the atmosphere above the surface of a liquid depends solely on the temperature of the liquid If the temperature changes the concentration of vapour in the air above the liquid changes accordingly The vapour-pressure curve for ether (fig 1) shows the strength of the saturated ether-air mixture corresponding to temperatures ranging between −20° C and 40° C , expressed both as partial pressure in mm Hg and in volume per cent of ether vapour in the mixture This strength is about 10% at −17° C , 25% at 0° C , 50% at 17° C (room temperature) and 100% at 34° C , the boiling-point of ether This gradual variation of the vapour concentration with temperature might seem to offer a means of administering a mixture containing any desired strength of ether vapour simply by changing the temperature of a vessel containing liquid ether, but unfortunately, for practical reasons, the construction of a device which allows such rapid well-controlled changes of temperature is not feasible We have therefore directed our attention to maintaining in an ether container a constant high concentration of ether vapour, diluting this with air or other gases in such a way that the percentage of ether vapour in the mixture delivered to the patient is known and can be altered at will

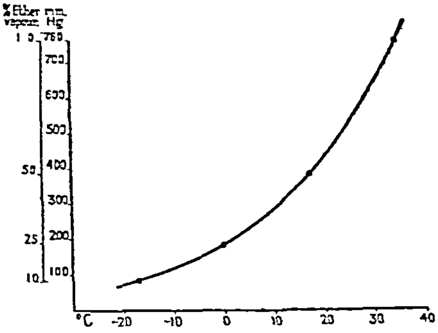

FIG 1—Vapour pressure curve for ether

In order to ensure this constant and high concentration of ether vapour it is necessary to keep constant the temperature of the liquid ether within the container It is here that we meet with our first difficulty The vaporisation of a liquid is a process which involves consumption of heat—for example, the transformation of 1 gramme of liquid ether into ether vapour of the same temperature requires 90 calories Unless this " heat of vaporisation " is furnished from outside the liquid will cool, and there will be a continual decrease in the strength of the vapour above the liquid

The jacket of warm water commonly used round the familiar Boyle's bottle does not provide this heat in a satisfactory manner If the heat content of such a jacket is to be adequate the size of the jacket will be unwieldy, since the initial temperature of the water must not exceed the boiling-point of ether, 34° C Further, the temperature of such an assembly will not remain constant, because the temperature of the water will fall as heat is taken from the system

CRYSTALS AS A HEAT RESERVOIR

The use of an electrical thermostat while theoretically satisfactory is not so in practice, because electricity is not always available, and because of risks of ignition Instead we have made use of the latent heat of a subsidiary substance to act as a *heat reservoir* at constant temperature It is well known that if heat is added to or lost from a vessel containing melting ice the temperature of the ice-water mixture does not change There is an increase in the amount of water present when heat is added, or in the amount of ice when heat is taken away, in each case at the expense of the other phase Thus any changes in heat content of the system either melt ice or crystallise water, but do not result in changes of temperature Such a thermostat is well suited to our purpose, but instead of ice we must choose another crystalline substance with a melting-point lying at a more convenient temperature The maximal concentration of the vapour desired determines the temperature to be maintained within the ether container, and the melting-point of the heat-reservoir substance must correspond with this temperature

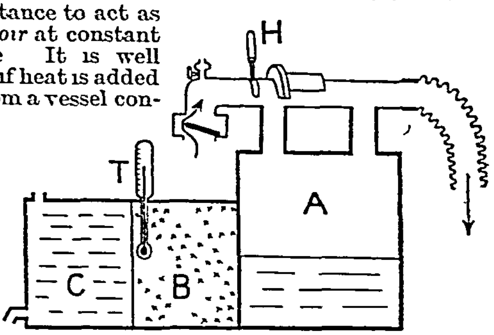

FIG 2—Scheme of ether vaporiser A ether container, B heat reservoir containing crystals, C hot-water chamber, H tap for controlling ether concentration, T thermometer

The general scheme of the new type of ether vaporiser is shown in fig 2 A is the container in which ether is evaporated, B the heat reservoir containing the crystals, and C is a chamber into which hot water is poured to provide heat to melt the crystals Let it be assumed that just sufficient hot water has been put into the chamber C to melt all the crystals in the reservoir B When ether vapour is taken out of the container A, more ether will evaporate in order to restore the original concentration of vapour above the surface of the fluid ether The temperature of the fluid ether does not fall, because the heat used for the evaporation is furnished from the reservoir B, in which an equivalent amount of molten " reservoir " substance crystallises This process goes on at constant temperature until all of the liquid in the reservoir B is solidified, which will be shown by a sudden fall in the reading of the thermometer registering the temperature of B In order to re-melt the crystals hot water is again poured into C There is no need for the temperature of the water to be below the boiling-point of ether, for the crystals in B will act as a thermal buffer, taking up heat at any higher temperature but releasing it only at the temperature of their melting-point members of the population fall, in one capacity or another These groups, known as "controls," include geographical dispersion, age and sex distribution, economic or income categories and the main occupational groupings Recent changes resulting from evacuation, mobilisation and the bombing of certain areas are of course incorporated in so far as their effects can be estimated

The degree of probable accuracy to be expected by interviewing different numbers of people may be accurately defined statistically If (say) 900 people are questioned and their opinions divide evenly on a given subject, the mathematical chances are 997 in 1000 that the margin of error will not be greater than 5% Should opinion divide unevenly then the margin of error will be even smaller The sample used is such that the greatest margin of error expected is between 3% and 4% with the least favourable division of opinion

ITS APPLICATION

In the light of this a total of 85% for some kind of State organisation of pre-hospital treatment is specially significant, and contrasts with 15% expressing preference for private doctors This was so in spite of frequent criticism of certain aspects of the panel system as now operating, expressed in such comments as —

> "Most men feel the panel system does not work too well—there is too great a dividing line between the doctors' treatment of the panel patient and the paying patient"

There were, too, certain reservations in the public mind on State control which were summed up in the comment —

> "Afraid State doctors would be like going to a Relief doctor—maybe they would treat us like dirt"

As opposed to these fears was the opinion of those favouring State control expressed in the typical comment —

> "The voluntary system means hospitals burdened perpetually with debt which must hamper efficiency"

Interesting divisions of opinion are revealed by a closer examination of the groups questioned Figures for the various groups were

INCOME GROUPS	*State control*	*Extension of panel*	*Private doctor*
Higher	37	23	40
Middle	56	23	21
Lower	55	32	13

Middle and lower income groups (£10 a week and under) approve, to the same extent, of State control 56% and 55% respectively as opposed to 37% approval amongst the upper income groups (over £10 a week) The latter group voted 40% for private doctors as against 21% in the middle income group and 13% in the lower income group On the other hand opinion in the upper and middle income groups with 23% approval for an extension of the panel system contrasted with 32% amongst the lower income group

AGE GROUPS	*State control*	*Extension of panel*	*Private doctor*
21–29	58	29	13
30–49	58	23	14
50 and over	45	33	22

Clear differences in attitude were noticeable in the age groupings questioned Of those under 50 years of age 58% were in favour of State control as opposed to 45% approving in the over 50 years age group The over 50's were on the other hand more inclined to favour an extension of the panel system or having a private doctor This probably reflects the fear in old people (expressed in a reported comment noted above) of harsh treatment by dis-interested doctors

SEX GROUPS	*State control*	*Extension of panel*	*Private doctor*
Men	58	29	13
Women	52	30	18

Men are slightly more in favour of State control than women, who in the same small degree incline towards private doctors The difference between the opinions of the sexes is by no means as large as the differences noted amongst other groups

B I P O

The price of Lewin's "Orthopedic Surgery for Nurses" (Saunders) is 17*s* 6*d*

VIKINGS ASHORE

SINCE the invasion of Norway, the Norwegia merchant fleet has sailed only from British ports Th has brought an influx of Norwegian sailors into our se port towns, and the government of Norway operating Britain was quick to recognise that plans must be ma to meet their needs In London Norwegian seamen ha a good hostel where they find surroundings resembli those with which they are familiar in their own countr and when they are ill they can obtain treatment at hospital *staffed with Norwegian doctors and nurs* Something on the same lines is now being done Glasgow, where it is estimated that there are alwa about 500 Norwegian seamen ashore for a longer *shorter period between voyages A Royal Norwegi* Medical Office has recently been opened at 62 Buchan Street, and from this centre the doctors attend th fellow countrymen as general practitioners They ha been made free to avail themselves of specialist servi *at the hospitals in the city*, and by an arrangement wi the medical officer of health all Norwegian sailors w require treatment in hospital are admitted to the Sou ern General Hospital

IRISH MEDICAL UNION —*Dr J F FitzGerald has now be* appointed medical secretary of the union in succession to I J C Martin, who has lately become registrar of the Ir branch of the General Medical Council Dr FitzGerald is present medical superintendent of the Clonmel District Men *Hospital He will take up his new duties on Oct 1*

Births, Marriages and Deaths

BIRTHS

CULL —On July 2, in Birmingham, the wife of Captain Tre Cull, R A M C —a son

HOPE GILL —On July 3, at Billingshurst, the wife of Dr Charles Hope Gill—a son

LUND —On July 1, at Fulmer Chase, the wife of T /Major Max Lu R A M C —a daughter

NEWBOLD —On July 7, in London, the wife of Mr Clifford Newbo F R C S —a daughter

RAEBURN —On June 25, at Adlington, Cheshire, the wife of H A Raeburn—a son

MARRIAGES

ANDREWS—JUKES —On June 23, at Bromsgrove, George Willi Scott Andrews, M R C S , to Winifred Jukes

FRANKLIN—GRAY —On July 8, at Golders Green, Lloyd Frankl L R C P , to Margaret Gray

LLOYD—DUNGAR —On June 17, at Newton Abbot, Kenne Newton Lloyd, M B , flying officer R A F V R , to Phy Maude Dungar of Deopham, Norfolk

MCPHERSON—GEDGE —On July 5, in London, Ian McPhers M D , to Mrs Herbert J Gedge

NEILL—KINLOCH —On July 5, at St Albans H Gordon Ne M B , major R A M C of Bath, to Jean Kinloch

RAYNER—COSTELLO —On June 18, at Dawlish, Maurice Seabur May Rayner, M B , to Bridget Costello

DEATHS

CHAVASSE —On July 5, Francis Bernard Chavasse, M C , D M Ox M R C P , of Rodney Street, Liverpool

EARP —On May 19, John Rosslyn Earp, M A Camb , M R C Dr P H Johns Hopkins, medical editor of the Division Public Health Education, New York State

HUSSEY —On July 4, James Hussey, M D Lond , of West Stre Farnham, Surrey

LAYTON —On July 3, Frank George Layton, M R C S , J P , Walsall

LLOYD —On July 5 at St Leonards on Sea, Owen Edward Pen father Lloyd, V C , K C B , major general, R A M C ret aged 87

POWER —On June 23, Robert Ignatius Power, L R C P I , ma R A M C retd , aged 85

STANLEY —On July 5, John Douglas Stanley, M D Edin a Birm , F R C P

STRONG —At Boston, Lincs, Clement Percival Strong M B Ed

WILLCOX —On July 8, at Welbeck Street, W , William Hen Willcox, K C I E , C B , C M G , M D Lond , F R C P

Appointments

DIVE, H R , M R C S , D T M & H *deputy* director of medi services, Malaya

DRURY WHITE, JEAN M , M B Lond senior asst pathologist the Royal Cancer Hospital (Free) London

LINEHAN JOHN, M D N U I , D P H , D C H asst M O Ealing

PEARSON R C M , M D Edin , M R C P E , D P H depu M O H for Coventry

SPENCER, A M , M B Brist , B Sc Wales, D P M senior asst M and deputy medical superintendent at the Joint Count Mental Hospital, Carmarthen

WHAPHAM, EILEEN M , M D Lond , F R C S , resident obstet officer at Southend Municipal Hospital

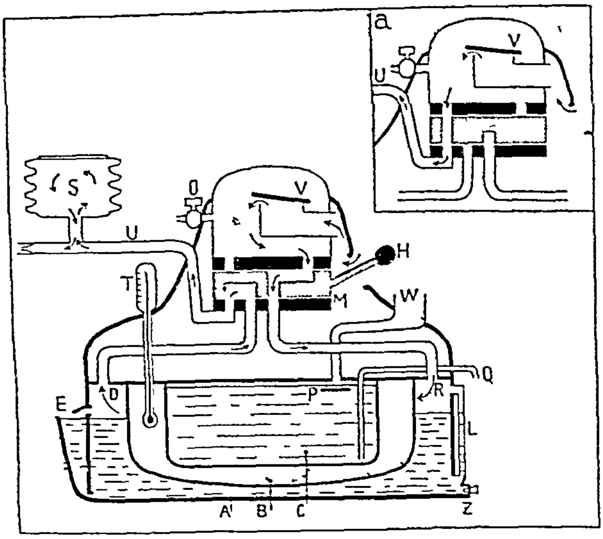

FIG 2—Modified vertical section through Oxford Vaporiser No 1 A ether chamber, B heat reservoir containing calcium-chloride crystals, C hot water chamber D exit for air plus ether vapour E ether filler H lever for controlling ether concentration, L ether level indicator M mixing tap assembly, O tap for oxygen, P baffle plate, Q water outlet R inlet for air S bag, T thermometer U tube to mask, V inlet valve, W filler for hot water, Z plug for draining ether In inset (a) the mixing tap is turned so that air passes direct to the patient

by the omission of fins from the walls of the containers Fig 3 is a sketch of the apparatus

The hot water chamber (*C*) —Hot water is poured in through the filler W and impinges on the baffle plate P In this way the freshly added hot water occupies the upper part of the chamber and displaces the cooled water through the outlet tube Q When the chamber has been completely filled with hot water, the stream flowing from the outlet changes quite suddenly from cold to hot

The calcium chloride chamber (*B*) is a cylindrical chamber the bottom of which is rounded so that bubbles cannot be trapped underneath it It contains the bulb of the thermometer T which registers the temperature of the calcium chloride After it has been filled this chamber is sealed off by the manufacturers and it should not be opened The hydrated calcium chloride does not deteriorate with time, but if exposed to air the crystals lose water and become inefficient for our purpose

The ether container (*A*) is filled through the funnel E, whose upper rim is so arranged that the chamber cannot be overfilled If by mischance hot water is poured into this filler it would not enter the chamber because of the constriction at the apex of the funnel The hot ether-water mixture would instead be blown back from the filler with considerable violence The ether level in A is shown by the level indicator L, and Z is a drain plug through which ether may be drained away

The inspiratory valve (*V*) *and mixing tap assembly* (*M*) — When the patient breathes, air is drawn into the vaporiser through the slot in the outer container from which the ether concentration control lever H projects The air then passes through the inspiratory valve V, whose action can be observed through the transparent dome (D in fig 3) If required oxygen may be added through the tap O

The mixing tap consists of three discs in which ports are cut The upper and lower discs are fixed and the intermediate one can be rotated about a central axis by moving the lever H By means of the mixing tap the air can now be (1) diverted wholly or in part over the surface of the ether, or (2) by-passed directly to the patient, who thus receives air only In fig 2 the tap is shown in the position in which all of the air reaching the patient passes through the ether chamber, the pathway being marked by small arrows Inset (a) shows the course taken by the air when it is passed direct to the patient without any part of it passing through the ether chamber The control handle H can be adjusted to any intermediate position , the figures above it (see fig 3) indicate the percentage of ether vapour (v/v) reaching the patient

The spirometer type bag (*S*) is lightly spring-loaded so that it tends always to remain expanded In normal use its action is to draw air gently through the vaporiser during the intervals between the patient's inspirations When the patient inspires, part of the contents is drawn from the bag, but the spring loading cannot produce any resistance to inspiration since air can at all times be drawn freely through the inspiratory valve V Rebreathing into the bag does not occur because of a one way valve placed between the mask and the bag When required the bag can be used as a pump to draw air over the surface of the ether and to deliver the resultant mixture to the patient This will be found of value during induction, and when an air-tight junction cannot be made between the face and mask, as for example during tonsillectomy The bag can be used too for artificial respiration , the ether indicator is set at zero, the mask held firmly to the face, and the lungs inflated with air by pressure of the anæsthetist's hand on the bag

In fig 3 a portion of the outer wall of the apparatus has been cut away, so that the outer wall of the calcium-chloride container and the radial fins come into view These fins project almost to the outer wall of the ether chamber, dividing it into twelve separate compartments Wicks are placed in each compartment These considerably increase the effective ether surface and since they are applied closely to the wall of the calcium-chloride chamber their temperature does not fall appreciably as evaporation takes place Slots are cut in the fins to allow the air to pass from the inlet tube (R, fig 2) to the exit tube (D fig 2) The arrangement of the slots is such that the current of air is made turbulent and passes close to the surface of the ether no matter what the ether level may be In this way, provided the position of the control tap remains unaltered, a constant concentration of ether vapour is delivered to the patient irrespective of the amount of ether in the apparatus

OPERATION OF THE VAPORISER

The ether chamber is filled Water, as hot as available, is poured into the water filler W to displace the cold water which escapes from the outlet tube Q The stream of water emerging from Q is cool at first, but quite suddenly changes to hot When this occurs no more hot water should be poured in After a few minutes it will be seen that the mercury in the thermometer T, which for convenience has a horizontal stem (fig 3), stands above the mark t_1 The apparatus is now ready for use the concentration of ether vapour delivered from it being determined by the position of the control handle H

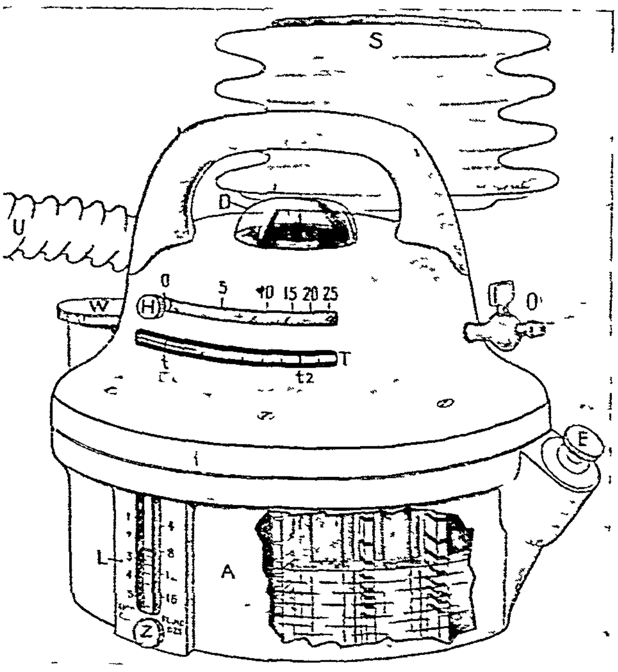

FIG. 3—Sketch of Oxford Vaporiser No 1 with part of outer wall cut away For normal working the thermometer reading should be between the marks t_1 and t_2 D glass dome for observing inspiratory valve , other key letters as in fig 2

Both the vaporisers to be described in the following papers work according to the principle outlined In the Oxford Vaporiser No 1 the temperature of the ether is kept *below* its boiling-point by choice of a suitable reservoir substance, and the machine is in fact an ether-vapour inhaler from which a constant supply of highly concentrated ether vapour is available and may be diluted with air to any desired strength by means of a calibrated mixing tap In the Oxford Vaporiser No 2, by the use of a reservoir substance whose melting-point is *above* the boiling-point of ether the concentration of ether vapour in the container is maintained at 100%, pure ether vapour is thus available and can be measured and then administered by methods similar to those used with other anæsthetic gases

The questions with which we have dealt so far are all related to the heat balance which must obtain within the system, and we have so far made the assumption that equilibrium is reached instantaneously Unfortunately this is not the case in practice It is well known that it is very difficult to saturate with ether vapour a stream of air passing over an ether surface, and also that it may take a long time before thermal equilibrium is reached between adjacent containers the contents of which are initially at different temperatures In the construction of vaporisers, therefore, we have not only to ensure that sufficient energy is furnished for the evaporation and that this evaporation takes place at a constant temperature but we must also see that attention is given to the problems of heat transfer, heat insulation, and the mixing of the anæsthetic vapour with air or other gases It is not possible to give a simple general solution of these problems, so that the way in which they have been dealt with is outlined in the descriptions of the two vaporisers

SUMMARY

The physical principles involved in the vaporisation of any liquid anæsthetic are discussed In order to maintain a constant supply of vapour it is necessary to keep constant the temperature of the liquid Two requirements must be satisfied First, an amount of heat equal to the latent heat of evaporation of the liquid must be supplied, this is done conveniently by utilising the latent heat of crystallisation of a “ reservoir ” substance which has previously been melted Secondly, the heat transfer from the molten reservoir substance to the liquid anæsthetic must be sufficiently rapid If these are satisfied, a measured amount of the vapour of a liquid anæsthetic can be delivered to a patient just as easily as a measured amount of any anæsthetic which is a gas at room temperature

The principle of utilising the latent heat of crystallisation has been used for the purpose of maintaining bacteriological specimens at constant temperature by Mislowitzer (1937) and Harrison (1937) We have to thank Colonel L W Harrison for his helpful interest in the initial stage of this work

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THE OXFORD VAPORISER NO 1

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The operation of this ether inhaler depends on the principles outlined in the previous paper A diagrammatical sketch of the apparatus is given in fig 1 A, B and C contain ether, the reservoir substance and hot water respectively (cf fig 2 of the preceding paper) The mask G is placed on the patient's face so that on inspiration air is drawn through the valve V The air goes straight to the patient (full arrows), or by means of the mixing tap H it can be directed over the surface of the ether (broken arrows) Any concentration of ether-air required for anæsthesia can be attained by setting the tap suitably

The dimensions of the various chambers are determined by (1) the amount of ether vapour which is to be furnished in a given time, and (2) the frequency with which it is convenient to supply heat by refilling the apparatus with hot water In order to fulfil comfortably the maximum demands which may be made upon the machine during induction and maintenance, the vaporisation of 15 fl oz of ether per hour has been provided for The vaporisation of this amount of ether requires 28,000 calories If we decide that the hot-water chamber is to be refilled once every 60 minutes, then we must be able to add 28,000 calories each time we refill, and this amount of heat will be furnished by 400 c cm of boiling water as it cools from 100° C to 30° C, the melting point of the reservoir substance The capacity of the hot-water container is thus determined at 400 c cm

Hydrated calcium chloride ($CaCl_2$ 6 H_2O) was chosen as a suitable reservoir substance Various other inorganic and organic compounds with melting-points in the neighbourhood of 30° C were tried but rejected because they were too active chemically or were subject to considerable supercooling The minimum amount of calcium chloride which can be used is that amount which will just be melted completely by the addition of 28,000 calories, since, if less calcium chloride is used, the heat added in filling the hot water chamber might completely melt the substance and then raise its temperature above the boiling point of ether By calculation, this minimum amount of calcium chloride is 700 grammes In practice, however, it is desirable to use considerably more than this minimum amount This is a safeguard in case the water container is inadvertently refilled with boiling water twice in rapid succession—although such a mistake can occur only if the reading of the thermometer is ignored In order to provide a considerable margin of safety we have therefore incorporated a calcium-chloride container with a capacity of 1300 g

Good heat transfer must be provided between the hot water and the calcium chloride, and between the calcium chloride and the ether, on the other hand, direct transfer of heat between the hot water and the ether must be prevented These conditions are achieved by arranging the containers concentrically The hot-water container C is cylindrical and placed centrally, surrounding this is the calcium-chloride container B, and outside this again the ether container A Since the ether container is maintained at about 30° C, heat loss from the apparatus is small because the temperature difference between its outside wall and the surrounding air is slight Heat exchange between the containers is increased by making them of an alloy of good heat conductivity, and by equipping the walls with radial fins

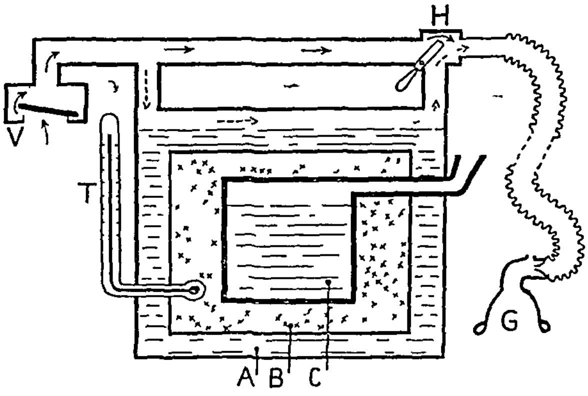

FIG 1—Diagram of Oxford Vaporiser No 1 to show general principles A contains ether, B crystals and C hot water G mask, H mixing tap, V inlet valve, T thermometer

DETAILS OF CONSTRUCTION

A modified cross-section through the actual model is given in fig 2 In order to represent as much as possible in one plane, the layout has been somewhat distorted, and various parts have been simplified—for example, The vessel for the reservoir substance, like the inner vessel, is made of metal of high thermal conductivity and fins are inserted radially These pass into the reservoir substance and through into the water contained in the outer vessel (fig 2) This construction ensures that heat from hot water poured into the outer compartment reaches the reservoir substance as rapidly as possible A funnel (W in fig 3) is provided above the water compartment whereby the water is poured in By an arrangement of tubes this hot water is directed first to the region of the flowmeter, which is thus warmed prior to the remainder of the apparatus, so that risk of condensation of the anæsthetic vapour in the flowmeter is obviated An outflow for displaced cool water is provided, Q

At the bottom of the vessel containing the reservoir substance there is a safety device in the form of a fusible metal plug The metal is chosen to melt at about 10° C above the melting-point of the reservoir substance If by accident the water container is refilled too many times so that all the reservoir substance is melted, before the temperature, and therefore the pressure, in the inner vessel can rise appreciably, the metal plug will melt and allow the molten substance to run out

When the reservoir substance is heated to its melting-point the pressure in the inner vessel rises above atmospheric, and therefore it would be impossible to fill this vessel with anæsthetic liquid without the aid of a pump A pump P and safety device have been constructed which will deliver anæsthetic liquid to the inner vessel, but no air This obviates the danger that the pressure in this vessel might be increased unduly by pumping in air , also, it prevents the production, under pressure, of a possibly explosive mixture of anæsthetic vapour and air The pump is of the hand-operated piston type, the piston being fitted with rings to minimise leakage It is contained in a small tank filled with the anæsthetic liquid so that any leakage which may occur merely results in the liquid returning to the main bulk Suitably arranged non-return valves allow the passage of liquid to the inner vessel In the small tank there is a float which closes the orifice leading to the pump when the level of liquid in the tank falls to within a short distance of this orifice, thus preventing entry of air into the pump Loss of heat from the warmed part of the apparatus to the pump via the connecting pipe is minimised by interposing a short length of bakelite tubing

In order that the amount of anæsthetic liquid present in the inner vessel may be ascertained, a liquid-level gauge L is provided This is recessed into a bakelite block which is mounted in the wall of the middle vessel alongside the metal sheath of the flowmeter

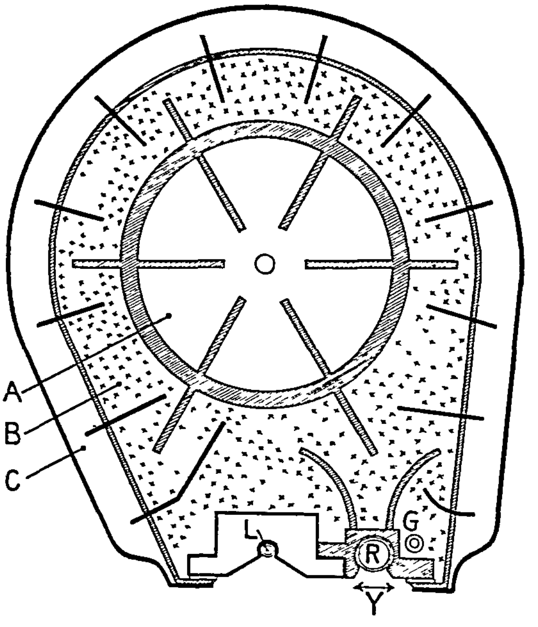

FIG 2—Horizontal section through Oxford Vaporiser No 2 A, B C G and R as in fig 1 L gauge showing level of liquid anæsthetic, Y window in metal sleeve

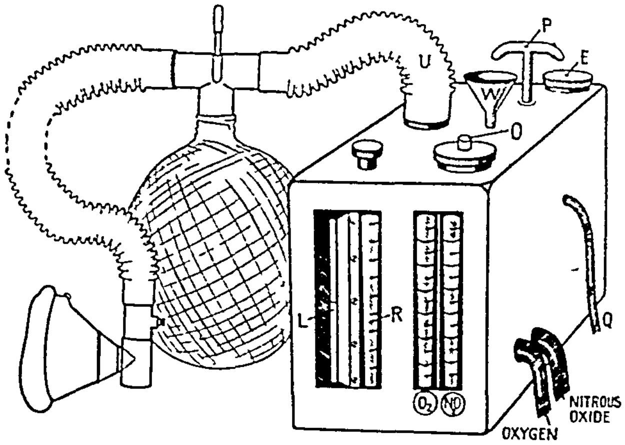

FIG 3—Sketch of Oxford Vaporiser No 2 E filler for ether, L fluid anæsthetic gauge, O press button actuated emergency oxygen supply, P pump for use when refilling ether chamber, Q outflow for cool water, R flowmeter for anæsthetic vapour, U connecting tube, W funnel for hot water, O_2 and N_2O flowmeters for oxygen and nitrous oxide

OPERATION OF THE VAPORISER

The method of putting the apparatus into operation can be described conveniently with special reference to ether When this liquid is used, para-dichlorobenzene has been found a suitable reservoir substance The melting-point of a moderately pure sample is usually about 52° C From the data given in International Critical Tables (vol i, p 196, 1926 , vol v p 130, 1929) it can be calculated that the latent heat of fusion is approximately 43 calories per c cm A rotameter graduated in c cm of ether vapour per minute, at room temperature, should be fitted into the sheath , also, a fusible metal plug melting at about 62° C should have been fitted before putting in the reservoir substance Ether is poured into the tank through aperture E and pumped into the inner vessel until this is full Three lots of two pints each of hot water (approx 85° C) are poured into the water compartment at five-minute intervals The amounts of reservoir substance and of hot water are chosen so that when enough heat has been stored to vaporise all the ether in the inner vessel there remains enough unmelted reservoir substance to absorb the heat from a further filling with hot water This provides a reasonable safety margin against filling too frequently with hot water If, however, this safety margin is exceeded the temperature of the reservoir substance will rise and the fusible plug previously described will operate While the three amounts of hot water will provide sufficient heat to vaporise all the ether contained in the inner vessel, it is preferable, if more ether is likely to be required, to refill before the supply has become exhausted To do this the inner vessel is refilled from the tank by operating the pump, and two more fillings of hot water are poured in allowing a five-minute interval

Provided that the flow of gases (essentially the flow of oxygen) is maintained, mixtures of any desired concentration can be produced by adjusting the control valves to give suitable rates of flow as measured by the respective flowmeters

To prevent total failure of the supply of any gas the usual precaution in anæsthetic practice of using a pair of cylinders, one always full, is observed A lightly loaded inspiratory valve V opening to the air is also provided and comes into play only if an insufficient total volume of gas mixture is available to the patient Should it be desirable at any time to inflate the patient's lungs with oxygen this can be done readily by means of a valve O actuated by a press-button which permits oxygen to pass under pressure to the patient, without passing through the flowmeter

As the work of Epstein * shows, the temperature of the inspired mixture during its passage from the apparatus to the patient falls to slightly above room temperature Condensation of ether will not occur in the tube leading to the patient provided that the partial pressure of ether in the mixture does not exceed the vapour pressure of ether at room temperature As this vapour pressure is

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* See the fourth paper in this series

The apparatus requires no further attention until the temperature falls below t_1 This indicates that all the calcium chloride has been solidified and a further filling of hot water is now required The hotter the water added the less often is it necessary to refill If by any mistake hot water is added too frequently the mercury in the thermometer may rise above the danger mark t_2 If this happens *cold* water must be poured into W to prevent the ether from boiling

SUMMARY

In the Oxford Vaporiser No 1, a liquid anæsthetic, such as ether, is maintained at a constant temperature below its boiling-point, thus making available a constant supply of vapour The concentration of anæsthetic vapour in the inspired air is controlled by a calibrated mixing tap which determines how much of the inspired air passes through the vaporiser, and how much by-passes it

The principle of the vaporiser is that hot water is used to melt a crystalline " reservoir " substance, and then this molten substance yields up its latent heat of crystallisation to provide, as required, the latent heat of evaporation of a liquid anæsthetic , the reservoir substance remains at a constant temperature until it has all resumed the crystalline form For the vaporisation of ether, hydrated calcium chloride, which melts at 29° C , has been found suitable To maintain the vaporiser in operation it is necessary only to fill at intervals with ether, and with sufficient hot water to re-melt the crystals , cylinders of compressed gas are not required Since the machine delivers vapour only during inspiration it is economical in use Artificial ventilation, with or without anæsthetic vapour, can be administered by a spring-loaded bag

We are indebted to Mr A V Oak, chief engineer of Morris Motors Ltd , and his colleagues for many helpful suggestions, and for redesigning the vaporiser in a form suitable for production in large numbers

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THE OXFORD VAPORISER NO. 2

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In the Oxford Vaporiser No 1 a liquid anæsthetic, such as ether, is maintained at a temperature below its boiling-point and the concentration of anæsthetic vapour in the patient's inspired air is controlled by means of a calibrated mixing tap, which determines the fraction of the inspired air passing over the liquid surface The Oxford Vaporiser No 2 has been developed to maintain a quantity of liquid anæsthetic at a temperature at which its vapour pressure exceeds atmospheric pressure—i e , above its boiling-point * The undiluted vapour can be obtained from a vessel containing an anæsthetic liquid in this condition, just as at room temperature gaseous nitrous oxide can be obtained from a cylinder of liquid nitrous oxide The rate of flow of the undiluted vapour is measured, and the vapour is then mixed with any other gas or gases desired Condensation must not be allowed to take place either during these operations or during the subsequent passage of the gas mixture to the patient

The latent heat of evaporation of the anæsthetic liquid is provided by the latent heat of crystallisation of a " reservoir " substance previously melted by hot water The reservoir substance is chosen so that the anæsthetic liquid is maintained at such a temperature as to produce a vapour pressure of less than one atmosphere above normal Thus the necessity of constructing a vessel to withstand high pressures is obviated We have endeavoured to make the heat transfer from the reservoir substance to the anæsthetic liquid sufficiently rapid to ensure an adequate supply of vapour (*a*) by constructing the dividing wall of metal of high thermal conductivity, and (*b*) by providing fins of similar metal which p from one vessel to the other

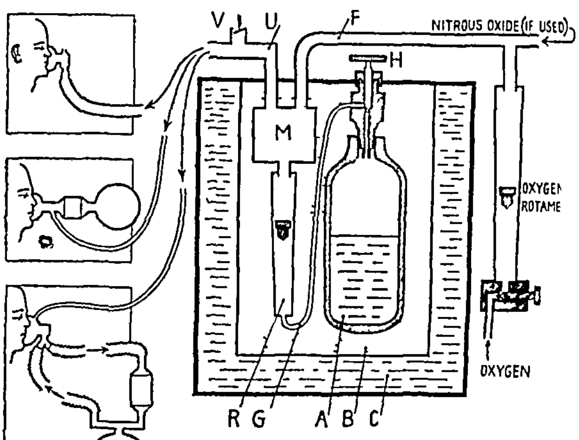

Fig 1—Diagrammatic vertical section throu Oxford Vaporiser No 2 A contains ana thetic, B crystals and C hot water F a G connecting tubes, H fine adjustment valv M mixing chamber, R flowmeter (" Rotameter "), U connecti tube, V inspiratory valve

DETAILS OF CONSTRUCTION

The most convenient arrangement of the compa ments was found to be in the form of three vessels, inside the other (fig 1) The anæsthetic liquid is c tained in the inner vessel A, the reservoir substance the intermediate B, and water in the outer vessel The inner vessel is a strong metal cylinder closed at e end, and will hold 12 fl oz of anæsthetic liquid Fin the same metal are inserted radially (fig 2) A fi adjustment needle valve H, situated on the top of cylinder controls the rate of outflow of the vapour prevent condensation the valve is immersed in reservoir substance so as to leave only the spindle a packing gland uncovered Although the pressure in vessel and valve should never reach one atmosphere ab normal they are tested to not less than ten atmosphe

The rate of flow of the vapour is measured by a fl meter of the rotating bobbin type R (" Rotameter ") prevent condensation of the vapour, the flowmeter to be warmed to at least the same temperature as anæsthetic liquid Moreover, the temperature of meter must be maintained constant in order to prev inaccuracies due to the changes in density and visco of the vapour, which would result from fluctuations temperature In order to achieve this constant tempe ture, the flowmeter is surrounded by a metal sleeve high thermal conductivity and several fins attached the sleeve pass deep into the reservoir substance T sleeve is fixed in the outer wall of the reservoir co partment At this point the water compartment interrupted, and a window Y cut in the metal sleeve expose the graduations on the meter and enable t position of the bobbin to be read (figs 2 and 3) T connecting metal tube G between the needle valve a the bottom of the flowmeter is also kept warm immersion in the reservoir substance

After leaving the flowmeter the anæsthetic vapo passes through a short tube to a mixing chamber where it mixes with oxygen, or any mixture of gas desired—e g , oxygen and nitrous oxide The rate of fl of each gas used is measured by passing it through a rot meter (see fig 3) before it enters the mixing chamber Th chamber is made of metal of high thermal conductivi and is immersed in the reservoir substance so that mixi takes place at a temperature which prevents condensati of the anæsthetic vapour Condensation can, howeve take place in the tubes connecting the apparatus the patient unless the precautions discussed below a observed Both in the tube F leading the oxygen or g mixture to the mixing chamber and in the tube U leadi to the patient a short length of tubing of low therm conductivity, such as a length of bakelite tubing, interposed This greatly reduces the loss of heat b conduction from the reservoir substance to the out parts of the apparatus

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* S R Wilson and K B Pinson (*Lancet*, 1921, 1, 336) produced an apparatus similar to the one described here in that it consisted of a strong metal vessel which was filled with ether and then immersed in very hot water

4% has the same significance During the first two or three weeks of illness eosinophils usually comprise 15–40% of the total circulating leucocytes Great variation in the actual percentage is often noted from day to day Rarely it may be necessary to make more than one examination before the eosinophilia is demonstrated In people who are moribund or in whom there is a pyogenic complication such as pneumonia there may be a temporary suppression of these cells In most instances eosinophilia persists for at least 3 months after the beginning of an infestation, and disappears sometime before the end of 12 months

Immune reactions —After an infestation with *Trichinella spiralis* specific antibodies are developed by the host Their presence may be demonstrated by a skin test or by a precipitin test with trichinella antigen (Augustine and Theiler 1932) The antigen employed is a saline suspension of powdered larvæ of the parasite When good preparations of antigen have been employed a positive skin reaction has been obtained in over 90% of clinical cases (Bozicevich 1938) The reaction is relatively specific, false positive reactions are rare One feature which detracts somewhat from the value of of this test as a diagnostic aid is the fact that a positive response may be exhibited for several years after an infestation, consequently it cannot be interpreted as an indication of recent infestation In the United States routine skin tests on hospital patients have revealed positive reactions in as many as 10% of persons (McCoy, Miller and Friedlander 1933, Shapiro, Crosby and Sickler 1938) The skin test is of real value when a positive response is obtained in a person who had previously given a negative one, this being almost certain evidence of a recent infestation Furthermore, a negative response in a subject who has been ill for four weeks or longer is strong evidence against a diagnosis of trichiniasis

Skin test —0 1 c cm of a 1 in 10,000 dilution of antigen is injected into the skin of the forearm An equal amount of normal saline is injected 5 cm distally, as a control Two types of positive response have been described delayed and immediate The delayed type becomes evident after 12–24 hours It consists of redness and induration, and is similar to a positive tuberculin reaction This type of response may be elicited as early as the end of the second week of illness, but is usually present only for a few days, after which the response is of the immediate type (Spink 1937) The immediate reaction develops during the third or fourth week of illness, and can be elicited for many months, sometimes for years, after an infestation This usually consists of wheal and erythema, but in some instances erythema is the only evidence It appears within 10 minutes of the time of injection, and begins to fade after 15–20 min

Precipitin test —This may be employed when the response to an intradermal test has been equivocal The essential technique consists in adding undiluted blood-serum to an equal volume of antigen diluted 1 200 or 1 500, and incubating the mixture for an hour at 37° C The appearance of a precipitate indicates the presence of specific antibody Precipitins usually develop at about the same stage of the disease as that at which the intradermal reaction becomes positive

Widal reaction —The development of agglutinins for *Bacterium typhosum* during the acute stage of trichiniasis has been observed occasionally (Dammin 1941) This possibility must be borne in mind because trichiniasis can simulate typhoid fever clinically I have recently tested the sera of 15 people who had been ill with trichiniasis 2–4 months previously There was no significant elevation of agglutinins for either " H " or " O " antigen of *Bact typhosum* in any of those sera

X ray of muscle —There exists a misconception that calcified trichinella cysts can be identified by X-ray examination of muscles Actually these cysts are so small that they can seldom if ever be distinguished radiologically during life It is probable that some appearances which in the past have been interpreted as due to trichinella cysts (Gouldesbrough 1918) were in reality *Cysticercus cellulosæ* Gray (1939) quotes Kirklin in the statement that there is no record of trichiniasis having been recognised radiographically at the Mayo Clinic

SUMMARY

The clinical features of trichiniasis are discussed, attention being directed to the variability of the disease, both in the nature of its manifestations and in the severity in different individuals

An eosinophil count is the best guide to early diagnosis The parasites can sometimes be isolated from the blood during the early weeks of an infestation They can usually be found in muscle tissue after the third week The specific skin test and the precipitin reaction with trichinella antigen are useful diagnostic procedures under certain conditions

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BLOOD-PICTURE IN TRICHINIASIS

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DURING the recent outbreak of trichiniasis in Wolverhampton reported by Sheldon (1941) we have through his kindness had the opportunity of observing the blood changes in about a hundred patients at various stages of the disease

Little systematic study seems to have been made of the blood changes in human beings suffering from this infestation The most complete is that of Brown (1898) but this related only to 1 case studied over three months and to 2 others followed for only a few weeks Much work has been done on the blood changes in infestations in the lower animals but the findings recorded show considerable variation, and their applicability to human infestation must be doubtful Maass (1933), in pigs, observed leucocytosis and an eosinophilia increasing steadily for twenty to twenty-four days after infestation and followed after a peak lasting one or two days by a steady fall to a normal figure Wantland (1937), working with rabbits, described a leucocytosis developing in the second week after infestation and an eosinophilia reaching a maximum of 25–79% appearing during the third week and thereafter persisting at a high level for several months McCoy (1932–33) found no definite eosinophilia in trichinosed monkeys Van Someren (1938), working with rats, found blood changes developing within four hours of infestation, these consisted of a neutrophilia with concomitant lymphopenia, the proportional distribution of the two types of white cells was fully established within two days from infestation and persisted for a considerable time, total counts of the white cells were not done The eosinophils decreased in the early stages of infestation, after about three days they began to increase and reached their maximum of 13–20% between seven and sixteen days later, the eosinophilia was found to fluctuate and two or more rises with intervening periods of low eosinophilia were observed, in heavily infested animals there was no increase in the eosinophil percentage, the cells remaining scanty or disappearing altogether, these animals invariably died within two weeks Beahm and Downs (1939) failed to find any significant eosinophilia in rats after experimental infestation

Brown in his 3 human subjects found a leucocytosis with absolute and relative increase in the number of eosinophils, the neutrophils showed a fall in total numbers and the lymphocytes a rise Brown noted the phenomenon, seen in our own cases, of primary and secondary waves of eosinophilia Three syndrome usually described as typical—gastro-intestinal symptoms, fever, œdema of the eyelids and muscle pain—is probably encountered only in severe forms of the disease Field studies indicate that some people who contract trichiniasis remain subjectively normal (Drake, Hawkes and Warren 1935), and that still more have a less severe and less distinctive illness, characterised by such symptoms as malaise, fatigue and backache Many people under such circumstances do not seek medical advice, and few physicians would suspect trichiniasis as the cause of symptoms so mild and so indefinite In addition to these milder cases, however, many examples of moderate or severe illness due to trichiniasis go unrecognised by physicians, partly because descriptions in medical textbooks often fail to emphasise significant features of the disease The following remarks are based on recent personal observations and on study of numerous case-reports

Incubation period —In the majority of instances symptoms first appear 7–12 days after ingestion of the parasite, but like all diseases of this class there may be considerable variation In one American outbreak, traced to a single meal, the onset of symptoms ranged from the third to the twentieth day (Ferenbaugh, Segal and Schulze 1938)

General manifestations —There is nearly always some rise of body temperature In most cases this does not exceed 102° F, but in exceptional instances a high sustained fever is present for many days There may be rigors The pulse-rate is usually increased in proportion to the fever

Integument —Œdema of the orbital tissues (sometimes extending to involve the whole upper portion of the face) is a very frequent manifestation Chemosis may be present, or there may be much suffusion of the conjunctival blood-vessels These signs develop during the first week of illness, and seldom persist for more than a few days Œdema of the extremities may be present, usually being associated with pain and tenderness in the underlying muscle groups Œdema over the sacrum or of the scrotal tissues is not usual Skin eruptions are uncommon, although various types of rash have been described morbilliform, urticarial or nodular Subungual hæmorrhage, which is especially likely to occur in severe cases, is a striking clinical sign and, almost pathognomonic The lesions are similar to the "splinter hæmorrhages" of subacute bacterial endocarditis, but are more extensive in trichiniasis, often forming a continuous line beneath the distal end of each finger nail (McNaught 1939)

Cardiovascular system —Hypotension is common during the febrile stage According to one case-report the blood-pressure fell to as low as 44/18 mm Hg (Cheney 1926) Electrocardiographic changes were noted in 6 of 18 patients studied at one hospital (Spink 1935) The changes were flattening or inversion of the T wave in lead 2, low amplitude of the QRS complex, and evidence of intraventricular block Pathological examination in fatal cases usually reveals an interstitial myocarditis, and larvæ have been found in the human myocardium, although they do not become encysted there Cardiac decompensation may be a manifestation of severe trichiniasis, but patients surviving the acute stage apparently have no permanent impairment of cardiac function

Nervous system —It has long been appreciated that lesions of the central nervous system may develop in trichiniasis, but the frequency and importance of these has not been stressed sufficiently When present they often dominate the clinical picture Sheldon (1941), in a careful study of 76 cases, noted neurological signs in thirteen patients These included focal pareses and signs of general inflammation, suggestive of meningitis or encephalitis In conjunction with such signs the cerebrospinal fluid may present no abnormality, or there may be pleocytosis and increased protein content Kaufman (1940) calls attention to the frequent coexistence of signs of encephalitis and myocarditis This may be ascribed to the fact that these two conditions are features of heavy infestations, where it is reasonable to assume that many parasites have been deposited in both brain and heart

Gastro-intestinal system —Such symptoms as abdominal pain, distension, diarrhœa or constipation occur in less than half the clinical cases of trichiniasis They usually subside within the first week of illness, although in rare instances abdominal pain may persist for several weeks Blood or mucus in the stools is not characteristic of trichiniasis, a point which is sometimes useful in the differentiation from dysentery

Respiratory system —There is too little recognition of the fact that cough and pain in the chest are frequent symptoms of trichiniasis Cough is probably caused by the presence of parasites in the lungs It is non-productive in most cases, although hæmoptysis occurs occasionally The chest pain may be attributed to infestation of the intercostal muscles or the diaphragm

Lymphatic system —Enlargement of the spleen is fairly commonly noted Swelling of the lymph-nodes has been described, but is rare

Fatality —Cases that terminate fatally usually show evidence of myocarditis or encephalitis or both Pneumonia may be a contributing cause of death The fatality in recent epidemics has been less than 5% If subclinical infestations are included the rate is probably less than 1%, and in the later English epidemics the fatality among cases notified was not more than 1%

Sequelæ —Complete recovery is the rule, though exceptionally there may be a permanent paralysis Some muscular pain or stiffness often persists for several months after a severe infection but progressive improvement usually takes place In a follow-up study of 70 patients, Bercovitz (1940) found that none of the patients had symptoms a year after the acute illness

Differential diagnosis —More frequent recognition of clinical trichiniasis will result only when doctors become more alert to the many possible variations of the disease Trichiniasis taking the form of a febrile illness without localising signs may resemble influenza or typhoid fever Respiratory symptoms may lead to a diagnosis of bronchitis, pleurisy or pneumonia Neurological lesions may produce the signs of meningitis, encephalitis or cerebral vascular accident Gastro-intestinal symptoms may cause confusion with dysentery or food-poisoning The orbital œdema resembles that of acute nephritis or sinusitis A practical example of possible errors was cited by Otto and Janney (1937) who reported an episode in which the following clinical diagnoses were made on seven cases of trichiniasis occurring in one family influenza, mumps, encephalitis, typhoid fever and acute alcoholism

DIAGNOSTIC PROCEDURES

Demonstration of the parasite —Although adult trichinellæ are excreted in the fæces during the first few weeks of an infestation, they are not easy to find, and search for them is usually a waste of time On the other hand, larvæ can sometimes be found in the blood during the first three or four weeks This means of diagnosis should be used more frequently, the technique is simple and does not require experience Whole blood is laked by diluting 5 c cm with 10 volumes of water This mixture is centrifuged and the sediment is examined under low power magnification The size of circulating larvæ is approximately 100 μ by 6 μ, their bodies have a granular appearance Larvæ have been found in the cerebrospinal fluid, but not in urine After the third week of illness biopsy of voluntary muscle is a fairly certain means of finding the parasites They are usually more numerous in certain muscles, such as diaphragm, intercostals and masseters, a circumstance which may be related to the glycogen content of different muscles (Lewis 1928) Because of accessibility the muscles usually chosen for biopsy are the deltoid or gastrocnemius Approximately 1 gramme of tissue is excised One portion of it can be examined immediately, pressing the tissue between two glass slides and searching for parasites, using low-power magnification The remainder can be sectioned and stained in the usual way, and examined for parasites or evidence of myositis

Eosinophilia —The differential leucocyte-count is the best guide to early diagnosis Relative and absolute increase in eosinophils is an almost constant accompaniment of the stage of larval dissemination If the total leucocyte-count is more than 10,000 per c mm of blood an eosinophil count of more than 400 may be interpreted as an eosinophilia If the total leucocyte count is less than 10,000, a proportion of eosinophils greater than

(B L D V) was able with the clinical symptoms in view to make a diagnosis of trichiniasis on the strength of the presence of these acidophil neutrophils in all the typical eosinophilia appeared later These acidophilic granules of the neutrophils were somewhat smaller than those of the true eosinophil cells but slightly larger than the neutrophil granules they varied greatly in number in the cytoplasm of individual cells even in the same film , in some they were scanty, in others so numerous as to make differentiation from a true eosinophil a matter of considerable difficulty

The absence or paucity of eosinophils in the earliest stages of infestation has been ascribed by various authors to the fixation of the eosinophils present in the blood-stream around the adult worms as they embed themselves in the intestinal mucosa Later, in response to the toxins liberated by the worms the bone-marrow secretes and mobilises more of these cells and the percentage in the blood-stream increases This brings about the first wave of eosinophilia From the fifth to the seventh week after infestation the larvæ are migrating to and establishing themselves in the striated muscle , again there is a fixation of eosinophils around the encysting worms which accounts for the decline in the eosinophils found from the fifth to the seventh week after infestation and preceding the second and final wave of eosinophilia

All the cases we saw showed some degree of eosinophilia after the first three days, and all recovered A persistent absence or low level of eosinophils in the blood-stream is said to be of bad prognostic significance in trichiniasis Spink (1934) however, observed that animals experimentally infested with trichinella failed to develop an eosinophilia when they had a bacterial infection as well , this finding may also apply to human beings and if so would have to be taken into account in diagnosis

SUMMARY

The blood-picture has been followed in about 100 patients suffering from infestation with *Trichinella spiralis* The following points were observed

Leucocytosis occurs in a primary wave reaching its peak at about the third week from onset of symptoms and a secondary wave reaching its peak at the eleventh week

The eosinophils diminish or may disappear within the first three days from onset of symptoms ; thereafter they increase in primary and secondary waves coinciding with those of the general leucocytosis

The neutrophils diminish during the waves of general leucocytosis and increase as the eosinophilia diminishes

The monocytes increase with the first diminution in the eosinophilia

In addition to true eosinophil cells neutrophils bearing within their cytoplasm greater or lesser numbers of eosinophilic (acidophilic) granules may appear especially in the early stages of infestation

Our thanks are due to Dr J H Sheldon for access to case-histories

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ELECTRICAL CONVULSION THERAPY

A M Wyllie, M D Glasg , D Psych
MAJOR, R A M C DEPUTY PHYSICIAN SUPERINTENDENT OF CRICHTON ROYAL MENTAL HOSPITAL, DUMFRIES

The method of producing convulsions by electrical stimulation introduced by Cerletti and Bini in Rome has been used in this country by Shepley and McGregor (1939, 1940), and by Fleming, Golla and Grey Walter (1939, 1940) In this hospital we have used the simple and inexpensive machine devised by Grey Walter When this is used in a favourable case there is an immediate spasm of the muscles on pressing the shock button The thighs are flexed on the abdomen, the arms are extended, and the facial muscles produce a grimace A few seconds later the true tonic spasm sets in, often heralded by a cry and fixed staring eyes, with conjugate deviation to one or other side The tonic spasm is essentially the same as that induced by Cardiazol, but it is a little shorter in duration and less powerful The veins of the head and neck stand out prominently and the skin is red and congested while the eyelids close spasmodically The mouth which is open at the beginning of the tonic stage closes powerfully and there is a tendency to bite the tongue Carpopedal spasm follows with hyperextension of the fingers, and the arms are extended while the legs are flexed on the abdomen Towards the end of the tonic stage the legs are fully extended " Goose-flesh " is often present The clonic stage follows and the colour becomes livid When the clonic jerkings settle down, respiration is spontaneously re-established, there is a short period of hyperpnœa, and the patient quietly returns to consciousness This description belongs to the majority of cases, but each patient has his own individual reaction A few of my patients were extremely restless and difficult to control for 5–10 minutes after the fit In many cases it was necessary gradually to increase the impulse in intensity and duration as the course progressed in order to secure a complete reaction Treatments are given thrice weekly at first, then twice weekly, according to the patient's progress

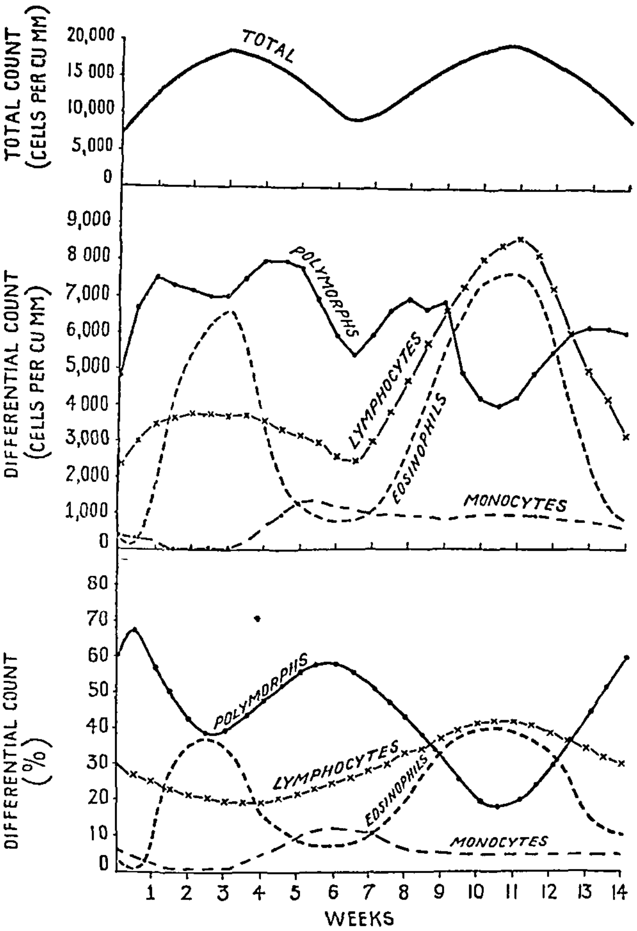
It has been claimed for this treatment that the amnesia is complete and fear of treatment consequently eliminated In my experience the amnesia is deeper than with cardiazol or triazol but fear is not eliminated although it is diminished Most patients who were sufficiently intelligent to express an opinion disliked the treatment , some hated the " going off " and others the " coming round " Nevertheless, appreciating their own rapid improvement most of them were fully coöperative One patient who had triazol shortly after a course of electrical shocks referred to electrical therapy as " the nice treatment " and triazol as " the bad treatment " Some of the schizophrenic patients resisted being brought for treatment—partly from general negativism —and so did some resistive melancholic patients Among the melancholics, however, it was noticeable that resistiveness diminished as the treatment progressed and the patient improved

The patients recovered quickly from the fit and after a period of confusion lasting 10–30 minutes were able to be up and moving about Many complained of headache on the evening after treatment and a few vomited Muscular pains—a constant feature of cardiazol and triazol therapy—were rarely complained of only three patients being affected in this way No fractures or dislocations occurred in this series but among patients since treated there was one compression fracture of the spine and one dislocated shoulder

In nearly all cases amnesia was complete for a period lasting from a few seconds before the impulse till 5–10 minutes afterwards Even when a major convulsion was not produced amnesia was complete—an important difference from cardiazol and triazol therapy An ineffective injection of these drugs often causes fear and apprehension and produces resistance to treatment , failure to produce a major convulsion by the electrical method does not in any way prejudice the continuance of the treatment After an incomplete reaction the patient recovers quickly and can walk away from the treatment couch Several patients complained of disorder of memory distinct from the amnesia covering the period of the treatment There was a transient retrograde amnesia of a patchy type and a retention defect , these memory symptoms were more severe than those following cardiazol or triazol therapy

RESULTS

Twelve cases of involutional melancholia were treated three recovered and were discharged , two recovered and are convalescent, one of these being a woman of 56 who had been ill for more than 12 months, and the other a woman aged 59 who had been ill for more than 2 years Six chronic cases showed improvement and another case improved but relapsed This recovery-rate cannot be fairly compared with the spontaneous recovery-rate, weeks from the onset of symptoms he found the eosinophilia to attain its first peak, the highest figure recorded being 37%; thereafter it declined to a level of 8–15% at which it stayed for about two weeks; a secondary rise in the eosinophils then began which attained its maximum in about four weeks, the highest figure observed being 68%; from this peak there was a gradual decline in the eosinophil percentage, the last observation—made eighty-five days after the onset of symptoms—giving a figure of 16%. Many observers have reported increase of eosinophils in human trichiniasis, but with the exception of Carter (1930) none seems to have followed the blood changes over any considerable period. Carter observed 2 subjects over two years and in one found the primary and secondary waves of eosinophilia as seen by Brown and ourselves.



Composite blood picture compiled from observations in 100 cases of trichiniasis. Time is taken from the appearance of swelling of the eyelids.

In 4 only of our cases was the diagnosis of trichiniasis confirmed by biopsy. We had no antigen for skin-testing, so that in all other cases of the series the diagnosis rested on the blood-picture and clinical appearances. The clinical picture, as pointed out by Sheldon, was clear and unmistakable and there was no doubt as to the correctness of the diagnosis in all the cases included. Some cases were followed for a considerable time and blood examinations made at regular intervals; in others only one examination was made. In all cases full clinical histories were available and it has therefore been possible to construct a composite picture of the blood changes occurring in the human subject throughout the first few months from infestation.

It was not always possible to make a total count of the white cells; our own results however and the study of those of others lead us to believe that the percentage distribution of the white cells in these cases roughly follows variations in total numbers. In epidemics of this sort the majority of the patients are usually seen outside hospital, and only a blood-film is available for examination; diagnosis therefore has to be made on the percentage figures. In examining films, Jenner's stain, which gives good differentiation between the types of cytoplasmic granules, was used. In making differential counts 100 cells were always, and 200 usually examined. For purposes of charting, the day of disease was calculated as from the date of the appearance of the symptom common to all cases—swelling of the eyelids.

ANALYSIS OF RESULTS

A leucocytosis appeared immediately after the appearance of symptoms; this might reach a level of 30,000 white cells per c mm, but more usual figures were between 12,000 and 15,000 (see figure). The initial leucocytosis persisted for three or four weeks, after which it declined to a more or less normal figure at about the sixth week. Thereafter a second rise in the total number of leucocytes occurred attaining a maximum at about the eleventh week from the appearance of symptoms; this was followed by a slow decline to normal.

The number of the eosinophils closely followed the rise and fall in the white-cell count. In the first three or four days of illness there was no appreciable eosinophilia—in some cases no eosinophils at all could be seen in the films; a similar aneosinophilia was noted by Van Someren in rats. About a week from the onset of symptoms the eosinophil count began to rise, and quickly reached 20%–50% or even more; the highest figure observed in the present series was 71%. After this first peak the eosinophils decreased, both totally and relatively, and at the end of the fourth week reached figures of 5%–15%; at this low level they remained for from three to four weeks after which the secondary rise commenced. The peak of the second wave was attained in about ten weeks from infestation; this was followed by a gradual decline, but a low grade of eosinophilia was still found some months later.

The neutrophils followed a course inverse to that of the eosinophils, their percentage decreasing with the first wave of eosinophilia, increasing as the eosinophilia decreased, and then falling again with the start of the second wave of eosinophilia.

The lymphocytes were diminished or present in normal numbers during the first stage of the infestation; a noticeable increase began at about the fifth week and lasted up to the eleventh or twelfth week, after which there was a decline to a normal figure.

Some authors have stated that the monocytes and basophils show no variations in numbers either relative or absolute in human trichiniasis. Many of our cases during the first few weeks of infestation showed diminution, sometimes resulting in complete disappearance of both types of cells. At the time of the fall of the eosinophils in the fourth to seventh week the monocytes returned to a normal or even higher level. The basophils attained a normal level a little later.

MORPHOLOGY

The morphology of the lymphocytes, monocytes and basophils showed no departure from normal throughout the course of the infestation. The eosinophils were usually of the ordinary type, slightly larger than the neutrophils and showing with Jenner's stain coarse eosinophilic granules. The nuclei were usually bilobed but in some cases many cells with three or more nuclear lobes were noted; in one case a small proportion of eosinophilic metamyelocytes was seen. Many films showed "shadow" eosinophils represented only by a cluster of eosinophil granules liberated from a disrupted cell. The appearance of these seemed to be of no particular significance.

In the later stages of the infestation the neutrophils presented the usual appearance. In the early stages, however, many of them showed in the cytoplasm, along with the typical neutrophilic, a greater or lesser number of eosinophilic granules. This type of cell was observed by Brown in muscle obtained by biopsy from his patients and led him to suggest that the eosinophils found in the blood-stream were actually derived from neutrophils. This conclusion is hardly in accord with present views on the genesis of the white cells; whether it be correct or not it is a fact that in a number of our cases this acidophilic change in the neutrophils showed itself before any excess of true eosinophils appeared in the blood-stream. In several very early cases one of us

THE LANCET

LONDON SATURDAY, JULY 19, 1941

TAMING THE ANÆSTHETIC

ETHER is admittedly the best general anæsthetic we have It is less toxic for the patient than any other liquid anæsthetic, and it is relatively cheap and easy to handle But it suffers from two drawbacks One is chemical and unavoidable Its inflammability and low flash-point make constant vigilance the price of safety and forbid the use of many forms of electrical apparatus The other, which is physical, is shared with every other liquid that has to be vaporised before it can be used A great deal of heat is required for the conversion from liquid to vapour and how to supply this heat has taxed the ingenuity of every anæsthetist since ether was introduced The rough and ready way was to let the patient's breath do the warming, whether by mere conduction or by the heat liberated in condensing its water vapour In the process both anæsthetic and apparatus were apt to get chilled and in practice an even flow of warm, accurately dosed ether vapour was never reached A flash of genius in seeing the obvious has now solved this difficulty at the Nuffield department of anæsthetics, Oxford, where they have set a thief to catch a thief If at 34° C ether mops up no end of heat for the change from liquid to vapour, at a degree or two lower (say 30° C) melted crystals of calcium chloride will provide a reservoir of heat at a constant temperature on their change from liquid to solid Place the crystals between the hot water and the ether and the heat will get through all right, but only at precisely the required level, neither too hot nor too cold To vaporise 15 fluid ounces of ether in an hour requires no more than a kilo of crystals and a jug or two of hot water How the end was reached and the constructional difficulties overcome will be read with keen enjoyment by everyone who appreciates the adaptation of simple means o a harmonious end

Now that ether vapour can be handled as freely as itrous oxide, its concentration measured and dosed t will, and the vapour mixed in any desired propor-ion with oxygen or other gas, ether may reveal hitherto unsuspected virtue as an anæsthetic The Oxford vaporisers will make it easy to explore the ighter planes of anæsthesia which were difficult to maintain with the older methods Anæsthesia at these levels is particularly desirable in shocked patients and for that reason ether has been widely discarded n the emergency operating room Tamed by the new method it may do better when given another trial In the laboratory too the vaporisers will be very welcome, for they will enable the experimental physiologist to gather accurate data about narcosis in animals There is a growing appreciation of the importance of depth of anæsthesia, and the application of laboratory findings will supplement and enrich clinical experience Happily there need not in this instance be the usual lag between scientific conception and delivery The vaporisers have had the most scrupulous antenatal care and engineering craftsmanship of the highest order is attending their birth

OVERDUE LEGISLATION

THE Pharmacy and Medicines Bill gives our legislators the chance to do a greater service to the nation's health than they have achieved for many a year For reasons not invariably creditable to the democratic system of law-making, previous opportunities of controlling the predatory advertisement of quackery have been neglected Select committees have patiently examined evidence and have put forward recommendations, bills have been promoted, but overdue reforms have been thwarted either by the apathy of the M P or by the alertness of vested interests Even a *postmaster-general* has refused to censor the advertisements carried in his books of stamps, national health meant less to him than revenue Even now the Pharmacy and Medicines Bill, though sponsored by the Minister of Health, owes its genesis and impetus to fiscal considerations It is the aftermath of a finance bill Successive chancellors of the exchequer have become conscious that the medicine stamp duties are anomalous and anachronistic, that litigation might at any moment reveal fatal irregularities in the collection of the tax and, in short, that the repeal of the duties cannot be delayed The loss to the Exchequer would be some £840,000 per annum, but at present the application of the purchase tax to medicines is likely to bring in more than three times as much Our administrators cannot fail to be aware of the fantastic incidence of these ancient medicine duties which the High Court has described as a mass of confused and obsolete verbiage "Cough mixture" is taxable, "chest mixture" is not, "backache and kidney pills" are taxable, "back and kidney pills" are not It is not the fiscal or administrative aspects which interest the medicine-buying public or the medical profession Lord HORDER put the point significantly a few years ago when he said that, for every hundred pounds spent by the government in making people health-conscious, the quack medicine-mongers were spending a thousand in making them medicine-conscious In the words used by the Minister of Health in introducing the bill on July 8, opportunities still exist for the unscrupulous to trade upon the credulity and fears of the ill-informed by the production of useless (or even harmful) secret preparations, and to delay the seeking of proper advice and prompt treatment for serious diseases by advertising quack remedies Existing laws check advertisements of cures for venereal disease and cancer The Government's bill proposes to extend this restriction to Bright's disease, cataract, diabetes, epilepsy, glaucoma, locomotor ataxy, paralysis and tuberculosis This is nearly the same list as in the Duckworth Bill of 1936, though it omits the 1936 proposals for a further extension to cures for amenorrhœa, hernia, blindness and structural or organic ailments of the auditory system The new bill also proposes, as did the bill of 1936, to forbid advertisements relating to abortion The restrictions now put forward go no further than the code of advertising standards already voluntarily adopted, to its great credit, by the Proprietary Association of Great Britain Other features of the bill speak for themselves—a justifiable improvement of the pharmacists' position, a balanced agreement between vendors who are chemists and those who are not, and an important clause to compel he collapsed at his work His doctor treated him for "the gastric" Under evipan hypnosis he re-experienced fears, tremblings, stomach discomfort Said he wanted to fight against it and be like other men but had not succeeded He gradually regained his self confidence and was discharged recovered

CASE 10 —A woman of 52 Seven bombs were dropped within a radius of 1000 yards, the nearest being about 10 yards from her, it took off part of roof of shelter and blocked the exit On admission she complained of a nasty blankness over her head, and said she could not think of anything, and could not seem to speak like other people Constantly heard German aeroplane noises She looked depressed and some what agitated She stated that she had always been a cheerful personality and that the air raids did not worry her She remembers being thrown to the ground when a bomb exploded near, and though dazed she managed after an interval to walk home with help She is regarded as a case of "blast shock" She has made steady improvement and has been discharged as recovered

CASE 11 —A woman of 35 who complained of "nervousness due to raids" She dreaded the raids and suffered from sleeplessness, diarrhœa, frequency of micturition and head aches Physical examination revealed no abnormality except some tachycardia No emotional conflicts were revealed after an intravenous injection of evipan Her illness is a simple fear reaction and after the mechanism of the symptoms was explained to her she ceased worrying She has lost most of the symptoms, though some headache still persists It is hoped to discharge her in the near future

CASE 12 —A man of 34 A case of concussion from effects of blast Had never been "nervy" until 5 months ago, when a landmine exploded about 100 yards away He was thrown to the ground and lost consciousness for a time There was slight hæmorrhage from the ears for 3 days and he developed severe headaches No fracture was detected by X ray examination No emotional conflicts were elicited after an injection of evipan, and he appeared to have been well adapted maritally and socially He now exhibits a post concussion syndrome, complaining of sleeplessness, severe headaches, giddy sensations, throbbing of the temples and difficulty in concentration

CONCLUSION

In 46 (15 3%) of 300 consecutive admissions air-raids were given as an ætiological factor, but in only 4 (1 3%) was this regarded as having a major influence, and in only 6 (2%) as contributory Of those in which air-raids appeared to be largely responsible for symptoms, 2 have recovered and 1 is much improved Of the 6 in which air-raids are thought to have been contributory, 2 have recovered and 2 have been discharged much improved It is therefore not expected that there will be any burden on mental hospital beds as a result of raids

I wish to thank Dr C J Thomas, principal medical adviser in psychiatry to the county of Southampton, for permission to make use of the hospital records

Reviews of Books

Human Biology

By G A BAITSELL, professor of biology, Yale University London McGraw Hill Publishing Company Pp 621 26*s*

THIS textbook suggests that the teaching of biology in American universities is less bound by outworn traditions than it is in our own It is time we considered whether the concept of evolution—which in the late nineteenth century was rightly the driving force of biological teaching but which is now no longer a live issue—should remain the foundation of biological education The average student would never discover the importance of modern biology for human life and thought unless in his spare time he turned from his textbooks to more popular scientific literature not usually recommended by his teachers Professor Baitsell remarks in his preface that most students beginning biology are more interested in the human than in any other living species "If the human biological material is presented from a comparative standpoint," he says, "the student will learn not only the biology of man, but also biology in its broader aspects, for man is a part of, not apart from, the world of life" In the average zoology course in our universities the existence of the human species is hardly mentioned, still more rarely is there discussion of his place in the economy of nature

Professor Baitsell's book is an introduction to animal physiology and anatomy, illustrated mainly by man, but dealing also with the physiology of plants and micro-organisms It is perhaps a pity that the physiology is presented entirely in the classical analytical manner, by separate functions, with no discussion of the biology of the organism as a whole which has practical application in hygiene, and the biological foundations of agriculture might have been more specifically discussed with advantage But in other sections of the book and in dealing with heredity and with the biology of disease, the writer contrives to keep the human relevance of his subjects always before his reader's mind

The Scientific Photographer

By A S C LAWRENCE, Ph D London Cambridge University Press Pp 180 18*s*

IN his preface Dr Lawrence points out that results of great value have been obtained in scientific work by using the photographic plate as a detector of new radiations, but that the photographic technique is still rudimentary, full use of photography is not made in laboratories, and many possess no photographic equipment and no member of the staff with technical knowledge This is true, methods of photography practised by the average amateur are not good enough for serious purposes Whether this book goes far to bridge the gap is perhaps doubtful but it does draw attention to the facts It makes no effort to be a textbook—there are other, more pretentious, works dealing with the technicalities of photography—but it does draw attention to applications that are often disregarded The early chapters deal with photographic processes and optics Dr Lawrence points out that the aperture of a lens is not a complete guide to its rapidity, and gives examples of other factors affecting it Writing of miniature cameras, he holds on good grounds that no negative should be so small as to need the use of a fine-grain developer

Chapters on colour photography and on developing and printing are useful The last chapter should be the most telling for it deals with some of the scientific applications of photography, but it covers too much ground, so that each subject is too cursorily treated Even so, this work as a whole is stimulating and indicates how laboratory work could with benefit be raised to a higher plane

Food The Deciding Factor

By FRANK WOKES, Ph D Lond, B Sc Lpool, F I C, Ph C London Allen Lane Pp 144 6*d*

THIS Penguin Special is addressed to the general British public Its aim is to explain the principles of nutrition so that everyone can take steps to get the right food and "help to bring victory nearer" The title is challenging and admirable and can be recommended, with the book, to the Admiralty, the War Office and the Ministry of Food, the Board of Education and the Ministry of Agriculture ought to read it too The tables in the appendices are useful, though it seems hardly necessary to include cockles, whelks and winkles in so small a book as this The advice given is up to date as far as possible though the book probably went to press before cheese was rationed—one cheese savoury needs 6 oz cheese, a month and a half's ration, but this sort of thing is inevitable when conditions change so rapidly Dr Wokes repeatedly reminds readers of the important fact that the phytic acid of whole cereals and some vegetables renders their calcium less available, and perhaps the tables in the appendices will convince his brother vegetarians that some of their sweeping statements about the mineral value of wholemeal bread are not founded on fact It is a pity that diet is presented from the chemical and biochemical standpoint, the jargon of these sciences simply obscures information for the layman he will buy a copy, try to read it, give it up and probably attach himself immovably to some point which he will magnify out of all recognition, ignoring the sound stuff behind the calories None the less, the book deserves a wide circulation, especially among those who are inclined to be cranky about diet slightest movement may tear young and tender healing tissues, and BARNES and TRUETA[3] have shown in animals how immobilisation controls the absorption of both bacteria and toxins Only in the case of the fingers where the stagnating lymph glues the small joints, is early movement required Of other joints OGILVIE[4] has written that ' early movement is as unsound as the early movement of fractures HUDSON has used the envelope plus hypochlorite method in 60 cases including burns ulcers and gangrene severe lacerated wounds and acute pyogenic lesions of the hands and elsewhere In all of his cases where sepsis might be expected the sulphonamides were used as well, and it is not easy to assess how much credit must go to them HUDSON regards this as a valuable addition to the surgeon s armamentarium though not as a competitor The full possibilities of this new form of an old weapon have yet to be explored and its applications in the treatment of wounds may turn out to be limited In the treatment of burns for which it was designed and especially those of the hands and face where early skin-grafting is particularly desirable it is likely to find its greatest use What it needs now as HUDSON says is care and thought · and unbiased thought at that

KEEPING COOL

MAN and the horse have the advantage over most animals in owning skins which act on the same principle as a butter-cooler and a very effective principle it is if the air is dry LEE[5] quotes an eighteenth-century experiment in which a healthy man, accompanied by a raw beef-steak, submitted himself to a dry atmosphere at 250° F and was all right at the end of a quarter of an hour while the steak was nicely done in 13 minutes On the other hand two brothers recently described by SUNDERMAN[6] in whom sweat glands were congenitally absent must give up work in summer, sleep on a cellar floor and go about in wet clothing LEE has studied man's reactions to hot climates in Britain, Singapore and Australia and he concludes that four types of crisis are possible when conditions overpower the body's normal mechanisms of skin adjustment hyperpyrexia (true heat stroke) circulatory insufficiency (heat prostration) · electrolyte imbalance (associated with cramps) · and hyperdehydration. Clinical cases rarely exhibit one syndrome exclusively though they can often be assigned to a single category from the majority of their signs Immediate passive adaptations do little to protect a man against prolonged heat a rise in the temperature of the skin and lung surfaces increases the rate of heat loss and promotes the evaporation of surface moisture Primary active adaptation includes cutaneous vasodilatation sweating, and water shifts with dilution of the blood The significance of the blood dilution is not clear, but with the sudden vasodilatation the capacity of the circulation is increased and the extra blood-volume helps to maintain circulatory efficiency and enables the body to get full value out of the vasodilatation If the primary measures fail the body is driven to secondary adaptive mechanisms, of which there are five . rise of body temperature, increased pulmonary ventilation reduced appetite alteration of endocrine balance and reduced muscular activity If these are not successful in maintaining thermal equilibrium disturbances of the cardiovascular system of acid-base and water and electrolyte balance and of the nervous system may develop providing stepping stones to failure of adjustment DREOSTI finds[7] that natives working in the Rand gold-mines are liable to either syncope or heat-stroke unless they are carefully acclimatised to full work in the deeper parts of the mine New workers are given light work underground for a week or more and are only allowed to take on full work when adaptation is complete Such adaptation can only be achieved, it seems by letting the man start work in a relatively hot place and gradually increasing his output which on the first day should be almost nil Natives who go home to their villages for six months on extended leave must be freshly acclimatised on their return The time taken by different subjects to adapt to full working conditions varies, and on the City Deep mine a heat chamber has been fitted up in which the powers of adaptation of new workers can be estimated under controlled conditions of work and atmospheric environment Among DREOSTI S cases the first symptom of heat-stroke was often maniacal excitement at the onset sweating ceased and was absent throughout the acute stage of the condition only returning when and if, recovery began.

Protective measures taken against heat must vary with the type of climate—a point which has perhaps received too little attention in the past The native inhabitants as LEE indicates, have usually solved their problem successfully and empirically The Arab, in a hot dry climate wears thick loose robes which shield him from radiation and set up mild convection currents whenever he moves , his houses are thick-walled and small-windowed, built about a central courtyard and all openings are kept shuttered until evening The Polynesian, living in moist heat, wears scanty clothing which cannot obstruct the evaporation of sweat into the almost saturated air, and builds his houses of lath and thatch lightly and airily. Only the European tries to rise above these obvious considerations and builds identical hotels in dry and wet tropical lands The ingrained conviction that the west must know best was illustrated when Florence Nightingale wanted all Indian hospitals to have widely opened windows It took the united voices of all the doctors in India and finally the command of the Viceroy to make it clear to her that the patients would be cooler with the windows shut Foil surfaces, as CROWDEN has shown,[8] can be used to reflect radiation whether used in the construction of houses or of solar topees topees lined with aluminium foil are now being worn by our troops in the east, and portable cubicles insulated in the same way and supplied with air-conditioning plants are also in use LEE discusses the effect of the screening of doors and windows against mosquitoes and concludes that in hot dry climates the interference with air movement occasioned by such screens is not detrimental but that it is a decided disadvantage in hot wet countries unless profuse sweating is taking disclosure of the ingredients of medicine sold by retail

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[7] Dreosti A. O *S Afr J med Sci* 1937 2, 29

[8] Crowden. G P. *Lancet* 1934 1, 37, see 1938 2, 1069, and 1939, 1, 1244

Thunder comes up without warning, and many may have been surprised when a leading article in a great daily newspaper thundered against the bill on the morning of its second reading Reform, we were led to infer, was inopportune in war-time It seemed to be forgotten that the parallel restriction on advertising cures for venereal diseases was enacted in 1917, that valuable legislation for controlling the sale and possession of narcotic drugs (placed permanently on the statute-book in 1920) had first been initiated by defence of the realm regulations during the last war A great sum, which has been put as high as thirty million pounds, is spent yearly on self-medication , might not some of this be usefully diverted into war-time savings ? The bill, we were told, is an example of legislation based on decisions taken without full consideration of their consequences This criticism seems to suggest that the Select Committee on Patent Medicines never " reported " in 1914, nor the Select Committee on Medicine Stamp Duties in 1937, that the Government gave no pledge in 1934 to carry out the sensible agreement then reached between the cooperative societies and similar bodies, the chemists and the Home Office, that Sir Norman Birkett's strong committee never urged in 1939 the suppression of advertisements of articles for procuring abortion, and that neither House of Parliament has ever been addressed on the topic of the quack medicine trade Everything in fact is well if only it be left alone Fortunately the thunder passed over almost unheeded The bill received its second reading without a division Some minor amendment in committee is inevitable, but we hope and believe that Parliament will not fail to pass this useful measure into law

LAVAGE RETURNS

" I now come to Carrel's procedure of intercalating between the complete dressings a frequent flushing and refreshing of the wound surface and for carrying out this flushing unlaboriously Allow me to say that we have here, I think, far the most important contribution made to surgical technique since the beginning of the war But to that let me add, that while Carrel's precedure gives us a new and improved technique for the application of antiseptics, much more does it give us a new and improved technique for physiological treatment For that treatment the assiduous removal of corrupted and corruptible discharges is, as you know, the primary desideratum "—Sir Almroth Wright The Lancet, 1917, 1, 948

When this was written Carrel's method of treating infected wounds by intermittent lavage with Dakin's fluid had proved its value, and in the two years since its perfection at Compiegne had established itself as a routine in the Allied war hospitals Wright supported it not so much because of the antiseptic action of Dakin's fluid, as because, while removing dead material from the wound, it allowed the full antibacterial and digestive effects of the exudates to act during the intervals between irrigations Though the method marked a great advance, in the last two years of that war Baer and Winnett Orr, and to some extent Ogilvie and others, were already using the closed-plaster method which was based on almost a completely opposite principle Here the main accent was on the support and rest of healing tissues, and the organisms were let alone It was left to Trueta in the Spanish War to raise closed plaster from the fancy of a few to an unopposed favourite Nothing that has happened in this war has lessened its reputation from every casualty hospital have come glowing reports of its value—of the saving of life and limb, the smooth painless convalescence, and the little nursing required We have become as attuned to pus as the surgeons of the pre-Listerian era, and like them have accepted Matas's remark that " not all cheese that smells bad is bad " Lately we have seen even Trueta's results surpassed where his methods are combined with the local and general use of the sulphonamides

After such triumphs no-one would have foreseen a swing-back to lavage, and yet there are signs of one Bunyan and Vaughan Hudson and others[1] have lately described and reported on a method of enclosing wounds in specially treated silk envelopes to permit of lavage with a solution of hypochlorite made by the electrolysis of salt water As in Carrel's method the irrigation is intermittent Carrel advised some 20 douches a day , Bunyan in general gives 3 Bunyan claims that electrolytic sodium hypochlorite has advantages over Dakin's solution, being less irritant because it contains no free caustic soda, more constant in composition, and more effective because it contains ozone These claims seem in his paper to be unsupported, and it is unfortunate that many of the other desirable features possessed by any therapeutic solution of hypochlorite should here be ascribed to the electrolytic solution only Nothing but a controlled series, either human or animal, can decide whether Dakin's solution and eusol must really be counted back numbers, and the unbeliever may demand more evidence than Hannay gives us of the inferiority of saline All this must be for further inquiry It does seem certain however that, like Carrel, Bunyan has hit upon a highly convenient way of carrying out his irrigations With the technical assistance of Mr William Stannard he has evolved a treated silk fabric which can be made to fit over the wounded part, the edges being stuck to the skin so as to form an airtight joint Thus for a wound of the hand the whole hand is enclosed in the envelope, whose edge is attached half way up the forearm There is then no need for dressings between irrigations—indeed the progress of the wound can be kept under constant observation—and yet as long as the envelope is intact there is no risk of contamination from outside Even where irrigation is not required Vaughan Hudson finds the silk envelopes often a convenient and adequate cover for a wound

The new method has so far been used for some six months, and it is perhaps premature to say, as Bunyan does, that the problem of secondary infection will not now arise, and that catastrophes seen heretofore cannot now occur, though the 5 illustrative cases he describes are sufficiently encouraging He is unfair when he says of war surgery that some of the therapeutic advance up to date has been of an empirical, trial and error type, for in this war new methods have been remarkably carefully checked by experimental and other animal work Some, too, will not agree with him that active and passive movements of the injured parts at all times are an advantage C R and E L Clarke[2] have demonstrated that the patient of men might prefer a porcelain one in the meantime. The position in a child is rather different: in many children the first molars decay early and have to be extracted; and it might well be possible to transfer a child's own wisdom-tooth rudiment to the first molar socket; the time-lag in that case would not matter providing the necessary space for eruption was maintained with a dental appliance. It is not certain, however, that the transferred molar would erupt in normal occlusion with the upper teeth: the factors governing the height of an erupting tooth are not fully understood. Possibly the pressure of the occluding tooth might be the deciding factor, and in that case the implanted tooth might well erupt into normal occlusion.

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[1] Bunyan, J *Brit med J* July 5, 1941, p 1; Hudson R V *Ibid*, p 7, Bruce Pearson R S Lewis E E and Niven R B *Ibid*, July 12 p 41, Hannay, J W *Ibid* p 46

[2] *J Anat Lond* 1940, 74 309

And finally the use of transplants between different subjects would have to overcome obstacles which are not merely technical in a limited sense. There is evidence of innumerable antigenic differences between members of the same species, as we have lately noted.[2] Blood-transfusion is a comparatively simple operation but it would have had little practical application if there were 4000 blood groups instead of 4. Genetic and serological work here and in America suggests that this is roughly the type of problem confronting the surgeon attempting to graft adult or embryonic tissues. Lapchinski does not seem to have been greatly hampered by antigenic differences in his dogs—indeed, he does not mention these recent genetical studies. His approach is otherwise critical and his successes make his work worthy of attention. It may be that an implanted tooth germ functions as an organiser, the original cells inducing a new germ in the host though failing to survive themselves. We may look forward to a day when workers familiar with English and American genetical techniques will be able to study the work of this Russian school at first hand.

PILL'S PROGRESS

The pill-bouncing contest at the Pharmaceutical Society is one of the Entertainments At Which We Have Never Assisted. But everyone knows that the pharmacist takes an artist's pride in turning out pills like ball-bearings. The doctor's outlook is warped by memories of his own products made when a student. In those days his sense of inferiority was largely dispelled by his clinical teachers, who assured him that his lustreless and pultaceous masses would readily disintegrate in the alimentary canal and have a good chance of undergoing absorption, whereas the shining spheres of the expert could often be recovered as good as new from the fæces. The resistant pill, however, is not without virtues. It resembles the time-bomb, whose chief merit is not that it explodes but that it explodes at the right moment. The case-hardened pill can be made to pass through the stomach unchanged and liberate its contents in the lower reaches of the alimentary canal. The efficiency of the various substances used to protect the active principles in a pill mass from destruction in the gastric juice has been investigated by Lark-Horovitz and Leng[3] of Indiana, who employ radioactive indicators. The pill covering was imitated by using a gelatin capsule coated with a mixture of shellac, castor oil and alcohol. The capsule was filled with sodium chloride previously rendered radioactive by bombardment with deuterons. Liberation of the activated salt from the capsule and its entry into the circulation were signalled almost immediately by the appearance of radioactivity in the subject's extremities (the hand was used by these workers). Simultaneously the progress of the capsule along the alimentary tract was observed by means of a movable electron-counter. The one used is presumably a modification of the Geiger electron-counter, in which the electrons thrown off by a radioactive material are deflected on to a fluorescent screen where each "hit" shows as a glowing dot. Thus it was possible to say how long the capsule had been able to withstand the action of the digestive juices of the alimentary canal, and also to correlate this finding with the approximate position of the container in the stomach or intestine. It was shown that a well-made enteric coated pill released none of its contents during a stay of 2 hours in the stomach; but as soon as it passed into the intestine radioactivity appeared in the peripheral tissues and steadily increased for the next 6 hours. On the other hand, a pill which had a defective enteric coating began to liberate its contents some 20 minutes after administration and while it was still in the stomach. The effect of leakage produces a graph quite different in pattern from that which is obtained when the contents of the capsule are suddenly liberated by digestion in the bowel. Twenty-one experiments were made with hand-coated pills. It was found that 66% dissolved in the intestine and only 10% in the stomach; the corresponding figures for ten experiments made with commercial coatings were 50 and 40%. At a time when so much reliance is placed on factory-made products these results are somewhat disconcerting. This is an ingenious application of the use of "marked" atoms that has already been applied to several biochemical and pharmacological problems, such as in Whipple's work on the fate of ingested iron and J. H. Lawrence's investigations into the phosphorus metabolism of leucocytes in health and disease. It will certainly be applied to many more in the future but the investigator will need to bring to his task a fair knowledge of the newer chemistry and more than a smattering of mathematics.

METHÆMALBUMIN

The demonstration by Fairley and Bromfield that the pigment appearing in the blood-plasma in hæmolytic diseases is not methæmoglobin but methæmalbumin is now well-established. The distinction is of considerable practical importance and Fairley[1] has therefore brought together all the information that he and his co-workers have compiled so far. The spectroscope is the most useful instrument for distinguishing the various blood-pigments, but it happens that the three pigments methæmalbumin, methæmoglobin, and sulphæmoglobin all show an absorption band—the α band—in the red part of the spectrum, and although they are in different positions they are sufficiently close to make distinction by the usual direct vision spectroscope very difficult. Two lines of investigation, however, help to overcome this difficulty. Methæmoglobin and sulphæmoglobin when they appear in the blood—for example, in sulphanilamide or other drug poisoning—are confined to the corpuscles; they are not free in the plasma. Methæmalbumin, on the other hand, occurs only in the plasma and not in the corpuscles. The hæmoglobin that appears in urine is oxyhæmoglobin; if the urine is acid a proportion of this is converted in the renal tubules into methæmoglobin; methæmalbumin and sulphæmoglobin do not appear in the urine. Secondly, by treating the pigments with reducing agents, different changes are brought about. With Stokes's reagent (ammonium ferrotartrate) or dilute ammonium sulphide the α band is dispersed in the case of methæmoglobin but unaltered in methæmalbumin and sulphæmoglobin; with concentrated ammonium sulphide the α band of both methæmalbumin and methæmoglobin is dispersed while that of sulphæmoglobin remains unaltered. These changes are easily observed with the direct-vision spectroscope. Failure to distinguish between these three pigments has led to much confusion in the terminology and classification of hæmolytic diseases. "Hæmatinæmia" is a misnomer, since hæmatin when formed place Simple air conditioning can be achieved by allowing a large fan to blow through some porous material, such as hessian, which is kept wet by water siphoning from a trough But, as LEE says, the maintenance of health in hot places turns finally on the common sense and self-discipline of the resident himself He must steer a careful course between the excessive heat production induced by violent exercise and the indolence which may grow on him, mentally and physically The margin of safety in the body's reserves is reduced in tropical climates and a man can less easily afford to ignore hygiene and offer dietetic insults to his organism He must aim at a balanced diet—with a high fluid and salt intake to meet the loss in sweat—at moderation in alcohol, a high degree of cleanliness, and early attention to ailments

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[2] Lark-Horovitz, K., and Leng, R. H. *Nature*, May 10, 1941, p. 580.
[3] *Lancet*, July 12, p. 43.

[1] Fairley, N. H. *Quart. J. Med.* 1941, 10, 95.

Annotations

TOBACCO AND CANCER

IT has been long and widely held that a causative relationship exists between tobacco and cancer of the mouth and lip, but the reasons for the belief, which were well summarised by Shurch and Winterstein,[1] are slender and circumstantial Cancer of the lip is more common in men than in women, patients with leukoplakia and cancer of the mouth are more often smokers than not, cancer in pipe smokers often arises at the point where the pipe rests against the lips, when cancer occurs inside the mouth the site affected is commonly that where the smoke jet strikes it From these observations, and from recent knowledge of the synthetic carcinogenic chemicals, one might guess that tobacco smoke contains a carcinogenic chemical comparable in potency to one of the weak and slowly acting new compounds But early experimental work failed to give any support to clinical opinion Though many attempts were made to produce cancer in animals with tobacco tar or smoke yet carcinomatoids or true carcinomas were rarely observed Roffo of Buenos Aires first obtained a papillary carcinoma on the ear of a rabbit in 8 months of treatment with tobacco smoke condensed in water His next success was got in a rabbit from a jet of tobacco smoke after 3 years' treatment Others had similar isolated successes Argyll Campbell was first successful with mice, obtaining one carcinoma after 16 months of painting In *Cancer Research*, the new official organ of the American Association for Cancer Research, Flory[2] of Chicago discusses previous attempts and records his own outstanding successes Of 12 rabbits painted on the ears with tar produced by the destructive distillation of tobacco at 350–700° C all developed tumours at the site of painting between the 49th and 79th days The tumours were papillomas and carcinomatoids A destructive distillate made at 130–350° C produced 45 tumours in 16 out of 17 rabbits but did so more slowly Of these, 40 were papillomas and 5 carcinomatoids In 22 out of 24 rabbits painted with tar from tobacco smoked in pipes at 520–730° C, 38 tumours were produced in 37–374 days, 36 of these were papillomas and 2 carcinomatoids In trials on a large number of mice 15 papillomas and 2 carcinomas were produced These developed late, between 7½ and 17 months The objection may be raised that the carcinomatoids, or locally malignant tumours, of the rabbits' ear, are not carcinomas But this type of tumour is the response which the rabbit's ear makes to the application of coal tar The same tar which in mice yields 60% of carcinomas will cause mainly papillomas and carcinomatoids, with only a few metastasising growths, in rabbits Just as tar papillomas and *carcinomatoids are true indicators* of the presence of a specific cancer-producing substance in coal tar, so they point to some similar compound in tobacco smoke and tobacco tar Flory's success where so many have failed must be attributed to his methods of making the tobacco tar and smoke Many of the conditions both of production and application were of course far removed from those under which human beings smoke tobacco Nevertheless the one probably essential condition—the temperature at which the tobacco is burnt—was the same Tobacco smoked slowly in briar pipes burns at 425–560° C and rises t 600° C or even 700° C after a few puffs The temperature in clay pipes rises to 645–704° C and i cigarettes to 604–670° C The *fractions of tobacc* distillate used by Flory were made in a specially constructed still so that they could be collected at thes and other temperatures Flory's experiments, togethe with the experience of others, point to the productio *during the destructive distillation of tobacco of a wea* and slowly acting carcinogenic chemical, a conclusio which is in accord with clinical observation

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[1] Shurch, O and Winterstein A L *Krebsforsch* 1935 **42,** 76
[2] Flory, C M *Cancer Res* 1941, **1,** 262

TRANSPLANTED TEETH

OUR teeth never seem as personal as other parts of ou bodies We should resent premature decay in ou fingernails or the presence of moth in our hair, but whe our teeth rot in our head we are acquiescent, an experience no sense of crippling when they drop or ar pulled out The thought of transplanting a growin tooth, therefore, seems little more than a matter o gardening Two Soviet scientists, A Lapchinsky and A A Malinovsky are reported to have grown tooth rudiments in alien gums[1] They extracted teeth from anæsthetised adult dogs and transplanted into the sockets rudiments of permanent teeth taken from below the milk teeth of puppies These grew to full size in the adult dogs and the same result was achieved if the puppy had been killed on the previous day and its jaw kept in a refrigerator overnight The logical outcome of these experiments would be to discover whether the principle could be applied to human dentition—whether, for example, tooth rudiments from a child could be transferred successfully to an adult human jaw Dental surgeons already enucleate the tooth germs of the lower wisdom teeth in children when there is clinical and radiological evidence that the teeth cannot erupt normally, but there are practical difficulties to their transplantation With perfect technique successful transfer might in theory be achieved in about 60% of cases, but if the tooth follicle or the germ of the enamel organ was damaged in the process then a follicular or dentigerous cyst might *develop or the growing tooth might be malformed* A cyst might also form if the surrounding bone grew over and encapsuled the transplanted rudiment, but the growing pressure of the tooth would probably overcome this difficulty, causing absorption of the obstructing bone Sepsis might also cause trouble, healthy mouths are the rule in dogs but an adult human mouth is rarely completely free from sepsis, and the implanted tooth might well act as a foreign body causing bone necrosis Even if it were possible to obtain tooth germs from the jaws of children killed in accidents, the chance of success in transplanting would be remote, and the idea is not wholly inoffensive

A further objection to the operation is the time factor The lower incisors, for example, are formed 4½–5 months after birth and begin to erupt when the child is 6 years old, the crown is fully erupted 6 months later but the root is not formed until the child is 10 Thus an adult receiving such a transplant would only boast the crown of the tooth 6 years after the operation and would have to wait another 3½ years for the root, even the most

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[1] Circulated to the press by "Industrial and General Information"

In England Now

A Running Commentary by Peripatetic Correspondents

THE other evening I went as usual from listening to the news straight to the surgery. Among the patients there was a man I had seen that morning and told to come up again with a tomato leaf. He was a nurseryman and had dermatitis and from its appearance at a significant time each year it seemed likely that tomatoes were the cause. The wireless was still jangling in my head as I cut the leaf for a patch test. V for victory, V for arrowhead from Heaven, V except for the proud phallic I the simplest and probably the oldest letter of them all, that points to man his origin from dust, where he shall go again, where he shall lie, the divine point driven irresistibly downwards, the piercer, the wedge of resolve, God's stream-lined spermatozoon, the emblem of union, two views culminating in one point, the conquering call of the eagle. "It's a funny thing, doctor but where I am sunburnt, on the face and this side of my arms" (he stroked the extensor surface of his arm) "and on the neck here I don't get the spots nor the itching." Nature's own cure or preventive, the light from the sun which when reflected would form a V, the light from Heaven reflected on man, V for Victory! V for a positive patch test on a nurseryman's belly, V for vengeance, V —

Gosh, this is becoming an obsession.

* * *

The alarm sounded over the ship's broadcaster, an air-attack was apparently imminent. My position in action was the officers' bathroom which made an excellent dressing station having running water (in theory at any rate) and several baths which with the addition of boards became crude but serviceable operating tables. The steriliser was switched on and the emergency lighting checked over. In the adjacent compartment the chaplain, the dental officer, my three sick-berth attendants and a motley crowd of assorted cooks and stewards had gathered, the latter constituting the first-aid parties. Stretchers and bags containing the essentials for elementary first-aid were distributed and the parties trooped away to their vantage points to await casualties. Meanwhile outside events were livening up with a vengeance as far as we down below could judge. Our position having been chosen for its comparative safety we were pretty well isolated from the happenings on the upper deck, and for our news we depended on announcements over the broadcaster or the excited and never very accurate accounts of those people who found their way below. However, the dull concussions of the bombs were pretty obvious, as were the sharper and closer explosions of our own A.A. guns and the occasional chatter of some close-range weapon.

For a time all was well though I could see my own nervous tension reflected from most of the other faces. Our experience of attacks was too small for us to have become blasé. None the less we all assumed a nonchalant air which was rather spoilt by occasional involuntary starts. At first these occurred at only the louder and more fearsome noises, but as tension grew we leapt like startled stags at even the closing of a hatch. One consolation was that the old hands, the veteran sea dogs, seemed similarly affected, though admittedly not to the same extent.

Our assumed complacency received a rude shock when, with a crescendo of loud explosions a stick of bombs fell across the ship, the last one very close to the port side, shaking us not a little both mentally and physically. We straightened up from the crouching positions we had adopted and smiled bravely at one another. There was little time for speculation though, for soon a confused shouting above with cries of "To you!" "I've got him," and "Take your foot off the blinking rope!" brought us running to the foot of a ladder leading up to a hatch through which protruded a pair of "boots regulation," neatly fastened up in a Neil Robertson stretcher. The first casualty was arriving. He proved to be a Royal Marine, who had sustained several small splinter wounds, all luckily superficial, and whose chief complaint was against the over-zealous stretcher party, who had clapped him into a stretcher to bring him down to us. Though a bit shaken he was as he maintained "in the pink." While we were dressing him the second casualty arrived—a seaman with a bad wound of his right arm showing a splintered fracture of the humerus and much loss of overlying flesh. Though in a good deal of pain and considerably shocked he was very cheerful and temporary dressings together with morphia soon had him comfortable. Inquiry on our private telephone line revealed that the other dressing station had received no casualties at all and so the total bag for the near-miss was fortunately very small. It seemed a good excuse, if excuse be ever needed in the Navy for the making of tea. So we sent the chief cook off on this errand and soon large "fannies" of it arrived, hot and incredibly strong. The casualties had first whack and then, having satisfied our consciences we proceeded to satisfy our thirsts in no uncertain manner.

This done, there was nothing to do but wait and waiting is perhaps the worst possible occupation under such circumstances. I cannot pretend that the danger was ever very great, but in our arrogant manner we assumed that we were the principal target and had ample time to analyse the various noises and think unpleasant thoughts about their proximity. Commands over the broadcaster were interspersed with greater and lesser bangs, the gunfire went on and on relentlessly, always accompanied by that curious frenzied shouting which seems to be part of the naval gunners' stock-in-trade. I imagine that the temporary deafness induced by the continuous detonations—and 4 inch is a notorious calibre for this—makes it impossible to modulate one's voice. For several hours this lasted fortunately without anything more dropping in our immediate vicinity. Then, after a long interval to make quite sure, the "secure" was sounded. The first-aid parties returned with their equipment, all was stowed away and the "disperse" sent us about our business.

While our casualties were being removed to the sick bay and prepared for operation we strolled out for a breath of fresh air on the upper deck. The fires were fading with the growing light of dawn and the smoke was drifting away from the heavily blitzed city. A dockyard policeman, veteran of many raids said with no assumed bravado, "You should have been here on Saturday night, that was a real raid that was."

* * *

Like many of his fans I was concerned to see that Mr P. G. Wodehouse had got into hot water from certain sections of the press. Being anxious to come by some reliable first-hand information on the subject I decided to ring up Jeeves—and what a pleasure it was to hear his voice again! With the possible exception of the Royal Navy I know of nothing that gives such solid confidence in the future of England as those cultured tones. "That you Jeeves?" I asked. "How are you?" "I enjoy the best of health I thank you sir." "And Mr Wooster?" "Mr Wooster I am happy to say is well. He is in the intelligence service, sir but I regret that I cannot divulge his immediate whereabouts even to you, sir. I am sure you will understand." 'Quite so, Jeeves. Now what's all this I hear about Mr Wodehouse?' "Mr Wodehouse sir? Ah that would be the literary gentleman who used to spend so much of his time with us. He is, I understand at present on the Continent, sir." Admiring his discretion and resisting the temptation to tell him to quit stalling I went on "Yes, Jeeves, but what do you think about him?" "Well, sir I always found him an exceedingly pleasant gentleman, though I cannot speak with authority about his writings not having had leisure or—ahem—inclination to peruse them. They are I believe, of a somewhat frivolous nature." "Yes, but what would you say about the man himself?" "Well, sir since you ask me and speaking in the strictest confidence I should describe him as a light-hearted gentleman, not perhaps intellectually profound but—for an author—singularly free from vice." "Thank you, Jeeves. That's just what I wanted to know. You have relieved my mind and I'm grateful to you." "Not at all, sir, will there be anything further, sir?"

* * *

I was a bit doubtful when the lady next door signed her free-milk form in block capitals whether the Minister combines at once with serum albumin to form methæmalbumin The hæmolytic methæmoglobinæmias and sulphæmoglobinæmias of van den Bergh were probably both examples of methæmalbuminæmia Methæmoglobin, so long as it remains within the corpuscles, can be converted back to oxyhæmoglobin, sulphæmoglobin, however, is an irreversible compound—lysis of red cells will release the pigments into the plasma but methæmoglobinæmia or sulphæmoglobinæmia is not produced Both these pigments have to be present in considerable amounts to be detected spectroscopically and they are probably not present as such for long, for if they are incubated with plasma at 40° C methæmalbumin is produced, and it is likely that this represents their fate in vivo Fairley suggests that hæmolytic anæmias can be put into three groups In one hæmoglobin appears in the urine, methæmalbumin and excess of bilirubin in the blood-plasma, the second is similar but without hæmoglobinuria, in the third only hyperbilirubinæmia is present In the first two groups hæmolysis is occurring predominantly in the blood stream whereas in the third the reticulo-endothelial system is responsible We have standard methods for detecting hæmoglobin in the urine and bilirubin in plasma or serum, methæmalbumin can be demonstrated by direct spectroscopy only if considerable amounts are present, but it can be converted by a reducing agent into a spectroscopically sensitive hæmochromogen with a clearly defined absorption band at 558 $m\mu$ (yellow-green) This reaction is known as Schumm's test and was originally used to detect the presence of hæmatin, but from what has already been said it is clear that a positive reaction in a specimen of serum indicates the presence of methæmalbumin, and this is the best way of detecting methæmalbumin The test is carried out by covering a known volume of serum with a layer of ether and then running in with a pipette one-tenth the volume of concentrated ammonium sulphide and a few drops of ammonia, the mixture is shaken and the direct vision spectroscope can then be used to look for the characteristic absorption band. The van den Bergh test for bilirubin is asked for in every case of suspected hæmolytic anæmia, Schumm's test should be used just as often

FIRST-AID FOR BURNS

THE differences of opinion and changes in practice with regard to tannic acid have led to some confusion in both laymen and doctors called on to apply first aid to burns In E M S Memo No 7 (H M Stationery Office, pp 4, 2*d*), issued by the Department of Health for Scotland, the principles as modified by modern views are restated In local treatment the layman is told to cover the exposed parts of the burn with a clean dry sheet, towel or cloth, and under no circumstances to apply oil, grease, flour, soot, baking soda or lysol The medical attendant is advised in severe cases, which include all burns of the face and eyes, hands and feet, to control pain with morphine rather than local applications, this implies that before moving the patient to hospital he should keep to dry dressings The moderate burn which can be treated fully at the first aid post should be cleansed before the application of a coagulant, using soap where necessary, followed by saline, and avoiding ether or alcoholic solutions and vigorous rubbing or scrubbing For general use a coagulant in a water-soluble base is advised The recommendations for difficult areas are usefully illustrated in a diagram and summarised as follows

Palmar surfaces of fingers and hands —Snip blisters, but do not remove epidermis Apply gauze soaked in 1/1000 euflavine

Flexures —After cleansing and removal of epidermis, apply gauze soaked in 1/1000 euflavine

Face —After cleansing, apply jelly spread on a mask of gauze cut to fit with holes for eyes, nostrils and mouth

Eyelids —Eyelids should never be coagulated, but thick smeared with sterile soft paraffin

Mucous surfaces of lips and mouth —Apply sterile sc paraffin

Ears —Before cleansing, plug lightly with cotton wo smeared with sterile soft paraffin After cleansing, sme thickly with sterile soft paraffin

Hairy parts —These must be shaved for at least 2 in round the margin of the burn before cleansing with ster saline

It will be seen that the memo follows the lines of th issued by the Ministry of Health in February (see *Lanc* March 29, p 425), but here no attempt is made to disc treatment in hospital

GUY'S IN THE WILDERNESSE

AT the suggestion of the Ministry of Health Gu has, for obvious and cogent reasons, opened a coun branch at the Wildernesse Club at Seal, near Sevenoa The first patients moved in on June 30, and on Jul the annexe was formally opened as "Guy's U S Hospital" The transatlantic flavour of the name a token of the hospital's gratitude to the Bundles Britain Association which has given 10,000 dollars pay for the adaptation of the house into a hospit At the opening, Mrs Edward Murrow, their represen tive in this country, said that the general pro-Brit feeling which exists in America needs to be harness to particular objectives with a tangible human app more satisfying than an intellectual passion democracy The Hollywood branch of the organis tion has accordingly adopted Guy's, and the advanta of hitching your wagon to a galaxy of stars is clear, Hollywood has already promised a much needed de X ray therapy plant, fracture beds, and a gastroscop while Mr Harry Warner has given £900 to furnish operating theatre The new annexe has 120 beds an the resident staff will include a medical superintende and two medical officers, a lady superintendent, eigh sisters, and fifty nurses, while physicians and surgeon from Guy's will be regular visitors The patients wil be air-raid casualties and other civilian sick transferre from the mother hospital The reactions of patient and staff to a country life will be recorded for con sideration when the time for post war reconstructio comes

THE KING AND THE COLLEGE OF SURGEONS

AT a meeting last week of the council a letter was rea from Sir Alexander Hardinge, private secretary to th King, who is Visitor to the Royal College I am t assure you, the letter runs, that it is a source of dee regret to His Majesty to learn of the damage to th museum buildings and the loss of valuable specimen resulting from enemy action The King is, howeve much gratified to hear of the further generous gift mad by the Bernhard Baron trustees towards the endowmen of the professorship of research, which will go far t prevent any of the regrettable interruption which migh otherwise have occurred in the scientific work an development of the college

SIR ALFRED WEBB JOHNSON has been elected presiden of the Royal College of Surgeons in succession to Si Hugh Lett

AWARDS IN THE R A M C —The following awards hav been made to medical officers in recognition of distinguishe services in the Middle East

C B —Colonel (temp Major General) P S Tomlinson D S O, M R C P, A M S

C B E —Lieut Colonel (temp Colonel) F G A Smyth O B E, M B Lond, R A M C

O B E —Major (temp Lieut Colonel) B J Daunt, L R C P I, R A M C

M B E —Captain (temp Major) P L E Wood, M R C S, R A M C

In England Now

A Running Commentary by Peripatetic Correspondents

THE other evening I went as usual from listening to the news straight to the surgery Among the patients there was a man I had seen that morning and told to come up again with a tomato leaf He was a nurseryman and had dermatitis and from its appearance at a significant time each year it seemed likely that tomatoes were the cause The wireless was still jangling in my head as I cut the leaf for a patch test V for victory, V for arrowhead from Heaven, V except for the proud phallic I the simplest and probably the oldest letter of them all, that points to man his origin from dust, where he shall go again, where he shall lie, the divine point driven irresistibly downwards, the piercer, the wedge of resolve, God's stream-lined spermatozoon the emblem of union, two views culminating in one point, the conquering call of the eagle " It's a funny thing doctor but where I am sunburnt, on the face and this side of my arms " he stroked the extensor surface of his arm) " and on the neck here, I don't get the spots nor the itching " Nature's own cure or preventive, the light from the sun which when reflected would form a V, the light from Heaven reflected on man, V for Victory V for a positive patch test on a nurseryman's belly, V for vengeance, V • —

Gosh, this is becoming an obsession

* * *

The alarm sounded over the ship's broadcaster, an air-attack was apparently imminent My position in action was the officers' bathroom which made an excellent dressing station, having running water (in theory at any rate) and several baths which with the addition of boards became crude but serviceable operating tables The steriliser was switched on and the emergency lighting checked over In the adjacent compartment the chaplain, the dental officer, my three sick-berth attendants and a motley crowd of assorted cooks and stewards had gathered, the latter constituting the first-aid parties Stretchers and bags containing the essentials for elementary first-aid were distributed and the parties trooped away to their vantage points to await casualties Meanwhile outside events were livening up with a vengeance as far as we down below could judge Our position having been chosen for its comparative safety we were pretty well isolated from the happenings on the upper deck, and for our news we depended on announcements over the broadcaster or the excited and never very accurate accounts of those people who found their way below However, the dull concussions of the bombs were pretty obvious, as were the sharper and closer explosions of our own A A guns and the occasional chatter of some close-range weapon

For a time all was well though I could see my own nervous tension reflected from most of the other faces Our experience of attacks was too small for us to have become blase None the less we all assumed a nonchalant air which was rather spoilt by occasional involuntary starts At first these occurred at only the louder and more fearsome noises but as tension grew we leapt like startled stags at even the closing of a hatch One consolation was that the old hands, the veteran sea dogs, seemed similarly affected, though admittedly not to the same extent

Our assumed complacency received a rude shock when, with a crescendo of loud explosions, a stick of bombs fell across the ship, the last one very close to the port side, shaking us not a little both mentally and physically We straightened up from the crouching positions we had adopted and smiled bravely at one another There was little time for speculation, though, for soon a confused shouting above with cries of " To you!" "I've got him," and " Take your foot off the blinking rope!" brought us running to the foot of a ladder leading up to a hatch through which protruded a pair of " boots, regulation," neatly fastened up in a Neil Robertson stretcher The first casualty was arriving He proved to be a Royal Marine, who had sustained several small splinter wounds all luckily superficial, and whose chief complaint was against the over-zealous stretcher party, who had clapped him into a stretcher to bring him down to us Though a bit shaken he was as he maintained " in the pink " While we were dressing him the second casualty arrived—a seaman with a bad wound of his right arm showing a splintered fracture of the humerus and much loss of overlying flesh Though in a good deal of pain and considerably shocked he was very cheerful and temporary dressings together with morphia soon had him comfortable Inquiry on our private telephone line revealed that the other dressing station had received no casualties at all and so the total bag for the near-miss was fortunately very small It seemed a good excuse, if excuse be ever needed in the Navy for the making of tea So we sent the chief cook off on this errand and soon large " fannies " of it arrived, hot and incredibly strong The casualties had first whack and then having satisfied our consciences we proceeded to satisfy our thirsts in no uncertain manner

This done, there was nothing to do but wait and waiting is perhaps the worst possible occupation under such circumstances I cannot pretend that the danger was ever very great, but in our arrogant manner we assumed that we were the principal target and had ample time to analyse the various noises and think unpleasant thoughts about their proximity Commands over the broadcaster were interspersed with greater and lesser bangs, the gunfire went on and on relentlessly, always accompanied by that curious frenzied shouting which seems to be part of the naval gunners' stock-in-trade I imagine that the temporary deafness induced by the continuous detonations—and 4 inch is a notorious calibre for this—makes it impossible to modulate one's voice For several hours this lasted, fortunately without anything more dropping in our immediate vicinity Then after a long interval to make quite sure, the " secure " was sounded The first-aid parties returned with their equipment, all was stowed away and the " disperse " sent us about our business

While our casualties were being removed to the sick bay and prepared for operation we strolled out for a breath of fresh air on the upper deck The fires were fading with the growing light of dawn and the smoke was drifting away from the heavily blitzed city A dockyard policeman, veteran of many raids, said, with no assumed bravado, " You should have been here on Saturday night, that was a real raid that was "

* * *

Like many of his fans I was concerned to see that Mr P G Wodehouse had got into hot water from certain sections of the press Being anxious to come by some reliable first-hand information on the subject I decided to ring up Jeeves—and what a pleasure it was to hear his voice again! With the possible exception of the Royal Navy I know of nothing that gives such solid confidence in the future of England as those cultured tones " That you Jeeves?" I asked " How are you?" " I enjoy the best of health I thank you sir " " And Mr Wooster?" " Mr Wooster I am happy to say is well He is in the intelligence service sir, but I regret that I cannot divulge his immediate whereabouts even to you, sir I am sure you will understand " " Quite so, Jeeves Now what's all this I hear about Mr Wodehouse?" " Mr Wodehouse, sir? Ah that would be the literary gentleman who used to spend so much of his time with us He is, I understand at present on the Continent, sir " Admiring his discretion and resisting the temptation to tell him to quit stalling I went on " Yes, Jeeves, but what do you think about him?" " Well sir, I always found him an exceedingly pleasant gentleman, though I cannot speak with authority about his writings not having had leisure or—ahem—inclination to peruse them They are, I believe, of a somewhat frivolous nature " " Yes, but what would you say about the man himself?" " Well, sir, since you ask me and speaking in the strictest confidence I should describe him as a light-hearted gentleman, not perhaps intellectually profound but—for an author—singularly free from vice " " Thank you, Jeeves That's just what I wanted to know You have relieved my mind and I'm grateful to you " " Not at all, sir, will there be anything further, sir?"

* * *

I was a bit doubtful when the lady next door signed her free-milk form in block capitals whether the Minister of Food would accept that as a signature I took the advice of the Law

Dear MIKE (wrote the Law),—All right, I'll ask you another What d'you mean by signature ? If it is just your name on a form for some official purpose, the Government 'll tell you the way it wants you to sign If it is the signing of a name to show that the writing accords with your wishes or intentions, then the law will tell you what minimum it insists upon In this connexion it will often accept your initials or just your mark, if they're intended to represent your name And signature by a duly accredited agent will also do For signing a will, it's enough to affix a mark, or stamp with an engraved signature, or put your initials But it ain't enough to trace a former signature with a dry pen, because it leaves no physical sign The signature to a will ought to be your real name, but where a lady called " Glover " signed as " Reeve " (her first husband's name), the will was held validly executed In legal proceedings I believe it has been held that particulars filed in a county court action, where the solicitor's name at the end was merely lithographed, were not " signed " , if the solicitor's clerk had signed for him, it would have been O K For certain purposes, in contracts and documents creating obligations, the Statute of Frauds requires the document to be signed by the party who is to be charged Initials have been held to suffice for this I don't know that this answers your question which perhaps arose out of a distinction between signature and usual signature The bank knows our " usual signature " to our cheques We could alter it, if we liked , but if we kept altering it, the result would be a lot of inconvenience to ourselves as well as to the bank We want to be able to answer confidently if anybody asks " Is this your signature ? " And so no more at present from—UNCLE BOB

* * *

A round at hospital has revealed that Anna is back again She is a toxæmia of pregnancy with albuminuria The local hospital and I play battledore and shuttlecock with her, they not caring for the sight of her any more than I do When the B P soars to terrifying heights I send her in for surgical induction, when it subsides they send her out The score at the moment is vantage nobody (the patient not excepted), my service Sister, a professional gleam in her eye, asks if I have seen Mrs S——'s foot ? The question is purely rhetorical, as Mrs S has been admitted for myocardial degeneration Her foot certainly presents a unique, and to me undiagnosed problem The entire surface of the heel is covered with soft warts which pressure has flattened out into thin, pulpy, plates with a central pedicle These plates are fitted into one another like a piece of mosaic, and the condition is complicated by advanced varicose veins The cure and treatment, if any, has not yet occurred to me

Harness, the six-year old diabetic, is leaning out of the baby-room window " Someone mit move these babies," he begins indignantly on sighting me " They make too much noise " The noise certainly is appalling, but as Sister and I point out he is under no obligation to stay in the room Harness pouts, and we realise that his objection to the nursery is the presence of Maria, an old-fashioned party of five and a half who sets Sister and me right on matters of hygiene " No thank you," she says with frigid politeness when we offer her a piece of barley-sugar " It's been in the same room as the sick babies " Despite the screw-top to the jar, we feel snubbed, and help ourselves to pieces with overacted enthusiasm Secretly we sympathise with Harness and to change the subject Sister reminds him that there was something he wanted to tell doctor Harness goes very pink, stutters, and finally gets the story out with a rush Toilet paper had run out, and one of the nurses had presented him with a piece of newspaper till she had time to fit a new roll , on it was a photograph of Hitler " I used it," he announced with awful emphasis, " and then I pulled the plush on him " He giggles, stares intently at us both, and deciding that we lack entertainment value turns back to the window " Are the gulls interned ? " he asks, watching them as they beat up wind to the headland

SHAFTESBURY MILITARY HOSPITAL MEDICAL SOCIETY —A meeting of this society will take place on Tuesday, July 22, at 3 P M , when Major F R Bettley, R A M C , will speak on the early diagnosis of common skin diseases

Special Articles

THE BIOLOGY OF EPIDEMICS

Abstract of the Croonian Lecture given by Prof W TOPLEY *before the Royal Society on July* 17

THE universe of study which today faces the ep logist is not, in its essence, composed of a number of a clinically recognisable disease, with a dist that varies in an observable way in space and ti is composed of a variety of biological species, som as parasites and some as hosts The parasites viruses, or bacteria, or protozoa, or worms Th may be men, or animals, or insects, or plant parasite may pass from host to host by direct by indirect mechanical contact, or through the of an insect vector In whatever way it passes, t factor that determines the occurrence and typ epidemic prevalence is the frequency of its passa

If all relevant environmental conditions are he stant, and susceptible hosts are added at a hi steady rate to an infected herd, a steady rate of m is attained, with no major waves or fluctuatio with a steady rate of addition, the closeness of between host and host is changed, increased clos contact is followed by the propagation of a ma demic wave, and decreased opportunity for conta rapid fall in the mortality-rate These exper observations have many analogies in the record valence of infectious disease under natural condit

During an epidemic prevalence the average re of the hosts rises with length of exposure to r part because of the elimination by death of th susceptible individuals, in part because of the immunisation of survivors The resistance atta this way, though sometimes high, is never absolut can, in many cases, attain the advantages of immunisation, without its risks, by an appr method of vaccination

Differences in severity between different epide the same disease are in part accounted for by bi differences between various strains of a single p species, between different races of a single species or between different races of a single species o vector The biological characters that determi ability of a parasite to spread from host to host identical with the characters that determine its to multiply rapidly in the host's viruses, so that vi and infectivity may vary independently

In attempting to control epidemics we always st one way or another, to decrease the probability passage of the causative parasite from an infect susceptible host We may do this by changes distribution of the hosts at risk, or by lessen population density of an essential insect vector, reducing the proportion of susceptible hosts by a immunisation, or in many other ways In no ca necessary, by our own action, to reduce the probal zero The epidemic system is in unstable equil If we tip the balance far enough in favour of the system itself will do the rest, and the disease will become very infrequent, and may sometimes dis

SCOTLAND

ADMISSION TO E M S HOSPITALS

THE Department of Health for Scotland has anno that whole-time civil defence workers transferred their homes, and trainees in Ministry of Labour ind establishments who have been moved from their are eligible for admission to E M S hospitals patients, in accordance with normal hospital pr will be given an opportunity of contributing to the cost of their treatment Whole-time civil d workers are already eligible for admission, whethe are in their home areas or not, for treatment o service injuries and fractures sustained whether o service or not The new extension includes sickn injury sustained while not on civil defence servi while living away from home

SUMMER GRADUATION IN ABERDEEN

Dr W Hamilton Fyfe, the principal of Aberdeen University, in addressing the new graduates last week said that civilisation did not consist in a material standard of living, moral standards were even more important It was for moral standards we were fighting—mutual trust fair dealing, sympathy, mercy and goodwill, and for a genuine respect for the interests of the human intellect and spirit The price of freedom was eternal vigilance, and the price of civilisation was a sense of responsibility One nation after another had been enslaved because each considered its own interests in isolation Slavery awaited all men and women who did the same Their sense of responsibility required that they should answer any call for service however uncongenial and hard It made also one of those more trivial demands, often harder to meet than the calls for great sacrifice When rules were framed to secure for all an equal share of food, clothing or petrol, they must set an example which will put to shame those stupid and treacherous people who try to evade the rules and get more than a fair share for themselves And on them also lay the responsibility for rebuilding and securing and improving the civilisation of Europe when the war is over That might prove the hardest and heaviest responsibility of all, but they were privileged people to whom much was given, and of whom much was required

HONYMAN GILLESPIE LECTURES

The following lectures will be given during the summer vacation at 4 30 P M on Thursdays, at Edinburgh Royal Infirmary July 24, Prof D M Lyon, significance of a systolic murmur, July 31, Prof L S P Davidson, biopsy of the sternal bone-marrow as a diagnostic procedure, Aug 14, Prof D K Henderson, the significance of fear, Aug 21, Dr A Rae Gilchrist, the hypertensions, Aug 28, Sir John Fraser, the antiseptic eras—yesterday and today, and Sept 4, Prof D M Dunlop, the dietetic treatment of gastro-intestinal disease The lectures are open to graduates and senior students

Parliament

Pharmacy and Medicines Bill

Mr Ernest Brown broke a twenty-five-year-old parliamentary hoodoo in sponsoring this bill which came before the House of Commons for second reading on July 8 and which, he rightly said, involved a very old and controversial story The new bill, in accordance with the Chancellor of the Exchequer's promise, repeals the Medicines Stamp Acts which have become unworkable—indeed the High Court has stigmatised them as "a mass of confused and obsolete verbiage" The general proposition of the select committee of 1937 that medicines could suitably be taxed at $16\frac{2}{3}\%$ ad valorem, which formerly met with much opposition, had now been carried into effect by the Purchase Tax, and the estimated yield of the tax on medicine is 3 million pounds a year, or nearly four times the yield of the Medicine Duty

There were strong reasons against sweeping away the advantages which chemists enjoyed under the present law, and the bill embodied an agreement accepted by most of the trade interests concerned which substituted a trading privilege for a financial advantage Clause 7 provides that from the date of repeal of the duties all medicines shall be sold retail only by chemists, together with doctors and dentists, with the exception of herbal remedies, of mineral waters, and of proprietary medicines not described in the B P or B P C There was, Mr Brown added, no desire on anyone's part to interfere with the legitimate practice of legitimate herbalists

Today there were still opportunities for the unscrupulous to trade on the credulity and fears of the ill-informed, and the advertisement of quack remedies often delayed the seeking of proper advice This bill would stop these practices From Jan 1, 1942, all medicines must bear a statement of their composition or active constituents, the only exception is a medicine supplied to an individual prescribed according to his needs—for instance a mixture made up in accordance with a doctor's prescription The advertisement of remedies for certain diseases, or of articles for procuring abortion, would be stopped Advertisements of articles for the treatment of venereal disease and cancer are already prohibited by law and the present bill extends the prohibition to advertisements of remedies for Bright's disease, cataract, diabetes, epilepsy or fits, glaucoma, locomotor ataxy, paralysis and tuberculosis The bill also makes minor amendments to the Pharmacy and Poisons Act, 1933 A retailer who sells drugs including poisons at a chemist's shop need not have a pharmacist in charge of other shops where he sells drugs other than poisons The statutory committee of the Pharmaceutical Society when adding or restoring a name to their register may take into account any offence committed by the applicant while not registered They are also authorised to remove or withhold names from the register for a stated period Mr Brown said the bill was the result of infinite shrewdness and goodwill, and he commended it to the House as the first legislative step for a generation on the road to reform

In the debate which followed members showed a generous indignation that the gullible should be expensively duped Many thought the measure did not go far enough, while others were anxious that herbalists should have a fair deal Mr James Griffiths urged that the real remedy lay in the advance of education and the provision of adequate medical services Mr Beverley Baxter thought the B M A was reactionary but had found herbalists to have social charm Prof A V Hill rushed to the rescue of the medical profession, and deplored people who scrupulously obey the law the Ten Commandments and Mrs Grundy and only show their liberalism by favouring quack medicines He reviewed with wit and distaste the advertisements of some popular remedies and welcomed the bill which was overdue We had been respectful and tolerant far too long of the exploitation of the sick and suffering

Mr Henry Strauss agreed with Lord Horder that the advertisements of patent remedies often constituted a greater danger to health than the contents of the medicines themselves Unless the Government were prepared to go much further in the control of advertisements it would be better to drop Clause 3 and combat the evil by sowing distrust in the public mind Sir Ernest Graham-Little supported the bill though he was disappointed in its character and its scope A sum of 30 million pounds a year was extracted from the public for patent medicines, more than was spent on all the hospital services Advertisements of patent medicines in the newspapers produced a disease consciousness He agreed with Mr Strauss that the restrictions on advertisements did not go far enough and he doubted whether they would have much effect The bill states that the description of a remedy may take the form of a reference to it in the B P But, Sir Ernest asked, did the purchaser of medicine in a shop know the British Pharmacopœia? Mr Rhys Davies pointed out that 20 million out of our population of 44 million were entitled to free medicine under the National Health Insurance scheme If the sale of proprietary medicines was still being maintained that was a commentary on the gullibility of the public He also raised the question of surgical appliances If it had not been for the Ministry of Health and the approved societies there would have been a first-class racket in some of these appliances

Captain G Elliston did not pretend to have wholehearted enthusiasm for this measure The weakest point was the absence of any enforcement clause Suggestions would be made in committee for the creation of an advisory controlling body for the registration and supervision of proprietary medicines Sir Dymoke White said that a large body of retail pharmacists, including the National Pharmacists Union, was alarmed at many of the proposals Sir Francis Fremantle admitted that the bill did not go far enough because it did not compel disclosure of the quantities of the component parts, but he thought it was a step in the right direction He spoke up for the B M A which had done its best to run down the gross frauds and quackery in the patent medicine trade

Miss F Horsbrugh, who replied for the ministry, promised consideration for the points raised She agreed that this country needed a constructive health policy, but in order to build we had to demolish The bill was read a second time

The Seaman's Diet

In the House of Lords on July 8 the Earl of CORK and ORRERY made a further plea for equal rights for merchant seamen when in hospital He explained that he was not alluding to medical treatment but to diet For instance, the Royal naval rating received 2⅝ lb of meat in a week, whereas the merchant seaman only got a shilling's worth, or less than 1 lb , the naval rating got 10½ oz of butter, the merchant seaman 6 oz , the naval rating got 1 lb 8 oz of sugar and the merchant seaman 8 oz , the naval rating got 9 oz of bacon and the merchant seaman 4 oz When he raised this matter about six weeks ago[1] Lord Croft had stated that the Government were satisfied that both classes of patient were getting the food current supplies allowed and their medical condition required But in view of these figures one could only think that one class of man was getting too much or the other too little Lord Cork and Orrery quoted from a letter written by a physician who gave up his spare time to caring for sailors of the merchant marine The doctor wrote that during the past year it had become increasingly clear that extra food allowances were highly desirable in the Seamen's Hospital since many of the patients were admitted in a debilitated state after long voyages or prolonged exposure in open boats No small number of the conditions which the hospital was called upon to treat were the outcome of faulty and deficient diet on board ship The doctor added that there was no doubt that the increased dietary offered by Service hospital rations would enable physicians and surgeons to get their sailor patients back into service more quickly

Lord WOOLTON said that six weeks ago an alteration was made in merchant seamen's rations and now except for meat the two Services were treated alike In hospital the rations went into a common pool and each man got what was necessary for him according to the opinion of his medical attendant If there was any shortage of food for merchant seamen, or for any other class of seamen, who were being treated in hospitals, he promised to see it put right But he had received no complaints But in deference to Lord Cork and Orrery he had referred the amount of food used in hospitals treating merchant seamen once more to the Medical Research Council for advice as to whether the dietary was sufficient, and if in the opinion of the council the dietary was not sufficient he would at once increase it But if he was advised that it was not necessary he hoped that Lord Cork and Orrery would be satisfied The Earl of Cork and Orrery thanked Lord Woolton for his sympathetic reply, but said that he could not agree with him, for as vice-chairman of the Seamen's Hospital Society he had received the dietary figures which he had quoted that morning from the secretary The society had five hospitals and two convalescent homes and the information of the alteration given by Lord Woolton had not reached those hospitals

Extended Benefits

On July 10 in the House of Commons Mr ERNEST BROWN, Minister of Health, introduced the National Health Insurance Contributory Pensions and Workmen's Compensation Bill, a measure to increase the rates of sickness and disablement benefit and the rates of contribution payable under the acts relating to National Health Insurance, to extend the said acts to persons employed otherwise than by way of manual labour at a rate of remuneration exceeding £250 a year, and in connexion therewith to amend the acts relating to widows', orphans' and old age contributory pensions and certain other enactments , to enable any of the acts aforesaid to be adapted by regulations to war-time conditions , and to amend paragraph (*a*) of subsection (2) of section three of the Workmen's Compensation Act, 1925 The bill was read a first time

QUESTION TIME

Orthopædic Treatment in Scotland

Mr T JOHNSTON replying to Dr H B MORGAN said I am aware that facilities for fracture treatment in Edinburgh and Glasgow are not generally in full accordance with the recommendations of the Delevingne committee but some progress has been made since the publication of the report Moreover in developing the Emergency Hospital Services special attention has been given to arrangements for the treatment of fractures including the provision in Scotland o 6 entirely new orthopædic units (with associated provision fo occupational therapy providing 2000 beds) These facilitie are available not only for the treatment of civilian wa casualties but also for certain manual workers whose earl return to work is of special importance As regards cond tions which occasion crippling other than fractures I hav encouraged schemes initiated by voluntary bodies for th improvement and extension of facilities for their treatmen

Venereal Disease in Jamaica

In reply to questions from Dr MORGAN Mr GEORGE HAL Under Secretary of State for the Colonies, stated There a different departments in the venereal diseases clinic at Kingst for males and females, but owing to lack of space and st there are not separate departments for children There a no special facilities in the hospitals for treating childr suffering from these diseases and the great majority infected children are treated at the clinic as outpatient It is not the general rule for a child attending the clinic to accompanied by an adult member of the family except first visit The Minister does not regard this position satisfactory and he is taking up the whole matter with th Governor of Jamaica

There are three clinics for the treatment of venereal disease in Jamaica, situated at Kingston, Montego Bay and Po Antonio Four full time and two part time medical office are attached to the Kingston clinic and one part time medic officer to each of the other two clinics The governor state that it is impossible to estimate the proportion of thos infected who seek treatment at the clinics It is know however, that an exceedingly small proportion of cases eve seek competent medical treatment in the early stage Th greater percentage only do so if late unpleasant complication develop The following numbers of new cases were admitte to the clinics in 1940

Kingston	Gonorrhœa	M	2691	F	405
	Syphilis	M	1624	F	219
Montego Bay	Gonorrhœa	M	1056	F	110
	Syphilis	M	504	F	44
Port Antonio	Gonorrhœa	M	800	F	506
	Syphilis	M	758	F	489

M = Male, F = Female

A temporary clinic at Kingston public hospital is equipped but is not in operation owing to the lack of staff Clinics are also planned for Spanish Town, St Anne's Bay, Falmouth, Savanna La Mar, Black River and Mandeville, when funds are available

National Health Insurance Benefits

Mr J J TINKER asked the Minister of Health if he was aware of the different rates of benefit paid by societies under the National Health Insurance scheme , and would he give consideration in the Bill he was to introduce to the pooling of all funds, so that one rate of benefit could be given to all insured persons —Mr BROWN replied The answer to the first part of the question is Yes The bill is designed to give effect to certain changes in the health insurance scheme necessary to meet war time conditions, and the proposal referred to will doubtless be one of the issues to be considered by the committee which has been appointed by the Minister without Portfolio to undertake a comprehensive survey of the existing schemes of social insurance

Alien Doctors

Mr GEORGE STRAUSS asked the Minister whether he would extend the scheme whereby the services of doctors of allied and friendly nationality were employed in certain hospitals and institutions to cover those few doctors resident in Great Britain who had obtained their degrees in Switzerland, Sweden and other neutral countries —Mr BROWN replied The question of making a further order under Defence Regulation 32B so as to include the classes of doctors referred to is receiving consideration

Price and Delivery of Milk

Sir HENRY MORRIS JONES asked the Parliamentary Secretary to the Ministry of Food why the producer of milk from best attested herds only received 1*s* 4½*d* per gallon, including cost of transport to wholesalers, whereas the retailer received 2*s* 8*d* per gallon —Major G LLOYD GEORGE replied The return to the milk producer varies slightly according to the Milk Marketing Board region in which he is situated The retail price of milk also varies according to population areas The figures quoted are substantially correct for North Wales for June, 1941 The retailer does not himself retain the difference between the price to the producer and the price to the consumer He purchases his milk at the regional price which in June was 1s 8½*d* per gallon. Furthermore, the retailers' margin varies from month to month, being in England and Wales generally higher in the summer months than the winter months, while the return to the producer is higher in the winter than the summer It is therefore misleading to base any comparison of producers and retailers' earnings on the figures of any particular month

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[1] See *Lancet*, May 31, 1941, p 710

In answer to a further question Major LLOYD GEORGE stated While the practice of restricting milk deliveries to six days a week is substantially less prevalent than a month ago, there are still towns and villages where a milkless day operates The Minister has appealed to distributors to maintain a 7 day delivery service in the interest of the consumer The great majority of distributors has responded to this appeal Consideration is being given to the further action which might be taken in those centres where the appeal has so far proved fruitless

Occupational Therapy in Mental Hospitals

Mr F MESSER asked the Minister of Health if he was aware that the present rationing of materials is hindering the work of occupational therapy in mental hospitals, and if he could take steps to secure a relaxation of the rationing regulations in these special cases —Mr BROWN replied I am in communication with the President of the Board of Trade in this matter

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Letters to the Editor

SAVING ON DRUGS

SIR,—Arising out of Dr Pappworth's letter on this important subject in your issue of July 5, it may be of interest to set out what has been done in the hospitals of the London County Council The purchase of drugs by contract and otherwise is in the hands of experts on the staff of the chief officer of supplies they advised me in April, 1940, that there was actual and potential shortage of many drugs and I forthwith established a committee of hospital medical officers and pharmacists to revise our pharmacopœia and drug schedules On June 4, 1940, a circular, from which the following are extracts, was issued to all hospitals with, as is our routine practice, a copy to each pharmacist —

> " Considerable difficulty is being experienced at the present moment in obtaining supplies of drugs, medicines, etc, required for the treatment of patients in the Council's ospitals owing to the war and to difficulties in overseas ansport
>
> The questions whether various kinds of drugs could be educed in number or adequate substitutes found have been ery carefully considered and a statement is attached which ontains suggestions whereby such economies can be secured he question of transport not only affects drugs from overseas ut affects also the distribution of drugs from the firms pplying them, owing to the restriction of petrol supplies, nd it is imperative as far as possible to restrict the number f deliveries
>
> "In the schedule which is attached it is recommended at certain articles should be issued only for use in particular nds of wards, e g, tuberculosis wards, and it is hoped that ou will ensure that this request is carried out to its fullest xtent
>
> With regard to the use of proprietary medicines, every ffort should be made to restrict their use and British subtitutes of official preparations and reputed analogous herapeutic effect should be used where possible I attach or your information and for that of the pharmacist, a handook entitled Pharmaceutical Specialities, issued by the ssociation of British Chemical Manufacturers
>
> "Your special attention is also drawn to the fact that both live oil and glycerine are controlled and that the amounts vailable are severely restricted Both must be used as paringly as possible
>
> "It is also suggested on the grounds of economy that all he developing and fixing solutions for use in the X ray epartment or cardiographic department, if any, should be ade at the hospital "

The schedule attached to this letter comprised 86 drugs or preparations Since that date several other circulars have been issued drawing attention to shortage or unavailability of other drugs and copies of all recommendations as to the use of drugs, &c, emanating from the Ministry of Health or the M R C have been sent to all medical superintendents and pharmacists Careful scrutiny of drug requisitions is maintained at head office and, as it is only rarely that deletion or substitution is called for, I am satisfied that in the L C C hospital service the desire to economise, which Dr Pappworth rightly insists on, undoubtedly exists and is loyally acted upon

County Hall S E 1 W ALLEN DALEY
Medical Officer of Health

SHORT ŒSOPHAGUS AND PEPTIC ULCER OF THE ŒSOPHAGUS

SIR,—In your issue of July 5 you refer to a communication Dr P J Briggs, Dr R C S Dick and I made before the medical section of the R S M in 1939 (*Proc R Soc Med* 1939, 32, 1423), in which we stated that peptic ulcer of the œsophagus is almost always associated with that form of hernia of the upper part of the stomach through the diaphragm which is caused by congenital shortening of the œsophagus According to your annotation Dr A S Johnstone has recently described 7 cases of chronic œsophageal ulcer, in all of which there was definite shortening of the œsophagus He regards the short œsophagus as secondary to cicatricial contraction of the ulcer, and not, as we maintained, the predisposing cause The main reason for this appears to be that in his experience œsophageal ulcers occur at an advanced age, the average in his series being 64, as symptoms might be expected to develop much earlier if the condition were associated with a congenital abnormality But the age at the onset of symptoms in our 7 cases of chronic peptic ulcer in a short œsophagus varied between 18 and 58 the average being 41 In the only case we have found in the literature the shortening was obviously congenital, as the patient was only three years old and vomiting of blood-stained material had begun at the age of one week (Haroen, I L and Gerlings, P G *Acta oto-laryng Stockh* 1934, 19, 461)

We believe that a short œsophagus predisposes to the development of a peptic ulcer because for some unknown reason the cardiac sphincter is incompetent when the œsophagus is congenitally short, whether an ulcer is present or not Opaque fluid can be seen with the X rays to regurgitate into the œsophagus from the stomach on lying down, whereas no such regurgitation occurs under normal conditions Consequently acid gastric juice is likely to enter the lower end of a congenitally short œsophagus at night and produce erosions which may develop into chronic ulcers Owing to this regurgitation most patients with chronic œsophageal ulcers experience pain behind the lower end of the sternum immediately they lie down at night as well as while eating, and healing is hastened and recurrence prevented by having the head of the bed permanently raised on blocks

Oxford ARTHUR HURST.

THE FRONTAL LOBES

SIR,—I wondered how long it would be before the erstwhile insulin, Cardiazol and electrocution enthusiasts, having become tired of inflicting minor injuries on the cerebrum, got wind of the new whole-hogging technique and dashed in, with careless rapture, to the mutilation of the frontal lobes I take it that their former adventures will now be allowed to sink into respectable oblivion

Lest in what follows I should be accused of having allowed my emotions to run away with my reason I should like to point out that the new procedure consists in inflicting severe injury on a part of the brain the function of which has not yet been precisely determined in order to cure disorders of the cause of which we are largely ignorant Not that I am so much against empirical procedures of this kind provided that the work is done well and scientifically which means the selection of a special type of mental disorder for investigation the accumulation of an adequate number of such cases before publication, accurate and detailed psychological assessment before and after treatment, and careful

The Seaman's Diet

In the House of Lords on July 8 the Earl of CORK and ORRERY made a further plea for equal rights for merchant seamen when in hospital He explained that he was not alluding to medical treatment but to diet For instance, the Royal naval rating received 2⅜ lb of meat in a week, whereas the merchant seaman only got a shilling's worth, or less than 1 lb , the naval rating got 10½ oz of butter, the merchant seaman 6 oz , the naval rating got 1 lb 8 oz of sugar and the merchant seaman 8 oz , the naval rating got 9 oz of bacon and the merchant seaman 4 oz When he raised this matter about six weeks ago[1] Lord Croft had stated that the Government were satisfied that both classes of patient were getting the food current supplies allowed and their medical condition required But in view of these figures one could only think that one class of man was getting too much or the other too little Lord Cork and Orrery quoted from a letter written by a physician who gave up his spare time to caring for sailors of the merchant marine The doctor wrote that during the past year it had become increasingly clear that extra food allowances were highly desirable in the Seamen's Hospital since many of the patients were admitted in a debilitated state after long voyages or prolonged exposure in open boats No small number of the conditions which the hospital was called upon to treat were the outcome of faulty and deficient diet on board ship The doctor added that there was no doubt that the increased dietary offered by Service hospital rations would enable physicians and surgeons to get their sailor patients back into service more quickly

Lord WOOLTON said that six weeks ago an alteration was made in merchant seamen's rations and now except for meat the two Services were treated alike In hospital the rations went into a common pool and each man got what was necessary for him according to the opinion of his medical attendant If there was any shortage of food for merchant seamen, or for any other class of seamen, who were being treated in hospitals, he promised to see it put right But he had received no complaints But in deference to Lord Cork and Orrery he had referred the amount of food used in hospitals treating merchant seamen once more to the Medical Research Council for advice as to whether the dietary was sufficient, and if in the opinion of the council the dietary was not sufficient he would at once increase it But if he was advised that it was not necessary he hoped that Lord Cork and Orrery would be satisfied The Earl of Cork and Orrery thanked Lord Woolton for his sympathetic reply, but said that he could not agree with him, for as vice-chairman of the Seamen's Hospital Society he had received the dietary figures which he had quoted that morning from the secretary The society had five hospitals and two convalescent homes and the information of the alteration given by Lord Woolton had not reached those hospitals

Extended Benefits

On July 10 in the House of Commons Mr ERNEST BROWN, Minister of Health, introduced the National Health Insurance, Contributory Pensions and Workmen's Compensation Bill, a measure to increase the rates of sickness and disablement benefit and the rates of contribution payable under the acts relating to National Health Insurance, to extend the said acts to persons employed otherwise than by way of manual labour at a rate of remuneration exceeding £250 a year, and in connexion therewith to amend the acts relating to widows', orphans' and old age contributory pensions and certain other enactments , to enable any of the acts aforesaid to be adapted by regulations to war-time conditions , and to amend paragraph (*a*) of subsection (2) of section three of the Workmen's Compensation Act, 1925 The bill was read a first time

QUESTION TIME

Orthopædic Treatment in Scotland

Mr T JOHNSTON replying to Dr H B MORGAN said I am aware that facilities for fracture treatment in Edinburgh and Glasgow are not generally in full accordance with the recommendations of the Delevingne committee but some progress has been made since the publication of the report Moreover in developing the Emergency Hospital Servic special attention has been given to arrangements for th treatment of fractures including the provision in Scotland 6 entirely new orthopædic units (with associated provision f occupational therapy providing 2000 beds) These faciliti are available not only for the treatment of civilian w casualties but also for certain manual workers whose ea return to work is of special importance As regards con tions which occasion crippling other than fractures I ha encouraged schemes initiated by voluntary bodies for t *improvement and extension of facilities for their treatme*

Venereal Disease in Jamaica

In reply to questions from Dr MORGAN Mr GEORGE HA Under Secretary of State for the Colonies, stated There different departments in the venereal diseases clinic at Kingst for males and females, but owing to lack of space and st there are not separate departments for children There no special facilities in the hospitals for treating childr suffering from these diseases and the great majority infected children are treated at the clinic as outpatien It is not the general rule for a child attending the clinic to accompanied by an adult member of the family except first visit The Minister does not regard this position satisfactory and he is taking up the whole matter with t Governor of Jamaica

There are three clinics for the treatment of venereal diseas in Jamaica, situated at Kingston, Montego Bay and P Antonio Four full time and two part time medical offic are attached to the Kingston clinic and one part time medi officer to each of the other two clinics The governor sta that it is impossible to estimate the proportion of th infected who seek treatment at the clinics It is know however, that an exceedingly small proportion of cases ev seek competent medical treatment in the early stage T greater percentage only do so if late unpleasant complicatio develop The following numbers of new cases were admitt to the clinics in 1940

Kingston	Gonorrhœa	M	2691	F	40
	Syphilis	M	1624	F	21
Montego Bay	Gonorrhœa	M	1056	F	110
	Syphilis	M	504	F	44
Port Antonio	Gonorrhœa	M	800	F	50
	Syphilis	M	758	F	4

M = Male , F = Female

A temporary clinic at Kingston public hospital is equippe but is not in operation owing to the lack of staff Clinics ar also planned for Spanish Town, St Anne's Bay, Falmout Savanna La Mar, Black River and Mandeville, when fund are available

National Health Insurance Benefits

Mr J J TINKER asked the Minister of Health if he wa aware of the different rates of benefit paid by societies und the National Health Insurance scheme , and would he giv consideration in the Bill he was to introduce to the poolin of all funds, so that one rate of benefit could be given to a insured persons —Mr BROWN replied The answer to th first part of the question is Yes The bill is designed to giv effect to certain changes in the health insurance schem necessary to meet war time conditions, and the propos referred to will doubtless be one of the issues to be consider by the committee which has been appointed by the Minist without Portfolio to undertake a comprehensive survey of th existing schemes of social insurance

Alien Doctors

Mr GEORGE STRAUSS asked the Minister whether he woul extend the scheme whereby the services of doctors of allie and friendly nationality were employed in certain hospital and institutions to cover those few doctors resident in Grea Britain who had obtained their degrees in Switzerland, Swede and other neutral countries —Mr BROWN replied Th question of making a further order under Defence Regulatio 32B so as to include the classes of doctors referred to receiving consideration

Price and Delivery of Milk

Sir HENRY MORRIS JONES asked the Parliamentar Secretary to the Ministry of Food why the producer of mil from best attested herds only received 1*s* 4½*d* per gallon including cost of transport to wholesalers, whereas the retaile received 2*s* 8*d* per gallon —Major G LLOYD GEORG replied The return to the milk producer varies slightl according to the Milk Marketing Board region in which he ave been special problems in other directions to solve t the outbreak of hostilities only one of the better-nown settlements was requisitioned, in part at least y the Emergency Medical Service Its geographical osition near Maidstone made Preston Hall an early hoice for the reception and treatment of potential asualties, and in the early days of September 1939 beginning was made in the erection of new hutments hich are now familiar throughout the country Within ix months the huts were completed and the first patients dmitted Side by side with the reception of civilian nd Service patients the sanatorium section of the hos-ital—though greatly curtailed in the number of beds vailable—continued to function and no administrative ifficulties have been experienced

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[1] See *Lancet*, May 31, 1941, p 710

The association of a general hospital cheek by jowl ith a sanatorium is something new in medical organisa-ion in this country, and here again experience has shown that there is nothing incompatible in the association The routine of the village settlement has not been interfered with in any way The presence of a general hospital in the grounds of Preston Hall has in fact, done something to awake again in some of us a conscience in general medicine and surgery which a lifetime devoted to tuberculosis is apt to destroy and I believe I am speaking with the authority of my colleagues on the E M S staff when I say that they too have come to regard tuberculosis as a wider and more varied subject than they had never kown And that the two staffs can coöperate in the fullest measure was proved during the dark days following the evacuation of Dunkirk.

Preston Hall Kent J B McDOUGALL,
Medical Director

McARTHUR HERNIOPLASTY

SIR,—May I be allowed to join issue with Squadron-Leader McLaughlin (*Lancet*, July 5, p 11) on the value of the McArthur operation for inguinal hernia which he describes and practises as a routine procedure ? I have used it in selected cases in the past nine years as a compromise between the Bassini and the Gallie operations, but I find the indications becoming less frequent I do not agree that the anatomy of the inguinal canal is not disturbed by this procedure In fact, in order to make the short strip of fascia last until the internal ring is reached there is a temptation to pull firmly on each stitch and the distortion thereby produced is often more marked than in the Bassini operation. Certainly Gallie did not intend fascial strips to be used in this way, but to be darned loosely over the gap

In young active patients such as those with whom Squadron-Leader McLaughlin is dealing, the musculo-aponeurotic arch which surgeons call the conjoined tendon is well developed except where the hernia is unusually large Any suturing of this muscle, whether with catgut silk or fascia must cause it to atrophy. I have seen a direct hernia actually produced in this way where no hernia previously existed, the surgeon believing that he was " strengthening the inguinal canal by a few Bassini sutures In this type of patient, Kocher's operation, in which the sac is invaginated into itself and brought out near the anterior superior iliac spine, is undoubtedly the best because it is based on a physiological conception and strictly respectsthe conjoined tendon The second step of the operation is important and significant The sutures which reef the external oblique aponeurosis from above downwards narrow the inguinal canal thus relaxing and splinting the stretched muscular fibres of the conjoined tendon in the same way as a shoulder abduction splint relaxes a paralysed deltoid The operation is a simple one and should take no longer than ten minutes It was taught to me by Mr J H Rawlinson of the Northern Hospital Liverpool about nine years ago, and since then I have used it 288 times in 680 inguinal hernias with increasing confidence and without modifying it in any detail

Nor can I support Squadron-Leader McLaughlin's claim that the McArthur operation permits the patient to return to full duty in five weeks In dock labourers this practice would be disastrous The longer the patient abstains from heavy work the better, whatever the operation and a great deal of disability will be avoided if the surgeon insists on this point

Weaverham Cheshire J A MARTINEZ

SUPPRESSION OF URINE IN CRUSH ŒDEMA

SIR —The appearance among air-raid casualties of this syndrome—crush œdema followed by suppression of urine—stimulates one to survey all the conditions which are in any way comparable in the hope of finding some guide in treatment The paper by Mr Patey and Dr Robertson in THE LANCET of June 21 in which it is suggested that the symptoms may be mitigated by controlling the leak of fluid which takes place suddenly out of the circulation into the injured limb brings to mind work which was done many years ago by A W. Sellards on Asiatic cholera in Manila (Principles of Acidosis Harvard Press 1917) Sellards describes the suppression of urine which occurs in cholera when the patient collapses because of the huge effusion of fluid from the circulation into the intestine This suppression is associated with acidosis and he found that large doses of bicarbonate given intravenously was the most useful form of therapy He emphasised that this treatment should be started as soon as possible in the early stages of collapse in cholera, but found that it was possible sometimes to restart the secretion of urine by intravenous bicarbonate even when suppression had been present for two days He indicated that it was advisable to include calcium in the solution but necessary to avoid an excess of sodium He laid stress on the importance of noting the reaction of the urine frequently, as it was not permissible to use massive injections of alkali intravenously after the urine had become alkaline

Edinburgh. H RUSSELL.

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PAIN IN ACUTE APPENDICITIS

SIR —Mr Ruscoe Clarke and Mr Shapiro have done well to call attention to the indubitable fact that pain is not invariably the first symptom in cases of appendicitis It is encouraging to find the rising school of clinicians testing and qualifying the dogmatic statements of former teachers Nevertheless the fact that pain is generally the first symptom of appendicitis still holds good, and it is probable that those who first taught this merely overemphasised the fact in order to call attention to its great importance

London W 1 V. ZACHARY COPE

ST JOHN OPHTHALMIC HOSPITAL, JERUSALEM —The report of this hospital for 1940 shows that work, despite war conditions, was heavier than ever There were 926 inpatients, an increase of 234 over the previous year, and almost 200,000 attendances in the outpatients department The work on the new south block has been proceeding satisfactorily, and the Order of St John has offered it to the government of Palestine for the duration of the war to be used as a civilian-casualty hospital

SERVICE CASUALTIES —Surgeon Lieutenant Duncan Lorimer, M.B Edin , R.N V R , H.M S *Jersey*, and P/T/Surgeon Lieutenant A. K. Beardshaw, M B Sheff , R N V R , H.M S Yacht *Fiong* are reported missing, presumed killed.—Lieutenant R M Solomon M R C S , R.A.M C , has been posted as missing, believed prisoner of war

SOVIET WAR SURGERY —On Friday, July 25 at 7 30 P M , at 11 Chandos Street, London, W 1, Dr Janet Vaughan and Mr Ruscoe Clarke will speak on Some Soviet Contributions to War Surgery Invitation cards may be had from the Society for Cultural Relations with the U S S R , 98, Gower Street, W C 1 observation of the behaviour of individual personalities—if this term be still appropriate—for a reasonable period of time after they have left hospital Your contributors of July 5 did not do this The desire to be the first in Britain to rush into print must provide their principal excuse, since such pioneer work has already been carried out abroad on a larger scale by Moniz, Freeman and others One fact clearly emerges the new procedure injures severely the frontal lobes, a part of the brain which giants of the past such as Ferrier, Hitzig, Flechsig and Bianchi—to name but a few at random—considered to be of the greatest functional importance in the higher mammals, an opinion which is supported by thorough and careful workers of today like German, Jacobsen, Brickner and Rylander Incidentally Jacobsen has provided evidence of the specificity of function of the prefrontal lobes, so that it is unlikely that their function can be taken over by other cerebral areas after their liquidation

If, then, the frontal lobes be an essential part of the highest mental level, derangement of which, as Hughlings Jackson long ago suggested, is the first stage of dissolution in mental disorder, it is evident that any benefit derived from their destruction is at the expense of certain mental functions, attributes and potentialities which can never be restored The frontal lobes in such cases must still have been functioning in some fashion intermediate between normality and complete failure, because no benefit accrues from the destruction of centres which have already ceased to function The "cured" individual has dropped a rung on the evolutionary ladder I am not denying that such descent may seem a desirable alternative to incurable mental disorder Indeed, in a well-organised world of the future a new subhuman species may have its uses as hewers of wood and drawers of water Moreover, in certain individuals this highest level may never have been well developed and so its loss will not be severely felt I must, however, beseech the leucotomy experts to hold their hand as long as possible in dealing with mental patients formerly of great intellectual strength, delicate and sensitive minds or high moral or spiritual attributes, and be content to assist Nature's well-tried healing powers

Finally the employment of this method in the neuroses appears to me to be absolutely indefensible and can only be regarded as a measure of the lack of human sympathy and understanding and psychotherapeutic insufficiency of those who carry it out

Friern Hospital, N 11 C R BIRNIE

FUTURE OF GENERAL PRACTICE

SIR,—I am glad to have the assurance of Sir Farquhar Buzzard that I have misunderstood the principles of the Nuffield Trust, but the probable effect which the proposed changes will have on the lives of the patients and doctors of the future is a matter on which opinions are likely to differ, and after reading once again the article on the work of the trust in THE LANCET for Feb 1 I am still not convinced that it will be an organisation which will "come back to the individual man, be quickened by the individual life and respect individual autonomy to the fullest possible extent"

In terms of practical administration the point at issue resolves into the degree to which centralisation should be carried out in the hospital service, in the interest of the patients served and of the doctors supplying the service The Nuffield Trust proposes a form of organisation in which there will be a small number of very highly specialised and efficient hospitals working in association with a large number of other hospitals of inferior status I suggest that it would be a better plan to have a large number of general hospitals of approximately equal standing scattered throughout the country Is there any good reason why Bangor, for instance, should not have a good general hospital? It is the seat of a University College and the cultural and business centre for the counties of Caernarvon and Anglesey with a population of nearly 200,000 people This population should support a hospital of 1000 beds There might be a similar hospital at Wrexham or some other convenient town in North Wales It will be objected that there are not enough men of consultant rank to staff such hospitals If this is true at present it is because of the
unorganised state of postgraduate instruction It is no
due to any lack of natural ability in the doctors N
doubt much of the medical work done in England an
Wales falls short of the best standards This is
condition which we hope to remedy Much of the ba
surgery occurs because men with natural aptitude hav
not had adequate training in their special subject whil
men lacking in natural talent have had econom
advantages in early life which have enabled them
enter the ranks of the consultants With a rational ar
correlated system of postgraduate teaching, includi
opportunities for practical work under graduated sup
vision, there would be no difficulty in training up a bo
of consultants large enough for all the needs of t
community It is my opinion that the scheme of t
Nuffield Trust will not produce such a desirable resu

It is perhaps only fair to point out that although t
plan I have indicated would give enormously increas
opportunities to the general body of the members of
profession it would reduce the monopoly value of t
services of the consultants and specialists

Liverpool HENRY H MACWILLIAM

VILLAGE SETTLEMENTS IN WAR-TIME

SIR,—There were some who at the outbreak of w
thought that the entire fabric of village settleme
organisation would fall to the ground owing to t
impracticability of selling products in days when gover
ment requirements must take first place Expo
markets for goods—a prominent feature of prew
Papworth and Preston Hall—would certainly
eliminated to a large extent, and the question at on
arose Could the modern village settlements surv
in a period when luxury articles and the staple produc
of the industries could be manufactured only by gover
ment permits ? If not, the only course would be f
these institutions to close down for the period of th
war and endeavour to accommodate settlers in wo
in the near neighbourhood of the villages

War was in itself a challenge to village settlemen
to rearrange and reorganise themselves to meet ne
conditions The ways and means by which the man
difficulties have been overcome cannot be detailed here
but it can be said with truth that the industrial section
at both Papworth and Preston Hall have never bee
busier at any previous time in their history The chang
has indeed been remarkable The turnover at Presto
Hall has more than doubled in just over fifteen month
and, by the simple expedient of acquiring more machiner
and erecting more buildings and employing more outsid
workers, the turnover could be increased to four or fiv
times that of the peace-time figure of £100,000 or so a yea

Obviously it has been impossible to increase th
volume of work done without healthy labour being calle
upon to help, for the extra labour could not possibly
recruited and trained entirely from the tuberculo
population passing through the institutions At Presto
Hall outside labour has been called in, but only to
limited degree, and my object in reporting on the prese
position of village settlements is to issue a warning
this very direction If the village settlement conceptio
is to remain, there must be a limit to the number
outside healthy people employed in industries the temp
of which is adjusted to the needs of the tuberculo
patients The tendency to expand the purely industri
aspect of the settlement must never be allowed to pr
judice the main function of the settlement itself, whic
is the care and treatment of the tuberculous Onc
the balance of man-power has passed from the tuberc
lous to the healthy, then all the most valuable attribut
of the tuberculosis settlement disappear Adherence
this principle may have limited the industrial turnov
at Preston Hall, but it has preserved the integrity of
scheme which has been successful for the past fifteen year

My fear is that in an attempt to produce goods and
increase industrial income the very scheme which ha
taken so many years to build up may be sabotage
Let there be growth, but let the growth be in accordan
with the principles laid down by the late director an
founder of Papworth, by the reports of the employme
committee of the Joint Tuberculosis Council and b
others who have studied such schemes from the
inception If, however, the industrial mechanism
settlements has worked smoothly during the war, the

have been special problems in other directions to solve At the outbreak of hostilities only one of the better-known settlements was requisitioned, in part at least by the Emergency Medical Service Its geographical position near Maidstone made Preston Hall an early choice for the reception and treatment of potential casualties, and in the early days of September, 1939, a beginning was made in the erection of new hutments which are now familiar throughout the country Within six months the huts were completed and the first patients admitted Side by side with the reception of civilian and Service patients the sanatorium section of the hospital—though greatly curtailed in the number of beds available—continued to function, and no administrative difficulties have been experienced

The association of a general hospital cheek by jowl with a sanatorium is something new in medical organisation in this country, and here again experience has shown that there is nothing incompatible in the association The routine of the village settlement has not been interfered with in any way The presence of a general hospital in the grounds of Preston Hall has, in fact, done something to awake again in some of us a conscience in general medicine and surgery which a lifetime devoted to tuberculosis is apt to destroy, and I believe I am speaking with the authority of my colleagues on the E M S staff when I say that they too have come to regard tuberculosis as a wider and more varied subject than they had never kown And that the two staffs can cooperate in the fullest measure was proved during the dark days following the evacuation of Dunkirk

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ST JOHN OPHTHALMIC HOSPITAL, JERUSALEM —The report of this hospital for 1940 shows that work, despite war conditions, was heavier than ever There were 926 inpatients, an increase of 234 over the previous year, and almost 200,000 attendances in the outpatients department The work on the new south block has been proceeding satisfactorily, and the Order of St John has offered it to the government of Palestine for the duration of the war to be used as a civilian casualty hospital

SERVICE CASUALTIES —Surgeon Lieutenant Duncan Lorimer, M B Edin , R N V R , H M S *Jersey*, and P/T/Surgeon Lieutenant A K Beardshaw, M B Sheff , R N V R , H M S Yacht *Fiong* are reported missing, presumed killed —Lieutenant R M Solomon, M R C S , R A M C., has been posted as missing, believed prisoner of war

SOVIET WAR SURGERY —On Friday, July 25, at 7 30 P M at 11, Chandos Street, London, W 1, Dr Janet Vaughan and Mr Ruscoe Clarke will speak on Some Soviet Contributions to War Surgery Invitation cards may be had from the Society for Cultural Relations with the U S S R , 98, Gower Street, W C 1 observation of the behaviour of individual personalities—if this term be still appropriate—for a reasonable period of time after they have left hospital Your contributors of July 5 did not do this The desire to be the first in Britain to rush into print must provide their principal excuse, since such pioneer work has already been carried out abroad on a larger scale by Moniz, Freeman and others One fact clearly emerges the new procedure injures severely the frontal lobes, a part of the brain which giants of the past such as Ferrier, Hitzig, Flechsig and Bianchi—to name but a few at random—considered to be of the greatest functional importance in the higher mammals, an opinion which is supported by thorough and careful workers of today like German, Jacobsen, Brickner and Rylander Incidentally Jacobsen has provided evidence of the specificity of function of the prefrontal lobes, so that it is unlikely that their function can be taken over by other cerebral areas after their liquidation

If, then, the frontal lobes be an essential part of the highest mental level, derangement of which, as Hughlings Jackson long ago suggested, is the first stage of dissolution in mental disorder, it is evident that any benefit derived from their destruction is at the expense of certain mental functions, attributes and potentialities which can never be restored The frontal lobes in such cases must still have been functioning in some fashion intermediate between normality and complete failure, because no benefit accrues from the destruction of centres which have already ceased to function The "cured" individual has dropped a rung on the evolutionary ladder I am not denying that such descent may seem a desirable alternative to incurable mental disorder Indeed, in a well-organised world of the future a new subhuman species may have its uses as hewers of wood and drawers of water Moreover, in certain individuals this highest level may never have been well developed and so its loss will not be severely felt I must, however, beseech the leucotomy experts to hold their hand as long as possible in dealing with mental patients formerly of great intellectual strength, delicate and sensitive minds or high moral or spiritual attributes, and be content to assist Nature's well-tried healing powers

Finally the employment of this method in the neuroses appears to me to be absolutely indefensible and can only be regarded as a measure of the lack of human sympathy and understanding and psychotherapeutic insufficiency of those who carry it out

Friern Hospital, N 11 C R BIRNIE

FUTURE OF GENERAL PRACTICE

SIR,—I am glad to have the assurance of Sir Farquhar Buzzard that I have misunderstood the principles of the Nuffield Trust, but the probable effect which the proposed changes will have on the lives of the patients and doctors of the future is a matter on which opinions are likely to differ, and after reading once again the article on the work of the trust in THE LANCET for Feb 1 I am still not convinced that it will be an organisation which will "come back to the individual man, be quickened by the individual life and respect individual autonomy to the fullest possible extent"

In terms of practical administration the point at issue resolves into the degree to which centralisation should be carried out in the hospital service, in the interest of the patients served and of the doctors supplying the service The Nuffield Trust proposes a form of organisation in which there will be a small number of very highly specialised and efficient hospitals working in association with a large number of other hospitals of inferior status I suggest that it would be a better plan to have a large number of general hospitals of approximately equal standing scattered throughout the country Is there any good reason why Bangor, for instance, should not have a good general hospital? It is the seat of a University College and the cultural and business centre for the counties of Caernarvon and Anglesey with a population of nearly 200,000 people This population should support a hospital of 1000 beds There might be a similar hospital at Wrexham or some other convenient town in North Wales It will be objected that there are not enough men of consultant rank to staff such hospitals If this is true at present it is because of the unorganised state of postgraduate instruction It is not due to any lack of natural ability in the doctors No doubt much of the medical work done in England an Wales falls short of the best standards This is condition which we hope to remedy Much of the ba surgery occurs because men with natural aptitude hav *not had adequate training in their special subject* whil men lacking in natural talent have had econom advantages in early life which have enabled them enter the ranks of the consultants With a rational a correlated system of postgraduate teaching, includi opportunities for practical work under graduated sup vision, there would be no difficulty in training up a bo of consultants large enough for all the needs of t community It is my opinion that the scheme of t Nuffield Trust will not produce such a desirable resu

It is perhaps only fair to point out that although t plan I have indicated would give enormously increas opportunities to the general body of the members of profession it would reduce the monopoly value of services of the consultants and specialists

Liverpool HENRY H MACWILLIAM

VILLAGE SETTLEMENTS IN WAR-TIME

SIR,—*There were some who at the outbreak of* w thought that the entire fabric of village settleme organisation would fall to the ground owing to t impracticability of selling products in days when gover ment requirements must take first place Expo markets for goods—a prominent feature of prew Papworth and Preston Hall—would certainly eliminated to a large extent, and the question at on arose Could the modern village settlements survi in a period when luxury articles and the staple produ of the industries could be manufactured only by gover ment permits? If not, the only course would be f these institutions to close down for the period of t war and endeavour to accommodate settlers in wo in the near neighbourhood of the villages

War was in itself a challenge to village settlemen to rearrange and reorganise themselves to meet ne conditions The ways and means by which the man difficulties have been overcome cannot be detailed here but it can be said with truth that the industrial section at both Papworth and Preston Hall have never bee busier at any previous time in their history The chang has indeed been remarkable The turnover at Presto Hall has more than doubled in just over fifteen month and, by the simple expedient of acquiring more machiner and erecting more buildings and employing more outsi workers, the turnover could be increased to four or fi *times that of the peace-time figure of £100,000 or so a yea*

Obviously it has been impossible to increase t volume of work done without healthy labour being call upon to help, for the extra labour could not possibly recruited and trained entirely from the tuberculo population passing through the institutions At Presto Hall outside labour has been called in, but only to limited degree, and my object in reporting on the prese position of village settlements is to issue a warning this very direction If the village settlement conceptio is to remain, there must be a limit to the number outside healthy people employed in industries the temp of which is adjusted to the needs of the tuberculo patients The tendency to expand the purely industri aspect of the settlement must never be allowed to pr judice the main function of the settlement itself, whic is the care and treatment of the tuberculous On the balance of man-power has passed from the tuberc lous to the healthy, then all the most valuable attribut of the tuberculosis settlement disappear Adherence this principle may have limited the industrial turno at Preston Hall, but it has preserved the integrity of scheme which has been successful for the past fifteen year

My fear is that in an attempt to produce goods and increase industrial income the very scheme which h taken so many years to build up may be sabotage Let there be growth, but let the growth be in accordan with the principles laid down by the late director a founder of Papworth, by the reports of the employme committee of the Joint Tuberculosis Council and others who have studied such schemes from the inception If, however, the industrial mechanism settlements has worked smoothly during the war, the o take charge of a L C C clinic, lecturing in venereology o London hospital students He died at Paignton, Devon in his 54th year

OWEN EDWARD PENNEFATHER LLOYD

VC, KCB LRCPE, MAJOR-GENERAL, RAMC RETD

Sir Owen Lloyd died at St Leonards-on-Sea on July 5 at the age of 87 The son of an Irish soldier, he was educated at Fermoy College and Queen's University, Cork He took the Scottish conjoint qualification in 1877 was commissioned in the following year, and served in the Zulu campaign of 1879–81 and in the operations among the Kachin Hills in Burma in 1892–93 It was here that he won his Victoria Cross for bringing in a wounded brother officer under fire The officer died and Lloyd took command of the fort which he successfully defended He was medical officer to the Franco-British boundary commission on the Mekong river in 1894 and to the British Chinese boundary commission in 1898 His service abroad gave him unrivalled opportunity for sport and though he himself ate no meat he was a mighty hunter in one year killing 150 head of big game including six tusker elephants After further service at home and India Lloyd was created C B in 1910 and sent as principal medical officer to South Africa He retired shortly before the outbreak of the last war with the rank of surgeon general but he was quickly recalled in 1914 and appointed D D M S of the southern command In 1923 he was promoted K C B and from 1922 to 1924 he was a colonel commandant in the R A M C

ARCHIBALD THOMAS LEGGATE

M A CAMB M B LPOOL, SURGEON LIEUTENANT, R N V R

Dr A T Leggate was reported lost on active service, and the Admiralty have now intimated that he was killed by enemy action He was last seen attending the wounded on the deck of his vessel—he went down with the ship Archie Leggate who was thirty years of age, was the third son of Dr James Leggate of Liverpool and his wife whom he married recently was formerly Dr Joan Thomson He was educated at Liverpool College where he was a member of the first rugby and cricket teams He was awarded many prizes and won a scholarship to Emmanuel College Cambridge His main interests were philosophy and history and he seemed destined for the Church But the family tradition of medicine proved too strong, and after graduating at Cambridge he entered Liverpool University and qualified M B with distinction in surgery in 1937 After holding a house appointment at Liverpool Royal Infirmary he helped in his father's practice and quickly became a conscientious and resourceful practitioner who combined dignity and knowledge with good humour and understanding It was doubtful whether he intended to stay in general practice for specialisation in psychiatry attracted him

Burrell and Hardman Liverpool

A friend writes Archie Leggate had a wide range of interests—music, history literature and the wild grandeur of the North-West Highlands He had tremendous faith in man and in the ultimate triumph of truth and goodness Essentially a man of peace, he became imbued with the courageous spirit of a crusader, and with conviction based on the highest Christian ideals he joined the R N V R at the outset of the war

JAMES HUSSEY

M D LOND

Dr Hussey who died at Farnham on July 4, was an outstanding figure of his year at St Bartholomew's Hospital both in ability and personality His fellow-students recognised this by electing him president of the Abernethian Society He qualified in 1896 and after being house-physician to Sir Dyce Duckworth he went nto partnership at Farnham, where he proved himself to be of the best type of general practitioner His skill and clinical insight were reinforced by a zest for his work great kindness and sympathy Small wonder that he became the trusted adviser of a large circle of patients nor was his advice limited to medical matters, so wide was his interest in them Up to his last illness he retained an almost boyish enthusiasm and looked much younger than his years His striking presence will be greatly missed in the district in which he practised for more than forty years His daughter Barbara qualified in medicine in 1938

Medical News

University of Cambridge

At recent examinations for part II of the D M R E the following were successful

Manfred Altmann R D Caton, Arthur Elkeles J E Glasgow, Grace M Griffith, Max Halberstaedter and P C Phelps

Royal College of Surgeons of England

At a meeting of the council held on July 4 with Sir Hugh Lett, the president, in the chair, Sir Alfred Webb-Johnson was elected president for the ensuing year, and Surgeon Rear Admiral G Gordon Taylor and Mr L R Braithwaite vice presidents The following were elected for the ensuing year

Hunterian professors—Surgeon Rear-Admiral G Gordon Taylor surgical anatomy of the lower end of the common bile duct and the adjacent head of the pancreas Surgeon Rear-Admiral C P G Wakeley, war burns Lieut Colonel A E Hamerton primary degeneration of the spinal cord in monkeys, Mr W Turner Warwick growth of long bones Prof Francis Davies conducting system of the vertebrate heart Mr Nehemiah Asherson otogenic cerebellar abscess Surgeon Commander E R P Williams blast injuries in warfare Mr Arnold Sorsby ætiology of phlyctenular ophthalmia Mr Judson Chesterman, post lobectomy collapse of the lung, Mr F W Willway surgery in mental disease, and Mr D N Matthews sulphanilamide and sulphathiazole applied locally to infected wounds and burns

Arris and Gale Lecturers—Dr John Beattie, physical and chemical changes in the blood associated with shock and hæmorrhage and Dr D P Cuthbertson physiological reaction to injury—the post-shock metabolic response

Erasmus Wilson Demonstrators—Mr L E C Norbury Mr Robert Davies Colley, and Mr C E Shattock

Arnott Demonstrator—Dr A J E Cave

Sir Frank Colyer was reappointed hon curator of the odontological collection, and Mr C J S Thompson, hon curator of the historical collection

The Hallett prize, granted on the result of the primary examination for the fellowship, was awarded to S Oleesky (University of Manchester) and a Leverhulme scholarship was granted to Miss H B Collard, B A, for research on the change in blood-volume following hæmorrhage

The following diplomas were granted, jointly with the Royal College of Physicians

D P H—C A Boucher Maurice Coke, Nancie I Faux, H - J Griffiths W E MacDougall, and H C Price

D P M—R A Blair Edith M Booth E W Dunkley A M Edwards, S T Hayward J -J H Lowe J S McGregor Sigrid N Pribram, W A M Robinson J S F Sutton, and Mary E E Ward

D L O—D A Barley, N L Crabtree, O C Lord and J E Rees

University of Aberdeen

On July 10 the honorary degree of doctor of laws was conferred in absentia on Dr A W Falconer, principal and vice-chancellor of the University of Cape Town The following degrees and diplomas were also conferred

M B Ch B—G E Swinney and A R Taylor (second-class honours) T M Allan A L S Anderson Marie L Anderson, J B Barnet W H F Boyd, A A Brockie B E Brocks, J L D Brown John Bruce N B Carmichael Alison Clarke A M W Coburn H D Collins James Cramond James Cran Eunice M, Duncan Brown A H Dunnett Marguerite N L Erskine J W Gammie A G Gibb R A S Gibb Vera W D Hall Helen D Harkins J A Harrow G A M Hendry, M I Hepburn Thoma Hunter F L F Innes J M E Jewers P O Leggat J J McNairs J G Matheson R F Menzies Peter Milne W H P Minto R G Murray Kevin O Brien John Slater Alexander Stephen Florence Stewart, W D Swinney Pieter Theron E J Valentine S W Watson R A S Watt Lily White J H S Whyte Margaret O Will D M Williamson, L A Wilson, A J Witt and J F Woolcott

D P H—William Lamb and J A F McLean

National University of Ireland

Mr Denis Coffey has been reappointed representative of the university on the General Medical Council for three years

Dr W J O'Donovan, lecturer in the department of pathology in University College Cork, has been appointed to the chair of the department

Obituary

WILLIAM HENRY WILLCOX

KCIE, CB, CMG, MD LOND, FRCP, FIC

The passing of Sir William Willcox on July 8 leaves a gap in medicine which will be difficult to fill Trained first as a chemist and later in medicine, he used his double qualification to advance clinical medicine and to make contact with its sister professions Having taken the London B Sc in 1892 he entered St Mary's three years later with a natural science scholarship, qualifying M B with gold medal in forensic medicine and other honours in 1900 Then followed a period of struggle for he had little private means and no influential backing, but he made ends meet by private coaching and a lectureship in chemistry until in 1907 he was elected to the staff as outpatient physician About this time A P Luff resigned his appointment as junior analyst to the Home Office and Willcox succeeded him, working with Sir Thomas Stevenson and on his death succeeding to the senior position He handled with success many *causes célèbres*, and by his brilliant identification of hyoscine in mortal remains preserved, by the murderer's fatal slip, with quicklime was instrumental with Sir Bernard Spilsbury in bringing "Dr" Crippen to justice In the early part of the last war he was sent to Mudros where typhoid and dysentery had befallen the casualties from Gallipoli, and later went to Mesopotamia as consulting physician to the Forces with the temporary rank of colonel, when his services in combating scurvy and beriberi were recognised with high distinctions Returning to London after the war he reluctantly gave up his Home Office appointment and devoted himself more to clinical medicine From 1919 to 1935 he was physician to St Mary's and enjoyed a large consulting practice But the Home Office retained him as medical adviser until his death The wealth of his knowledge and experience was revealed in his study of toxic jaundice embodied in the Lumleian lectures of 1931 published in our columns, and in the rheumatic affections he became a recognised authority

Walter Stoneman

Willcox was slow of speech and thought He never made a step forward until he was sure that the foundations were well and truly laid Those who did not know him were apt to underrate his ability until they found themselves caught out by it He did everything which lay in his power for the hospital he loved and for generations of its students, many of whom he helped in a tight corner In the early years of the century when the medical school was not yet financially prosperous he gave much of his time to teaching, holding lectureships in chemistry, physics, hygiene, forensic medicine and chemical pathology, and later in medicine He was a regular attender at meetings and committees of a number of learned societies, over four of which he was elected to preside, discussion always interested him and he never spoke without careful preparation of his subject In 1935–36 he was master of the Society of Apothecaries Slow to form opinions he stuck to them when reached with the tenacity of honest conviction Those who did not share his views admitted their genuine quality and agreed that "Wilks" was a prodigious worker An hour after midnight was the best time to catch him on the phone, but he was to be seen riding in the Park before breakfast This was his recreation and he was never happier than with his horses or on the hunting field He liked dining out and was hospitable at home He was just the same to rich and poor and was beloved by the sisters and nurses of his wards

Sir William Willcox was the son of William Willcox of Melton Mowbray He married Mildred, eldest daughter of W Griffin of Clapton, Northants, and leaves his widow with three sons and a daughter

FRANK GEORGE LAYTON

MRCS, JP

Through the death of Dr F G Layton on July Walsall has lost a citizen and a doctor His work life was spent in and about back streets, and long bef it began he wandered in and out of the homes of t poor with his father who was essentially a poor ma parson Born at Hounslow in 1872 he was educated at King's College School and *qualified from* St Thomas's Hospital in 1894 House-appointments at St Thomas's, the Brompton, and Great Ormond Street gave him a good general background before he went as assistant surgeon to Walsall General Hospital He remained to practise medicine and humanity in the town, and became honorary physician to the hospital, town councillor and magistrate He felt keenly the civic responsibilities of the doctor and he was sure that the doctor's train experience and knowledge of men and women w badly needed in the council chamber and the co room Dr Layton's record of service shows that practised what he preached and some of his m valuable work was done as chairman of the juve court His life was never leisured yet he always fo time for the things he wanted to do, and writing one of them "Dr Grey" was published in 19 "Sable and Motley," "The Old Doctor," and "Beh the Night Bell" were among the novels that follow These shrewd commentaries, full of lively dialog described the life of a panel practitioner Though author emerges as a lovable character the descript would probably have displeased him He also wr several plays Miss Horniman produced "The Pa Pump" in London, Manchester and Birmingham, his most successful play for children was called " Land of Make Believe"

EDMUND TYTLER BURKE

DSO, MB GLASG, LIEUT-COLONEL RAMC (RETD

News of the death on June 14 of Colonel Burke cause much regret in the wide circle of those at ho and abroad who knew him through his vigorous writi on venereal diseases, and has come as a shock to friends in the North and in London, including b students and postgradua who benefited from his tea ing These will remem him for his easy friendlin his enthusiasm and for encouragement he gave to who sought his advice views, expressed with cla and vigour, on certain n lected aspects of his subj led at times to dissensions which he proved a dough opponent and more than a to hold his own Unf tunately, in later years, activities were restricted failing health and he *obliged in March last to res* his appointment as director of the Whitechapel Cli But he had been able to complete and publish a textb embodying his great experience which should l remain a standard work

Colonel Burke was the son of W M Burke, chamberlain of Dundee He was educated at Pe St Andrews and Glasgow, graduating in 1914 when already held a commission in the R A M C (S R) served in Gallipoli and Mesopotamia where he command the 40th field ambulance and was later A D M S No Persia He left the Army in 1920 to become V officer in Salford with a teaching appointment Manchester University Two years ago he came so

ORIGINAL ARTICLES

FOUR PHASES OF BIRTH*

SIR JOSEPH BARCROFT, M.A. Camb., F.R.S.

UNTIL the last two or three years little has been added to the meagre knowledge of the physiology of birth possessed by our forefathers. This may seem strange, for each of us depends for our very existence on its successful negotiation. Millions have died who might conceivably have lived, given greater knowledge on the part of the responsible people. Yet there are reasons for the want of progress; at any particular birth the attention of those concerned is completely and rightly concentrated on the effort to get that individual child into the world as satisfactorily as possible and they have little opportunity for observation and less for experiment. What I shall say towards the more accurate description of birth falls under four headings:

1. Birth might be described as a change in the atmosphere in which the fœtus lives: the external atmosphere, that with which its skin is in contact, and the internal atmosphere, which for our purpose is essentially that to which its brain is subjected.

2. At birth a considerable volume of blood seems to be transferred from the placenta to the fœtus. I shall discuss the reasons which account for an excessive quantity of blood being in the fœtal circulation just before birth, the extent of the plethora, why the redundant blood is transferred to the neonatal organism and its fate when it gets there.

3. The change in conditions means that on birth the blood must acquire its oxygen from the air instead of from the placenta; therefore, on birth, a great quantity of blood must be circulated through the lung. Up to birth, on the other hand, the pulmonary circulation is functionally redundant and is actually short-circuited.

4. There is the all important subject of the first breath.

THE CHANGE IN ATMOSPHERE

The external environment of fœtal life is the amniotic fluid and this presents the minimum of contrast to the fœtus itself. The composition of the amniotic fluid is not unlike that of the body fluids of the fœtus; the temperature of the amniotic fluid does not differ materially from that of the embryo. For these reasons, even though the sensory nerve-endings of the mature skin are capable of abundant stimulation little in the way of stimuli pass their way. We have no exact knowledge of degree of excitation of the fœtal cutaneous nerves, but in the absence of direct knowledge we have interesting information of a secondary character; we have evidence of happenings in the embryo, presumably reflexes, of which the cutaneous sensory nerves form the afferent paths. Fig. 1 is a tracing of the electric variations in the muscle of a fœtus. The fœtus (preserving its relation with the placenta) was alternately in a bath of saline at its own temperature, and in the air above; these changes simulated in a crude way the alteration in the external environment which takes place at birth. Each spike in the tracing represents the contraction of a muscle-fibre in the region adjacent to the electrodes which picked up the current. When the fœtus was in the salt solution no muscular fibres were contracting; once the fœtus was lifted into the air, abundant contraction took place. In fewer words, the existence or otherwise of muscular tone was largely dependent on a tempest of stimuli from the skin, which stimuli do not occur when the embryo is in an isotonic fluid medium at the fœtal temperature.

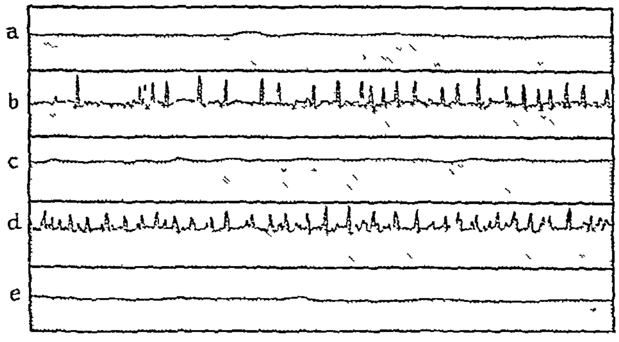

FIG. 1.—Record of muscular tone in fœtus of sheep at 144 days. Respiration maintained through umbilical cord. a, c, e, fœtus in bath; b, d, fœtus out of bath.

Our knowledge of the internal environment chiefly concerns oxygen. The fœtus (I allude principally to its brain) has an oxygen supply adequate for existence, but not adequate for sustained effort; after it is born it has an oxygen supply adequate for both. As some criterion of the adequacy of an oxygen supply it may be said roughly that if the organism can undergo any sustained exertion without lowering the oxygen content of its arterial blood the supply is adequate; if, on the other hand, the arterial blood blackens when the creature exercises its muscles with the activity of which they are capable—that is, if the oxygen in the arterial blood falls in exercise—not only are the contracting muscles and heart faced with the prospect of oxygen debt but the brain is faced with a "blackout." For example, no athlete by running can alter the normal bright red colour of his arterial blood; but I have seen the blood of an extremely fit person go dark and his face become intensely cyanosed at an altitude of 15,000 feet, when he undertook mild pedalling exercise on an ergometer. The same is true of animals suffering from experimental pneumonia due to poison gas, and indeed in cases of chlorine poisoning. Applying this yard-stick to the fœtus, the answer is unambiguous; it may be questioned whether the blood of the embryo at birth is oxygenated even up to the standard that would suffice for what would be normal resting conditions in a born animal. The blood of the carotid artery contains only about half the amount of oxygen which it is capable of carrying. Such a concentration of oxygen in man would be incompatible with clear thought and possibly even with consciousness, but not incompatible with the inhibition of random movements and with reflexes of a lower order.

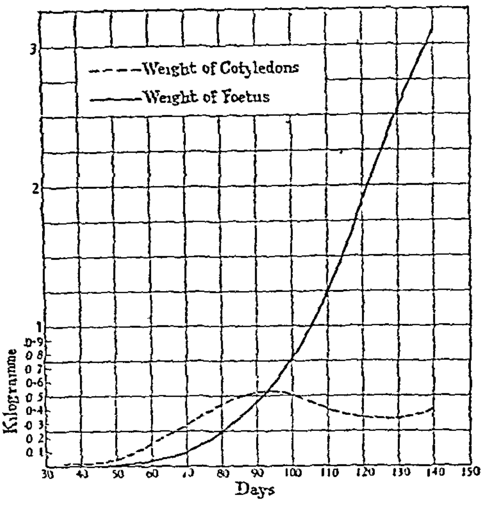

FIG. 2.

How comes this very restricted prenatal oxygen supply? It is caused by the needs of a rapidly growing fœtus outrunning the relatively fixed possibilities which exist of its obtaining oxygen from its mother. The capillary systems of the two bloods are in close juxtaposition in the placenta and the oxygen diffuses from that of the mother to that of the fœtus, through the intervening tissue. Inquiry into the conditions for such diffusion elicits some surprising facts. First, the placenta (in the sheep, at least) reaches its maximum weight not at the end of pregnancy, when the fœtus makes its greatest demands, but after the elapse of only about two-thirds of the whole period of gestation. The period in the sheep is 147 days, and the placenta is at its maximum weight at about the 100th day (fig. 2). The fœtus at the 100th day is quite small, perhaps one-eighth

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* Abstract of the Sharpey Schafer lecture given at the University of Edinburgh on Feb. 28.

Medical Research Council of Ireland

The *council has made a whole time grant to* Dr Cecil Mushatt, and grants in aid to Dr James Deeny, Mr D K Malley and Mr J G Waugh The grants of Dr T E T Bradshaw and Prof Hans Sachs have been renewed

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty held on July 7, with Mr Roy Young, the president, in the chair, Dr Archibald McPhater (Bowmore, Islay) and Dr Herbert Pinkerton (Glasgow) were admitted to the fellowship

Medical Honour

The M B E has been awarded to Dr L F Togneri, a ship's surgeon in the Merchant Navy

Medical Society for the Study of Venereal Diseases

The annual general meeting of this society will be held on Saturday, July 26, at 2 15 P M, at 11 Chandos Street, London, W 1 At 3 P M, Colonel L W Harrison, the president, will open a discussion on the present trend of incidence of venereal diseases in England and Wales and the methods of control Dr Margaret Rorke, Lieut Colonel T E Osmond, Dr Letitia Fairfield, Surgeon Commander David Duncan, Surgeon Lieutenant Genevieve Rewcastle, and Wing-Commander J M Kilpatrick will also speak

London Chest Hospital

Lieut -Colonel Henry Guest, M P, presiding on July 8 at the annual meeting of this hospital, said that despite severe damage in recent air raids the hospital had now been reopened for inpatients and all departments had resumed working The building had begun of a new pathological department to replace the one that had been completely destroyed, burying records and specimens representing 90 years of research on chest affections

Diphtheria Immunisation

The number of children under school age who have been immunised against diphtheria remains dangerously low in all but a few districts of Scotland The returns of inoculations received by the Department of Health show that efforts *to secure the immunisation of children have so far been* mainly concentrated on school children But as the age of maximal susceptibility to diphtheria is 1–4 years and case mortality is then highest, the department have issued a circular urging that immunisation should be carried out as soon as possible after a child reaches the age 9–12 months Inoculation at that age will practically ensure the child's safety until he enters school when a further inoculation is advisable As most schools have now been closed for summer holidays local authorities are asked to direct the attention of their medical staffs and of general practitioners to the immunisation of the pre school group of children Every effort should be made to induce parents to bring forward young children for inoculation during the remaining summer weeks in order to safeguard them from attack by diphtheria during the winter

In Birmingham Dr H P Newsholme, the medical officer of health, lately told a press reporter that in the first six months of this year there were 600 accurate diagnoses of diphtheria in the city compared with 336 last year, and 56 deaths compared with 16 in the corresponding period of 1940 Dr Vera Fellowes, assistant medical officer for diphtheria immunisation and maternity and child welfare in Birmingham, added "it is all so silly when immunisation is all that is needed and is so simple" To allow for the three months before it becomes effective immunisation should be done at once to safeguard children for next winter

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Lord Horder has been appointed personal adviser to the Minister of Food on medical aspects of food problems

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GLAXO Laboratories Ltd inform us that 5 mg and 25 mg ampoules of their Berin injection (aneurine hydrochloride B P) will take the place of the 2 mg and 10 mg ampoules now in use, while 3 mg Berin tablets as well as 1 mg tablets will be available in future

CORRIGENDA —The annotation on page 46 of THE LANCET of July 12 gives the impression that sulphamidothiazole (Cibazol or Ciba 3714) is a new sulphonamide, whereas these are, of course, other names for sulphathiazole —For "only 18 months having elapsed since the first operation was done" (*Lancet*, July 5, p 7, col 1, line 6) read "7 months"

Appointments

ORMEROD, F C, M D Manc, F R C S aural surgeon to t Westminster Hospital

PHILLIPS, G WHITE, M D Lpool, D M R E radiologist Whipps Cross Hospital, West Ham

SIMPSON, ANNE, M B Aberd, D P H asst M O H for Ilford

Births, Marriages and Deaths

BIRTHS

BEACH —On July 8 at Oxford, the wife of Surgeon Comman W V Beach, R N —a daughter

BOURDILLON —On July 10, at Aylesbury, the wife of Flying Of J F Bourdillon, F R C S —a son

CHARLES —On July 10, at Bournemouth, the wife of Dr G Pen Charles—a son

ELLIS —On July 9, the wife of Mr V H Ellis, F R C S —a so

MALONE —On July 8, at Cambridge, the wife of Captain Fra Malone, R A M C (prisoner of war)—a daughter

MOCKLER —On July 9, at Singapore, the wife of Surgeon Comma Edmund J Mockler R N —*a daughter*

STURGEON —On July 10, at Dunsford Place, Bath, the wif Dr Alec W Sturgeon—a son

WARE —On July 8, the wife of Captain Martin Ware R A M a son

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Infectious Disease in England and Wales

WEEK ENDED JULY 5

Notifications —The following cases of infectious dise were notified during the week smallpox, 0, sca fever, 787, whooping-cough, 5316, diphtheria, 7 paratyphoid, 140 (Stoke-on-Trent 40, Liverpool 2 typhoid, 46, measles (excluding rubella), 6524, pn monia (primary or influenzal), 680, puerperal pyre 159, cerebrospinal fever, 201 (County of London, Manchester, 13, Birmingham and Sheffield, each 8), po myelitis, 12, polio-encephalitis, 2, encephalitis leth gica, 1, dysentery, 61, ophthalmia neonatorum, No case of cholera, plague or typhus fever was noti during the week

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In Scotland in the six weeks ended July 5 the numbers been 56, 47 42 50, 54 and 51 *The maximum in 1940* wa week earlier, and in 1941 a week later, than in England and W The numbers of notifications in the first half of 1940 were and 1661 in the corresponding period in 1941

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Deaths —In 126 great towns there was no death fr scarlet fever, 3 (0) from enteric fever, 28 (3) fr whooping-cough, 5 (1) from measles, 25 (1) fr diphtheria, 32 (2) from diarrhœa and enteritis un 2 years, and 6 (0) from influenza The figures parentheses are those for London itself

Enfield Willesden and Birmingham each reported a *fatal* of enteric fever

The number of stillbirths notified during the week 208 (corresponding to a rate of 40 per thousand t births), including 18 in London

ORIGINAL ARTICLES

FOUR PHASES OF BIRTH *

SIR JOSEPH BARCROFT, M A Camb , F R S

UNTIL the last two or three years little has been added to the meagre knowledge of the physiology of birth possessed by our forefathers This may seem strange, for each of us depends for our very existence on its successful negotiation Millions have died who might conceivably have lived, given greater knowledge on the part of the responsible people Yet there are reasons for the want of progress , at any particular birth the attention of those concerned is completely and rightly concentrated on the effort to get that individual child into the world as satisfactorily as possible and they have little opportunity for observation and less for experiment What I shall say towards the more accurate description of birth falls under four headings

1 Birth might be described as a change in the atmosphere in which the fœtus lives the external atmosphere, that with which its skin is in contact, and the internal atmosphere, which for our purpose is essentially that to which its brain is subjected

2 At birth a considerable volume of blood seems to be transferred from the placenta to the fœtus I shall discuss the reasons which account for an excessive quantity of blood being in the fœtal circulation just before birth, the extent of the plethora, why the redundant blood is transferred to the neonatal organism and its fate when it gets there

3 The change in conditions means that on birth the blood must acquire its oxygen from the air instead of from the placenta , therefore, on birth, a great quantity of blood must be circulated through the lung Up to birth, on the other hand, the pulmonary circulation is functionally redundant and is actually short-circuited

4 There is the all important subject of the first breath

THE CHANGE IN ATMOSPHERE

The external environment of fœtal life is the amniotic fluid and this presents the minimum of contrast to the fœtus itself The composition of the amniotic fluid is not unlike that of the body fluids of the fœtus , the temperature of the amniotic fluid does not differ materially from that of the embryo For these reasons, even though the sensory nerve-endings of the mature skin are capable of abundant stimulation little in the way of stimuli pass their way We have no exact knowledge of degree of excitation of the fœtal cutaneous nerves, but in the absence of direct knowledge we have interesting information of a secondary character we have evidence of happenings in the embryo presumably reflexes, of which the cutaneous sensory nerves form the afferent paths Fig 1 is a tracing of the electric variations in the muscle of a fœtus The fœtus (preserving its relation with the placenta) was alternately in a bath of saline at its own temperature and in the air above , these changes simulated in a crude way the alteration in the external environment which takes place at birth Each spike in the tracing represents the contraction of a muscle-fibre in the region adjacent to the electrodes which picked up the current When the fœtus was in the salt solution no muscular fibres were contracting , once the fœtus was lifted into the air, abundant contraction took place In fewer words, the existence or otherwise of muscular tone was largely dependent on a tempest of stimuli from the skin, which stimuli do not occur when the embryo is in an isotonic fluid *medium at the fœtal* temperature

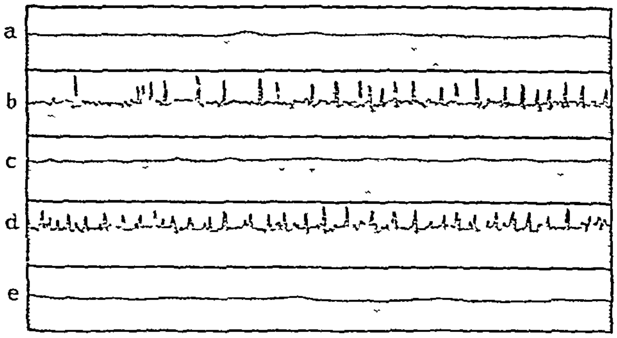

FIG 1—Record of muscular tone in fœtus of sheep at 144 days Respiration maintained through umbilical cord a, c e, fœtus in bath , b d, fœtus out of bath

Our knowledge of the internal environment chiefly concerns oxygen The fœtus (I allude principally to its brain) has an oxygen supply adequate for existence but not adequate for sustained effort, after it is born it has an oxygen supply adequate for both As some criterion of the adequacy of an oxygen supply it may be said roughly that if the organism can undergo any sustained exertion without lowering the oxygen content of its arterial blood the supply is adequate if, on the other hand, the arterial blood blackens when the creature exercises its muscles with the activity of which they are capable—that is if the oxygen in the arterial blood falls in exercise—not only are the contracting muscles and heart faced with the prospect of oxygen debt but the brain is faced with a " blackout " For example, no athlete by running can alter the normal bright red colour of his arterial blood but I have seen the blood of an extremely fit person go dark and his face become intensely cyanosed at an altitude of 15 000 feet, when he undertook mild pedalling exercise on an ergometer The same is true of animals suffering from experimental pneumonia due to poison gas, and indeed in cases of chlorine poisoning Applying this yard-stick to the fœtus, the answer is unambiguous it may be questioned whether the blood of the embryo at birth is oxygenated even up to the standard that would suffice for what would be normal resting conditions in a born animal The blood of the carotid artery contains only about half the amount of oxygen which it is capable of carrying Such a concentration of oxygen in man would be incompatible with clear thought and possibly even with consciousness, but not incompatible with the inhibition of random movements and with reflexes of a lower order

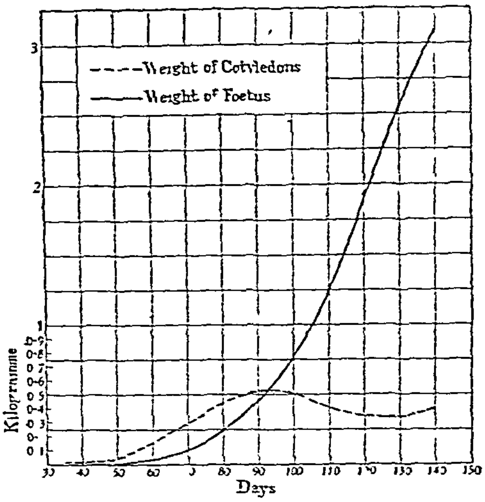

FIG 2

How comes this very restricted prenatal oxygen supply ? It is caused by the needs of a rapidly growing fœtus outrunning the relatively fixed possibilities which exist of its obtaining oxygen from its mother The capillary systems of the two bloods are in close juxtaposition in the placenta and the oxygen diffuses from that of the mother to that of the fœtus through the intervening tissue Inquiry into the conditions for such diffusion elicits some surprising facts First, the placenta (in the sheep, at least) reaches its maximum weight not at the end of pregnancy, when the fœtus makes its greatest demands, but after the elapse of only about two-thirds of the whole period of gestation The period in the sheep is 147 days, and the placenta is at its maximum weight at about the 100th day (fig 2) The fœtus at the 100th day is quite small, perhaps one-eighth

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* Abstract of the Sharpey Schafer lecture given at the University of Edinburgh on Feb 28

Medical Research Council of Ireland

The council has made a whole time grant to Dr Cecil Mushatt, and grants in-aid to Dr James Deeny, Mr D K Malley and Mr J G Waugh The grants of Dr T E T Bradshaw and Prof Hans Sachs have been renewed

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty held on July 7, with Mr Roy Young, the president, in the chair, Dr Archibald McPhater (Bowmore, Islay) and Dr Herbert Pinkerton (Glasgow) were admitted to the fellowship

Medical Honour

The M B E has been awarded to Dr L F Togneri, a ship's surgeon in the Merchant Navy

Medical Society for the Study of Venereal Diseases

The annual general meeting of this society will be held on Saturday, July 26, at 2 15 P M, at 11 Chandos Street, London, W 1 At 3 P M, Colonel L W Harrison, the president, will open a discussion on the present trend of incidence of venereal diseases in England and Wales and the methods of control Dr Margaret Rorke, Lieut Colonel T E Osmond, Dr Letitia Fairfield, Surgeon Commander David Duncan, Surgeon Lieutenant Genevieve Rewcastle, and Wing-Commander J M Kilpatrick will also speak

London Chest Hospital

Lieut Colonel Henry Guest, M P, presiding on July 8 at the annual meeting of this hospital, said that despite severe damage in recent air raids the hospital had now been reopened for inpatients and all departments had resumed working The building had begun of a new pathological department to replace the one that had been completely destroyed, burying records and specimens representing 90 years of research on chest affections

Diphtheria Immunisation

The number of children under school age who have been immunised against diphtheria remains dangerously low in all but a few districts of Scotland The returns of inoculations received by the Department of Health show that efforts to secure the immunisation of children have so far been mainly concentrated on school children But as the age of maximal susceptibility to diphtheria is 1–4 years and case-mortality is then highest, the department have issued a circular urging that immunisation should be carried out as soon as possible after a child reaches the age 9–12 months Inoculation at that age will practically ensure the child's safety until he enters school when a further inoculation is advisable As most schools have now been closed for summer holidays local authorities are asked to direct the attention of their medical staffs and of general practitioners to the immunisation of the pre school group of children Every effort should be made to induce parents to bring forward young children for inoculation during the remaining summer weeks in order to safeguard them from attack by diphtheria during the winter

In Birmingham Dr H P Newsholme, the medical officer of health, lately told a press reporter that in the first six months of this year there were 600 accurate diagnoses of diphtheria in the city compared with 336 last year, and 56 deaths compared with 16 in the corresponding period of 1940 Dr Vera Fellowes, assistant medical officer for diphtheria immunisation and maternity and child welfare in Birmingham, added "it is all so silly when immunisation is all that is needed and is so simple" To allow for the three months before it becomes effective immunisation should be done at once to safeguard children for next winter

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Lord Horder has been appointed personal adviser to the Minister of Food on medical aspects of food problems

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GLAXO Laboratories Ltd inform us that 5 mg and 25 mg ampoules of their Berin injection (aneurine hydrochloride B P) will take the place of the 2 mg and 10 mg ampoules now in use, while 3 mg Berin tablets as well as 1 mg tablets will be available in future

CORRIGENDA —The annotation on page 46 of THE LANCET of July 12 gives the impression that sulphamidothiazole (Cibazol or Ciba 3714) is a new sulphonamide, whereas these are, of course, other names for sulphathiazole —For "only 18 months having elapsed since the first operation was done" (*Lancet*, July 5, p 7, col 1, line 6) read "7 months"

Appointments

ORMEROD, F C, M D Manc, F R C S aural surgeon to Westminster Hospital

PHILLIPS, G WHITT, M D Lpool, D M R E radiologis Whipps Cross Hospital, West Ham

SIMPSON, ANNE, M B Aberd, D P H asst M O H for Ilfo

Births, Marriages and Deaths

BIRTHS

BEACH —On July 8 at Oxford, the wife of Surgeon Comm W V Beach, R N —a daughter

BOURDILLON —On July 10, at Aylesbury, the wife of Flying J F Bourdillon, F R C S —a son

CHARLES —On July 10, at Bournemouth, the wife of Dr G P Charles—a son

ELLIS —On July 9, the wife of Mr V H Ellis, F R C S —a

MALONE —On July 8, at Cambridge, the wife of Captain F Malone, R A M C (prisoner of war)—*a daughter*

MOCKLER —On July 9, at Singapore, the wife of Surgeon Comm Edmund J Mockler R N —a daughter

STURGEON —On July 10, at Dunsford Place, Bath the w Dr Alec W Sturgeon—a son

WARE —On July 8, the wife of Captain Martin Ware R A a son

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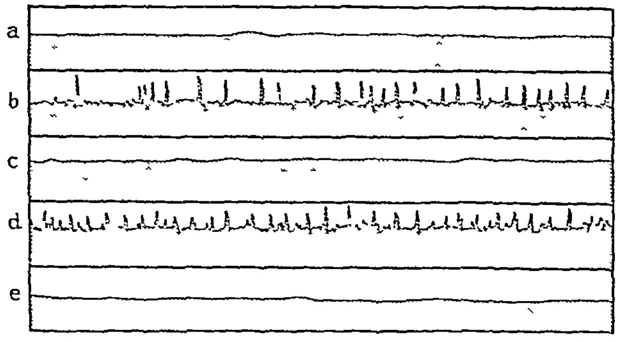

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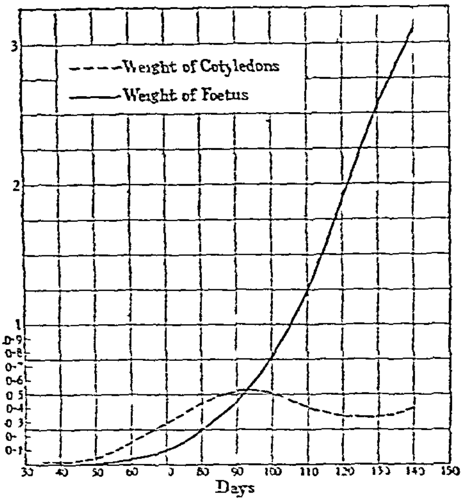

FIG 2

How comes this very restricted prenatal oxygen supply? It is caused by the needs of a rapidly growing fœtus outrunning the relatively fixed possibilities which exist of its obtaining oxygen from its mother. The capillary systems of the two bloods are in close juxtaposition in the placenta and the oxygen diffuses from that of the mother to that of the fœtus through the intervening tissue Inquiry into the conditions for such diffusion elicits some surprising facts First, the placenta (in the sheep, at least) reaches its maximum weight not at the end of pregnancy, when the fœtus makes its greatest demands, but after the elapse of only about two-thirds of the whole period of gestation The period in the sheep is 147 days, and the placenta is at its maximum weight at about the 100th day (fig 2) The fœtus at the 100th day is quite small, perhaps one-eighth of its size at birth Secondly, the quantity of blood in the placenta at any one time does not increase appreciably during the last third of pregnancy The volume of the fœtal capillary bed in the placenta remains more or less constant during this period yet the total quantity of blood in the fœtal circulation increases about six-fold (fig 3) It is as though a grown man had a lung no larger, and containing no more blood, than that of a year-old infant

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* Abstract of the Sharpey Schafer lecture given at the University of Edinburgh on Feb 28

The placental bed at 100 days is much larger than is necessary for the fœtus of that age—in short, the placenta is organised ahead of its immediate utility But why is a still larger placental bed not required for the full-grown fœtus? The problem is emphasised when we turn from the volume of blood in the placenta to the quantity which runs through it per minute

F B = Vol of fœtal blood traversing placenta of sheep per min (c cm)

Age (days)	F B	Age (days)	F B
111	111	137	568
126	218	138	284
127	162	152	300
129	600		

Till about a fortnight before birth the volume of the stream keeps up with the growth of the fœtus, so that an ever-increasing flow is forced through a bed of almost constant size This is possible because of the rise of arterial pressure, on the 76th day the pressure in the umbilical artery exceeds that in the umbilical vein by less than 10 mm of mercury, on the 138th day the difference is about 40 mm —a four-fold increase in the driving force A week or two before birth the stream is at its maximum and in the last fortnight or so nature resorts to one further device to improve oxygen transport a sharp rise in hæmoglobin (fig 4)

The provision for an adequate oxygen supply to the fœtus may, in respect of time, be divided into three stages the growth of the placental bed, up till the 100th day, the increase of fœtal arterial pressure, mainly after the 100th day till about the 130th day, and the increase of hæmoglobin in the last fortnight Yet in spite of all these mechanisms the position is always deteriorating The provision which at 100 days was more than good enough for the fœtal needs is by the 147th only just sufficient, even after it has been exploited in every way At the 80th day, and for a considerable time after that, the fœtus is living at what I may call the high alpine level, its carotid blood is oxygenated about as completely as that of a person living at 15,000 feet (roughly the summit of Mont Blanc), by 130 days it has passed the Andean level, and reached that of the Himalayas, at birth it is under Everest conditions, perhaps even more stringent ones The fœtus, as it grows to maturity, suffers, like the mountaineer, from an increasing degree of oxygen want, unlike the mountaineer, it cannot meet that situation by panting How far it can be said to acclimatise is not known, but at all events the experience of the alpinist, so far from being novel, is one to which he was subjected in his mother's womb

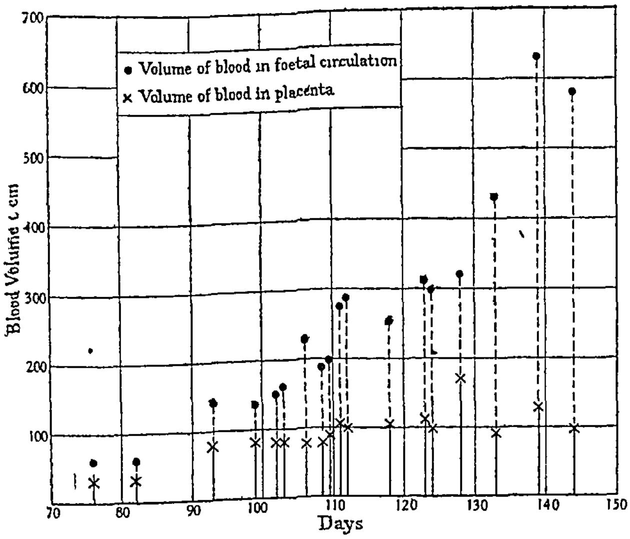

FIG 3

Within four minutes of birth all this is changed I well remember the joy with which I ran down the Peak of Teneriffe, prompted by the exhilaration of the inhalation of continually increasing quantities of oxygen, yet it took me about half an hour to get down to 5000 feet The fœtus makes its descent—a fa greater one—within four or five minutes, as was shown b a continuous record of the oxygen in its arterial blood as i was subjected to cæsarean section Before birth it i doubtful whether the fœtal brain was capable of consciousness, even if there were anything to be conscious of during birth the fœtus must have undergone a positiv blackout, yet in but a few minutes the lamb is fully conscious and in a few more it can get up and walk

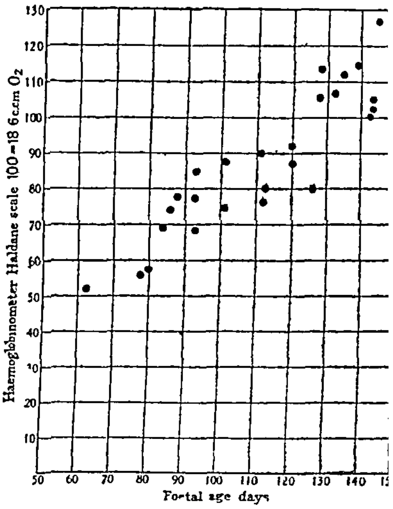

FIG 4

TRANSFER OF BLOOD FROM THE PLACENTA AT BIRTH

We have seen that for some weeks before birth the fœtal vessels had held 100–150 c cm of blood At birth most of this is transferred to the fœtus, presumably by contraction of the umbilical and placental vessels, in the sheep, at all events, with its cotyledonous placenta, the increased muscular tone of the uterus has, I imagine, little effect on the fœtal circulation Two sets of lambs of comparable weight may be compared in respect of their blood-volume (Barcroft and Gotsev 1937)—first, those naturally born and within a few hours of birth, secondly, those born at term by cæsarean section, the cord being tied as rapidly and with as little interference to the placenta and to the lamb as possible Here are three such comparisons

BLOOD VOLUME IN C CM PER KG

	Lambs naturally born	Lambs born by rapid cæsarean section
	168	153
	161	119
	168	108
Mean	166	127

The naturally born lambs had the advantage to the extent of 39 c cm of blood per kg It is fair to say that the estimation is much more easy in the naturally born lamb, which probably accounts for the figures being more uniform But even it it be granted that 39 c cm per kg —or about 110–120 c cm in all—is an over estimate, half that figure would mean a great deal of blood to a lamb—more than 10% of its whole blood volume

When the cord is tied near the umbilicus in a cæsarean section, a considerable pressure rapidly develops in the umbilical vessels This is due to their muscular walls contracting down on the blood If incisions be made in the vessel walls near the ligature blood gushes and it is easy to collect it in a measuring cylinder Three such experiments gave 75 c cm, 83 c cm and 80 c cm Judging from the pressure at which this blood is forced out, it seems unlikely that less is expelled into the fœtus during a normal birth

Why should the greater part of the blood in the placenta be transferred to the lamb at birth? An easy reply would be that as the placenta goes out of action the lung comes in, and that whichever organ of respiration is used, be it the placenta or the lung, the blood is necessary for it, but it is not certain that this simple explanation covers the facts It has yet to be proved that the fœtal lung is deficient in blood , the blood may not be circulating at a great rate but we know nothing really about the amount of blood in the fœtal lung except that the lung looks pretty vascular even in the embryo One reason why more blood may be wanted by the lamb than by the fœtus is that many abdominal organs, which have not functioned to any great extent in fœtal life, now become functional and presumably require blood

What casts doubt on all the above hypotheses is the fate of the blood after it arrives in the lamb Gotsev (1939) found in 2 out of 3 lambs that about 10% of the hæmoglobin with which they were born disappeared from the circulation , as far as we know it is broken down, the hæmatin portion being partly excreted as bilirubin and the iron stored in the liver Why overload the lamb's circulation with corpuscles that are at once to be broken down and perhaps give rise in exaggerated cases to icterus neonatorum ? For the sake of the iron Bunge many years ago called attention to the limited store of iron available to the baby during the months of suckling The initial store which is conferred on it at birth seems to be set aside against the day, which soon comes, on which iron is wanted for the formation of fresh hæmoglobin, and indeed for many cell enzymes into the bargain

ALTERATIONS IN THE THORACIC CIRCULATION

After birth each complete circuit of the blood consists of alternate phases, through the systemic and pulmonary circulations respectively In the fœtus such a sequence would be functionally redundant There is no point in driving masses of blood through a lung in which no exchange of gases takes place, therefore in the fœtus the lung is short-circuited Yet as soon as the fœtus is launched on the world the lung must function The greatest economy will clearly be attained in a system which provides for the most efficient short-circuiting before birth compatible with the least possible degree of short-circuiting immediately birth takes place

There are in the fœtus two by-passes , if blood passes through either of these, it will evade the lung The first is the foramen ovale, in the septum between the right and left auricles Blood arriving in the right auricle can pass through the foramen ovale into the left auricle, thence to the left ventricle and on to the aorta, thus cutting out the lung The second by-pass is the ductus arteriosus springing from the pulmonary trunk and entering the aorta just beyond the aortic arch Blood reaching the right side of the heart can pass to the right ventricle, up the pulmonary trunk, and through the ductus arteriosus to the dorsal aorta The blood which reaches the systemic system by this route cannot go to all parts of the body it cannot go to the head, the arms, the coronary system or any vessel springing from the aortic arch , it can only go to the vessels supplied by the dorsal aorta Both these by-passes have medical importance, because one or other may remain patent with corresponding prejudice to the circulation Probably because it is rarely seen in the dissecting-room except as represented by a strand of connective tissue, two erroneous ideas are prevalent about the ductus arteriosus First that it is small and that the foramen ovale is the important by-pass , and secondly that it closes by a process of cicatrisation taking weeks or months In an experiment carried out by my colleagues Dr A E Barclay, Dr D H Barron and Dr K J Franklin thorotrast was injected into the femoral artery of a rather decrepit fœtus , because of the low fœtal blood pressure it passed upwards against the stream, entered the aortic arch and the ductus arteriosus An X-ray cinema film showed that the bore of the ductus is at least as large as that of the dorsal aorta

Has any particular corpuscle on reaching the right side of the heart the same chance as any other corpuscle of passing through a particular by-pass ? One school holds that all the blood reaching the right side of the heart from whatever source becomes thoroughly mixed in the right auricle, the other and older school holds that the blood reaching the heart via the inferior vena cava on the whole passes through the foramen ovale, and so to the aortic arch, while that arriving from the superior vena cava passes into the right ventricle and up the pulmonary trunk and thence either through the ductus to the dorsal aorta or through the lung, but not along the aortic arch The implication in this second view affects the blood from the placenta which goes either directly or by way of the liver into the inferior vena cava and which therefore brings the heart the reddest blood reaching it ; this blood goes, with little admixture, through the foramen ovale to the left heart and the aortic arch, so that the organs supplied by the aortic arch have a first option on such oxygen, sugar and so on as reaches the circulation ; apart from the liver the organs in question are those which matter in fœtal life—the heart muscle, the brain, the thyroid and the thymus It is possible to judge between the two schools by the method of X-ray cinematography

If thorotrast is injected into the superior vena cava, the whole of the opaque material goes straight through the right auricle, into the right ventricle, and up through the pulmonary trunk , the stream there divides, part flowing through the ductus arteriosus into the dorsal aorta and the rest through the pulmonary arteries into the pulmonary circulation (fig 5A) No thorotrast appears on the left side of the heart or in the aortic arch until it has made the circuit of the lungs On the other hand, if the thorotrast is injected into the inferior vena cava the major part passes at once to the left side of the heart, presumably through the foramen ovale, and appears immediately in the aortic arch and brachiocephalic artery The minor part passes into the right side of the heart and up the pulmonary trunk The head therefore has a first call on the most oxygenated blood

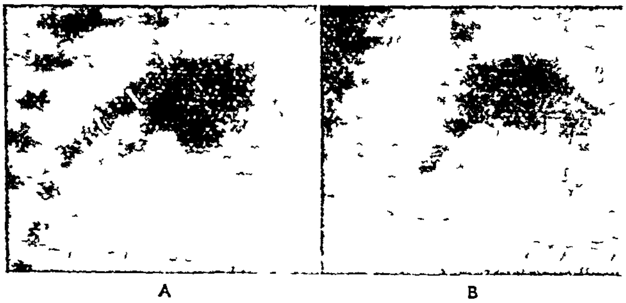

FIG 5—(A) Radiogram taken before ligation of the cord in the lamb , (B) taken 4 minutes after ligation of the cord In each case thorotrast has been injected into the superior vena cava giving a light shadow both in it and the right ventricle, and a dense shadow in the pulmonary trunk, the pulmonary artery, the ductus arteriosus and the dorsal aorta In (A) the junction of the ductus and the aortic arch can be seen at the lower margin of the rib The ends of the ductus are marked by two white lines In (B) the shadow extends into the pulmonary artery but not into the ductus or aorta

The closure of the ductus also has been investigated by Dr Barclay's X-ray cinema Cæsarean section was performed in the sheep, which and the following facts were revealed At delivery, and indeed for a short time after it, the ductus remains fully open, but when the umbilical cord is tied the picture rapidly changes , within 4 minutes the ductus is completely closed, or at least is closed to the point at which the lumen admits of no stream large enough to cast a shadow (fig 5B) It may, as far as we know, never reopen, or it may oscillate for a while between absolute closure and trivial patency, but it never allows more than a nominal quantity of blood to pass The time relations of the closure are those of a sphincter such as the cardiac sphincter of the stomach and not those of a cicatrisation These time relations are consistent with the structure of the ductus, which differs from the neighbouring arterial wall , the muscle of the sphincter is there for anyone with a microscope to see and nerve-endings may be seen in it In fact the sphincter is part of the vasomotor system The physiological occlusion as time goes on is followed by a conversion of the muscle into connective tissue

A different method is needed to investigate closure of the foramen ovale If the blood in the left ventricle (and consequently in the carotid artery) is completely arterial—if the hæmoglobin is 100% oxyhæmoglobin and if there is no reduced hæmoglobin present—all that blood must come from the lung and none can come from the great veins through the foramen ovale This state is actually reached within 4 or 5 minutes of the ligature of the umbilical cord if the fœtus is breathing an atmosphere of oxygen (Barcroft, Kramer and Millikan 1939) Thus the foramen ovale must close within the same period

The X rays give us what little information we have about which is the first to close, the ductus arteriosus or the foramen ovale.

Lipiodol was injected into the inferior vena cava of a newly born lamb, it divided into a major and a minor stream, the *former passing to the left side of the heart through the* foramen ovale, the latter into the right side The first stream soon ceased, which seemed to show that the foramen ovale had closed, all the lipiodol now went into the right ventricle and was seen to traverse the ductus, so reaching the dorsal aorta Finally the path was diverted again and all the lipiodol went into the pulmonary circulation

So far as this single experiment can be trusted, the sequence of shutting is first the foramen ovale, second the ductus arteriosus In any case, after 5 minutes, almost the whole venous inflow (apart from the pulmonary veins) seems to go through the lung before it reaches the left side of the heart

THE FIRST BREATH

There is a paradox about the first breath as there is about the maiden voyage of a steamship That voyage is the initiation of the functional life of the vessel, in this sense it is the initial effort of the steamer, but behind it is a background of trial trips, assemblage of parts, fitting of machinery and all the rest So it is with the first breath, true, it is the first time that air is taken into the lungs, if only because the fœtus has never been exposed to air, but the movements responsible for that inhalation have a history which can be traced back to the very first efforts of which the fœtus was capable

That first effort is a simple reflex (Barcroft and Barron 1939), it appears on the 34th day of fœtal life in the sheep. If the embryo at that time is sharply tapped under the eye it will turn its head, with the nose towards the side on which it is struck No other skin area will elicit a movement, no other movement takes place when the locality in question is struck Actually the locality is the skin area covering the point to which the maxillary branch of the fifth cranial nerve has grown The whole functional nervous system is then a single reflex arc, with the maxillary branch of the fifth nerve as its receptor, a neuron which involves the reticular formation in the medulla as its cell station and the efferent fibres which supply certain neck muscles as the effector This functional nervous system spreads as the days of gestation go by, about a week later four things have taken place (Barcroft 1939) a much gentler stimulus will elicit *movement*, the skin area, stimulation of which will produce movement, is much greater and notably involves the nose to which the fifth nerve has now grown, the muscles involved in the response are so numerous as to transform the simple movement into a spasm, and the response is not merely one spasm but a rhythm consisting of perhaps twenty spasms, each of which looks like a little gasp

By the 49th day the mechanism has become so delicate that only with difficulty can the fœtus be held still enough to preclude the development of these rhythmic spasmodic efforts Both the extent and the frequency of the rhythm depend on the severity of the stimulus, a gentle stimulus will cause only rhythmic contraction of the respiratory muscles—the diaphragm, the intercostals and the laryngeal muscles—while a strong stimulus will elicit a more rapid rhythm and one which extends to a great part of the body The first spasm in the response to a strong stimulus has properties which are not repeated in those which follow. If the fœtus is on its side it will turn its head crown upward, throw it back and with its feet make a complex movement which looks like a crude effort to get up, the whole procedure indeed closely resembles the first effort to rise made by the lamb There is then sometimes a slight pause and the subsequent movements are of the rhythmic type which we have seen in younger fœtuses The whole syndrome presents the appearance of an effort to get up followed by a fit of breathlessness Thus even a third of the way through pregnancy the essential neuromuscular mechanism has been laid down, and as it were tried out Not the least remarkable feature of these spasmodic rhythms of the respiratory type is their relation to asphyxia So far from asphyxia being able to stimula them, the reverse is the case, asphyxia has no oth action than that of a depressant, and in time wou extinguish them entirely

Between the 50th and 60th day *the activities of t* embryo undergo a remarkable change Instead being so active that the slightest touch or moveme starts a burst of rhythmic activity, it is now almo inert At first *sight it conveys* the impression of bei moribund, and doubtless for this reason its late activities have not been more fully realised, for thou a number of observers have described movements of respiratory type in embryos their significance has n hitherto been grasped If the healthy fœtus of 60 da gives the impression of lacking the power of movemen there are three ways of waking it up by asphyxi by exposure, and by appropriate surgical section the brain

The new development which is responsible for t quiescence of the 60-day fœtus is the appearance inhibition, this is due to the grip exerted on the low portions of the brain by a centre at a higher level T secret of asphyxia is that it depresses this seat of gover ment and liberates the lower centres from its dominio In effect then the rôle played by asphyxia is functionall to convert the 60-day embryo into one of 50 day Exposure acts in a similar way

The general position, geographically, occupied by t inhibitory centre is revealed by surgical procedur Dr Barron has succeeded in transecting the centr nervous system in fœtuses of 50–80 days without inte fering with their growth or affecting the date at whi they are born A fœtus in which section has been do half way up the forebrain has, like one subjected to small degree of asphyxia, lost its inhibition and exhibit a rhythm of the respiratory type on the smallest provocation

During the last two-thirds of the gestation period there is, then, a constant battle between the warring element of the fœtal brain, the lower part of which is tending to give movement—respiratory movement at that—and the upper part of which is all for quiet, and the upper part normally wins during gestation

There are other important forces which must not be lost sight of They are on the side of movement, and during intra-uterine life are in abeyance These are the sensory impulses caused by stimulation of peri pheral nerves, and among them the fifth cranial nerve—that which initiated the first movement—always holds a special place As long as the fœtus is in the amniotic fluid the peripheral impulses do not come into action or come in only to a slight extent because there is so little in the environment to excite them The effect of wholesale peripheral stimulation, however, would be to raise the sensitivity of the brain and so give it a bias towards action These then are the forces marshalled on the two sides for quiescence the inhibitory mechanism, for movement accidental stimuli from the nose, mouth, skin or muscles reaching a brain of exalted sensitivity, exalted by the general mass of peripheral stimuli

In that setting the lamb appears The inhibition of the fœtus is abolished or reduced by the suspension of the placental circulation, stimulation inevitably occurs and is amplified, as it were, by the heightened sensitivity of the nervous system Then response takes place That response is the old movement developed 100 days previously in the embryo, which is now no longer a spasmodic movement in a fluid medium but a gasp which expands and draws air into the lungs, it is the first breath

SUMMARY

During the latter half of the period of gestation in the sheep the quantity of fœtal blood in the placenta remains relatively constant, while that in the fœtus increases with the growth of the placenta as much as 6–8 times The growing needs of the fœtus are met, in the placenta, by an increased rapidity of blood flow and by increasing quantities of hæmoglobin in the blood

A considerable volume of the fœtal blood circulating in the placenta is transferred to the fœtus at birth The excess of corpuscles is broken down and the iron is stored

Evidence is given of the functional closing of the foramen ovale and the ductus arteriosus within a few minutes of birth

Evidence is also given showing that the essential neuromuscular mechanism for drawing the first breath is laid down between the 34th and the 50th day of gestation, and that asphyxia, far from stimulating the early spasmodic rhythms of the respiratory type, actually depresses them At this stage exposure or asphyxia excite no activity in the embryo

By the 60th day of gestation higher levels of the brain have developed sufficiently to inhibit the lower centres , so that the 60-day fœtus appears much more inert than the active 50-day fœtus Asphyxia depresses the higher centres and liberates the lower centres, thus converting the inert 60-day fœtus functionally to the active 50-day fœtus Exposure has the same effect

At birth the lamb experiences both partial asphyxia —because of suspension of the placental circulation— and exposure It responds with the respiratory movement which it developed some 100 days before Sensory impulses from the skin heighten the tendency towards respiration

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AMMONIA-GAS POISONING

FORTY-SEVEN CASES IN A LONDON SHELTER

Maxwell Caplin, M R C S

LATELY HOUSE OFFICER AT ST LEONARD'S HOSPITAL L C C

Early in September, 1940, during a heavy air-raid on London, a large brewery whose cellars were being used as a shelter received a direct hit from a bomb The damage to the building was not severe, but a fragment of flying metal pierced the connecting pipe of an ammonia ndenser in the corner of one of the cellars, and gaseous amonia was set free This spread rapidly through the owded shelter, and it was about ten minutes before employee of the brewery wearing an oxygen respirator as able to shut off the condenser

First-aid parties arrived almost at once and performed eir duties ably Most of those affected by the gas ere able to leave the building without help, but a few d to be brought out by the first-aid parties who entered e gas-filled cellars, some wearing civilian others civilian-ty respirators First-aid posts dealt with a large mber of cases, some of which were considered sufficiently rious to need hospital treatment

This account describes the signs, symptoms, treatment d subsequent course of some of the cases admitted St Leonard's Hospital In all, 75 cases were admitted, t owing to the rapid evacuation to base hospitals and e difficulty of obtaining case-notes after transfer, only 7, representing in the main the more serious cases, could e traced satisfactorily

CLINICAL FEATURES

Clinically, the patients could be divided into three ain types—mild, moderate and severe—depending on e extent of involvement of the respiratory tract he mild and moderate cases were mostly a considerable stance from the ammonia condenser at the time of the xplosion and were able to leave the shelter unaided hose in the severe group were resting near the condenser, nd were among the last to leave, many of them being so vercome as to need help from first-aid parties

Mild group —This comprised 9 patients with mild atarrhal symptoms, the inflammatory process being mited to the conjunctivæ and the upper respiratory assages The patients complained of a smarting ensation in the eyes and mouth, pain on swallowing, nd some of a tightness in the throat All were very oarse and could hardly raise their voices above a whiser Cough was not a prominent feature There was no shock or distress, the colour was good and the temperature and pulse-rate were not raised The conjunctivæ were suffused and there was swelling of the eyelids The lips, mouth and tongue were intensely reddened, dry and raw looking, and there was a strong smell of ammonia in the breath The fauces presented a similar picture with the addition of œdema No adventitious sounds were heard on auscultation of the chest

Moderate group —In this, the largest group, there were 27 cases who showed the effect of more severe or prolonged exposure to the gas Here, in addition to an exaggeration of the signs and symptoms present in the mild cases, there were moist sounds in the chest, suggestive of an extension of the inflammatory process to the bronchi and bronchioles There was smarting of the eyes, mouth and throat, together with a feeling of tightness in the chest, hoarseness and dysphagia Cough was prominent and productive of tenacious and, sometimes, blood-stained sputum There was no vomiting The colour was good, the pulse was strong and rapid, but the patient looked ill There was some restlessness with a slight increase in the respiration-rate, and in some the temperature was raised one or two degrees The conjunctivæ were hyperæmic and there was much lacrimation with swelling of the eyelids The lips, mouth, tongue and fauces resembled the picture seen in the mild type, but here œdema was more pronounced and there were dark red glazed patches scattered over the buccal mucosa indicating areas denuded of epithelium Auscultation of the chest revealed a poor air-entry with rhonchi, in some cases localised, and in others fairly generalised

Severe group —There were 11 cases in this group, exhibiting signs and symptoms of pulmonary œdema, evidence of still further extension of the inflammatory process to the lung parenchyma On admission they were shocked, restless and obviously distressed There was slight cyanosis, intense dyspnœa and persistent cough with much frothy sputum The pulse was rapid and of poor volume and the temperature was not raised The condition of the eyes, mouth and fauces was similar to that seen in the moderate cases The neck veins were not distended Generalised râles and rhonchi were audible in the chest

TREATMENT

The first aim was to combat shock and to relieve restlessness and dyspnœa in the severe cases , the second, to neutralise liquid ammonia present on the buccal mucosa, evidence of which was the strong ammoniacal smell in the breath , and the third, to relieve conjunctival and buccal pain All patients were put to bed, and in severe cases where shock and restlessness were present electric cradles were provided and morphia gr $\frac{1}{4}$–$\frac{1}{6}$ was given, the smaller dose where cyanosis and dyspnœa were evident Oxygen was administered by intranasal catheter to patients showing any sign of cyanosis Where moist sounds in the chest were pronounced, an injection of atropine gr $\frac{1}{100}$ was given and repeated two-hourly

The ammonia was neutralised with ordinary table vinegar, which was diluted one part in four with warm water and given as a mouth-wash and gargle After this, liquid paraffin was applied on a swab to soothe the roughened mucous membrane In the moderate and severe cases, where pain and œdema of the mouth and throat were more troublesome, a cocaine and adrenaline spray was used The eyes were irrigated with boric lotion and were instilled with a few drops of castor oil Cocaine was not used in the treatment of the eyes

SUBSEQUENT COURSE

Owing to the severity of the air-raids on London at that time, and the need to keep beds clear, rapid evacuation to base hospitals was essential, though the clinical condition of some of the patients would in normal times have made one doubt the wisdom of transfer The subsequent course of the transferred patients was gleaned from their case-notes which were made available to me after their discharge , I had no personal contact with these patients after they left St Leonard's Hospital

Mild group —The 9 cases in this group obtained considerable relief from the measures already outlined, and after a few hours' rest in bed they were fit for of the umbilical cord if the fœtus is breathing an atmosphere of oxygen (Barcroft, Kramer and Millikan 1939) Thus the foramen ovale must close within the same period

The X rays give us what little information we have about which is the first to close, the ductus arteriosus or the foramen ovale

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THE FIRST BREATH

There is a paradox about the first breath as there is about the maiden voyage of a steamship That voyage is the initiation of the functional life of the vessel , in this sense it is the initial effort of the steamer, but behind it is a background of trial trips, assemblage of parts, fitting of machinery and all the rest So it is with the first breath , true, it is the first time that air is taken into the lungs, if only because the fœtus has never been exposed to air , but the movements responsible for that inhalation have a history which can be traced back to the very first efforts of which the fœtus was capable

That first effort is a simple reflex (Barcroft and Barron 1939) , it appears on the 34th day of fœtal life in the sheep If the embryo at that time is sharply tapped under the eye it will turn its head, with the nose towards the side on which it is struck No other skin area will elicit a movement, no other movement takes place when the locality in question is struck Actually the locality is the skin area covering the point to which the maxillary branch of the fifth cranial nerve has grown The whole functional nervous system is then a single reflex arc, with the maxillary branch of the fifth nerve as its receptor, a neuron which involves the reticular formation in the medulla as its cell station and the efferent fibres which supply certain neck muscles as the effector This functional nervous system spreads as the days of gestation go by , about a week later four things have taken place (Barcroft 1939) a much gentler stimulus will elicit movement , the skin area, stimulation of which will produce movement, is much greater and notably involves the nose to which the fifth nerve has now grown , the muscles involved in the response are so numerous as to transform the simple movement into a spasm , and the response is not merely one spasm but a rhythm consisting of perhaps twenty spasms, each of which looks like a little gasp

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Between the 50th and 60th day the activities of the embryo undergo a remarkable change Instead of being so active that the slightest touch or movement starts a burst of rhythmic activity, it is now almost inert At first sight it conveys the impression of being moribund, and doubtless for this reason its latent activities have not been more fully realised , for though a number of observers have described movements of a respiratory type in embryos their significance has not hitherto been grasped If the healthy fœtus of 60 days gives the impression of lacking the power of movement there are three ways of waking it up by asphyxia by exposure , and by appropriate surgical section of the brain

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During the last two-thirds of the gestation period there is, then, a constant battle between the warring elements of the fœtal brain, the lower part of which is tending to give movement—respiratory movement at that—and the upper part of which is all for quiet, and the upper part normally wins during gestation

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SUMMARY

During the latter half of the period of gestation in the sheep the quantity of fœtal blood in the placenta remains relatively constant, while that in the fœtus increases with the growth of the placenta as much as 6–8 times The growing needs of the fœtus are met, in the placenta, by an increased rapidity of blood-flow and by increasing quantities of hæmoglobin in the blood

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Evidence is given of the functional closing of the foramen ovale and the ductus arteriosus within a few minutes of birth

CALCIUM AND PHOSPHORUS STUDIES IN NORMAL PEOPLE

INCLUDING OLD AGE

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As a preliminary to a series of observations on conditions associated with derangement of the calcium and phosphorus metabolism * a study was made of normal healthy adults

Serum calcium —The normal serum calcium is given by Peters and Van Slyke (1931) as 9–11 mg per 100 c cm in adults, and 10–11 5 mg per 100 c cm in children The circulating blood-cells are almost calcium free In a given person the serum calcium remains remarkably constant, thus Watchorn and McCance (1932) have shown that it does not vary throughout the day, and Clark (1920), Denis and Minot (1920), Mason (1921), and Bauer and Ropes (1926) showed that neither deprivation of calcium nor calcium-rich diets have any effect on the concentration of that substance in the serum Hjort (1925) was able to raise the serum calcium in dogs by giving calcium lactate in doses of 1 5 g per kg of body-weight in 5% solution—doses unlikely to be tolerated by human subjects

Serum inorganic phosphorus —Peters and Van Slyke (1931) have compiled a table from the reports of twenty-one authors in which they give the normal inorganic phosphorus as 2–5 mg per 100 c cm for adults, and 4–7 mg per 100 c cm for children The methods employed were those of Bloor (1918), Bell and Doisy (1920), Briggs (1923) and Tisdall (1922)

Serum phosphatase —The phosphatases are the enzymes which hydrolyse phosphate esters to liberate inorganic phosphate Different techniques are employed in the estimation of phosphatase with the result that the normal values vary widely according to the particular method employed The methods include those described by Kay (1930), Roberts (1930), Bodansky (1937), and King and Armstrong (1934)

Calcium and phosphorus balances —A comparison of the intake and output of calcium and phosphorus is a recognised method of determining the calcium and phosphorus metabolism of the body This method will recognise excessive calcium loss from the body long before osteoporosis of the skeleton begins It has now been established from observations in many laboratories that if normal healthy people live on a low intake of calcium, such as 0 1 g daily, then the body steadily loses calcium, chiefly in the fæces but also in the urine Sherman (1937) has calculated that if a 70 kg subject takes 0 45 g of calcium daily there is equilibrium between output and intake The figure of 0 45 g of calcium daily has come to be regarded by certain workers as the calcium requirement of the body, but this is not the case This figure represents the minimum of actual need, the optimum or ideal daily intake being about 1 g , with more during pregnancy and lactation

FINDINGS IN THE INQUIRY

Method —Throughout this series of investigations the serum calcium was estimated by Clark and Collip's (1925) modification of the method of Kramer and Tisdall (1921) The inorganic phosphorus was estimated by the method of Youngburg and Youngburg (1930), the serum being separated as quickly as possible from the cells and the estimation being carried out at once Serum phosphatase was determined by King and Armstrong's method (1934) The methods employed in the balance studies have already been reported by Beaumont, Dodds, and Robertson (1940)

Observations were made on the serum calcium, inorganic phosphorus, and phosphatase of 60 normal healthy people between the ages of twenty and forty (table I) In table II the serum-calcium findings in these 60 adults are compared with those already published by Watchorn and McCance (1932), Kramer and Tisdall (1921, 1922), Halverson, Mohler, and Bergeim (1917), Salvesen and Linder (1923), and Bogert and Plass (1923), amounting to 50 observations

Table III shows the results of analyses carried out on 15 people over sixty with an average age of 66 4 years In a previous publication Beaumont, Dodds, and Robertson (1940) reported on calcium and phosphorus balances in 9 normal healthy subjects aged nineteen to fifty-four, a modified table has been produced here showing the ranges of calcium and phosphorus excretion in these subjects on a low calcium intake and their negative balances in mg per kg (table IV) In the last column, using the total calcium output as the index, I have calculated the daily calcium maintenance per 70 kg of body-weight The mean figure of 0 31 g calcium daily is low On a low calcium intake the output no doubt becomes depressed below the normal equilibrium point I have tried to demonstrate this point in table V, in which the data here reported have been combined with 139 similar observations taken from papers by Bauer, Aub and Albright (1929), Von Wendt (1905), Sherman, Wheeler and Yates (1918), Sherman and Winters (1918), Sherman (1920), Rose (1920), Sherman, Gillett and Pope (1918), Sherman, Winters and Phillips (1919), Bogert and Kirkpatrick (1922), Hansman and Wilson (1934), and Beaumont, Dodds and Robertson (1940), the cases have been arranged into groups of increasing calcium intakes.

TABLE I—ANALYSES OF SERUM CALCIUM, INORGANIC PHOSPHORUS AND PHOSPHATASE IN 60 NORMAL MEN AND WOMEN BETWEEN THE AGES OF TWENTY AND FORTY

Case	Serum calcium	Serum inorg phosphorus	Serum phosphatase (units)*
	(mg /100 c cm)		
AA	10 8	3 5	5
AB	10 4	3 5	7 3
AC	10 7	3 6	6 2
AD	10 5	3 5	7 8
AE	10 5	3 2	6
AF	10 3	3 4	9 3
AG	10 3	3 1	5 8
AH	10 5	4	10 6
AI	10 4	3 5	5 6
AJ	11 1	3 9	7 8
AK	11	4 3	8 2
AL	10 5	3 8	11
AM	10 4	3 8	7 5
AN	10 2	3 5	6 9
AO	10 9	3 4	4 9
AP	10 7	4	5 9
AQ	10 6	3 8	13
AR	10 5	4 5	9 2
AS	10 2	4 1	5 9
AT	10 6	4	6 5
AU	10 5	3 5	9 7
AV	10 8	3 5	8 7
AW	10 1	4 3	6 5
AX	10 3	4 1	9 7
AY	10 6	4 3	6 6
AZ	10 4	4 7	5 8
BA	10 3	4 3	6 5
BB	10	3 7	11
BC	10 2	4	7 6
BD	10 3	4 8	6 5
BE	10 2	4 8	7
BF	10 2	4	7 9
BG	10 3	3 3	5 7
BH	10 6	4 1	8 7
BI	10 2	3 9	5
BJ	10 2	3 1	6 2
BK	10 3	3 5	9 2
BL	10 4	3 7	6
BM	10 7	3 7	8 3
BN	10 2	3 6	6 8
BO	10 3	4 1	5 5
BP	10 5	3 8	6 1
BQ	10 4	4 8	8 4
BR	10 1	3 6	7 4
BS	10 8	3 1	8 2
BT	10 9	3 9	4 4
BU	10 7	3 7	7 7
BV	10 2	3 8	6 4
BW	10 1	3 7	3 7
BX	9 9	3 7	6 7
BY	10 2	3 7	4 7
BZ	10	4	13 5
CA	10 1	4 2	8
CB	10 3	3 8	5 2
CC	10	3 8	6
CD	10	3 7	7 3
CE	10 2	4 1	4 7
CF	10 1	3 8	3 5
CG	10	3 5	8 5
CH	10 9	4	6
Mean	10 393	3 831	7 195
Range	9 9–11 1	3 1–4 8	3 5–13 5
S D †	0 27	0 395	2 03

* Units of King and Armstrong † S D = Standard deviation

It seems to be widely believed, and has been stated by Harris (1941), that in middle age a large retention of calcium occurs In table VI the calcium excretion of adults over forty (mean age 52 1 years) and under forty (mean age 29 5 years) is compared The data have been obtained from the experiments of Bauer, Aub and Albright (1929), and Beaumont, Dodds and Robertson (1940) It will be seen that there is no difference between the calcium excretion of people over and under forty

DISCUSSION

Serum calcium, inorganic phosphorus and phosphatase in adults and old age —The range of serum calcium in normal healthy adults between twenty and forty was found to be 9 9–11 1, which is smaller than the accepted range The figure is similar to the findings in a series collected from the literature, differing from this series discharge They were typical of those who received treatment at the first-aid posts, and therefore of most of the gas casualties

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* These observations will be reported in three further papers in THE LANCET The references for all four papers are given at the end of this one

Moderate group —Of the 27 cases in this group, 24 showed improvement after treatment, and these were evacuated ten and thirty hours after admission The 3 remaining cases showed great deterioration in their clinical condition and were detained at St Leonard's Hospital Within six hours of admission they became cyanosed, and dyspnœa and restlessness increased Clinically they resembled closely patients admitted with pulmonary œdema, and were treated in like manner In spite of treatment, their general condition gradually worsened, cyanosis and restlessness becoming still more severe Finally, they became comatose and died within thirty-six hours Post-mortem examination was not performed In 9 of the 24 patients who were evacuated, signs and symptoms of bronchopneumonia appeared on the second and third days All these cases received M & B 693 in addition to routine treatment, 6 recovered while the remaining 3 died within two days of the onset of symptoms An autopsy was done in 2 of these cases

Case A B —Male, aged 66 Mouth fauces, pharynx and larynx intensely inflamed Trachea and bronchi inflamed and filled with purulent exudate Lungs adhesions on both sides from old pleurisy Deeply congested lungs and patchy areas of bronchopneumonia Heart nothing abnormal

Case C D —Male, aged 47 Trachea and bronchi denuded of epithelium Lungs bronchopneumonia and pulmonary œdema

The remaining 15 patients made a relatively uninterrupted recovery, the average period in hospital being eight days. In most the conjunctivitis improved rapidly without further treatment, but in the more severe cases boric irrigations and castor-oil instillations were continued daily Severe corneal ulceration was noted in 2 patients In 12 cases at the Royal Free Hospital half were observed to have corneal ulceration on admission but this was not seen in those treated at St Leonard's Hospital where fluorescein was not instilled, so that corneal ulceration in mild degrees may have passed unnoticed Ulceration with slough formation inside the mouth was a common feature and responded rapidly to mouth-washes Hoarseness was persistent and was still present on discharge from hospital Laryngoscopic examination was not performed in these cases The bronchitis improved gradually and cleared, on the average, within seven days The mortality-rate in this moderate group of 27 cases was 22% Three cases died from what appeared to be delayed pulmonary œdema, and 3 from bronchopneumonia, though as the post-mortem evidence in one of these cases showed, pulmonary œdema was associated with the bronchopneumonia

Severe group —In this group 4 patients gradually went downhill They became more cyanosed and dyspnœic and died within forty-eight hours of admission The remaining 7 cases improved slightly under treatment and were transferred within ten hours of arrival to the base hospital Of these, 4 continued to improve and were discharged after an uneventful course about nine days later, and 3 became steadily worse and pursued a similar course to that of the patients in this group who were detained at St Leonard's Hospital They ultimately died within forty-eight hours of being transferred An autopsy was performed in two of these cases

Case E F —Female, aged 37 Mouth fauces, pharynx and larynx intensely injected and covered with purulent exudate Lungs both lower lobes show thin fibrinous exudate on pleural surfaces, bronchopneumonic areas in both lungs, and right upper lobe œdematous Heart nothing abnormal Liver somewhat enlarged and showing toxic degenerative changes, gall bladder normal Spleen slightly enlarged and softened Pancreas nothing abnormal Kidneys slightly toxic in appearance Stomach and intestines nothing abnormal Brain not examined

Case G H —Male, aged 19 Mouth fauces, pharynx and larynx injected, epiglottis covered by membrane of purulent exudate Trachea intense inflammation with much purulent exudate Lungs no exudate or fluid in pleural spaces, both lungs deeply congested, areas of broncho-pneumonic consolidation in lower lobes, upper lobes show no consolidation, and less congested, no evidence of tuberculosis or past lung disease Heart nothing abnormal Liver bright red, gall-bladder healthy Spleen congested but not hard Adrenals congested, no hæmorrhages Pancreas congested, no hæmorrhages Kidneys both congested Œsophagus nothing abnormal Stomach hyperæmia of summits of the mucous ridges Intestines healthy Brain not examined

Of the 11 cases in this group 7 died, representing a mortality of 63%

CONCLUSIONS

Although a number of casualty clearing stations might have been utilised, most of the cases were sent to St Leonard's Hospital This unequal distribution of casualties had two disadvantages First, the medical and nursing staff were overburdened It was not possible for 75 patients to be given the individual attention that could have been given to, say, 15, and no more than 15 need have been sent to this hospital if each casualty-clearing station in the area had received its proportion Secondly, because the casualty beds were filled, early evacuation had to be resorted to, in some cases earlier than good judgment would allow [1]

The effectiveness of the civilian respirators, both ordinary and duty, against gaseous ammonia was demonstrated by the first-aid personnel, who subsequently suffered no ill effects This experience was shared by those people in the shelter who put on their gas-masks at the first suspicion of gas A small proportion of the casualties had also worn their gas-masks, but these had felt much worse in them and taken them off They admitted coughing and spluttering before donning their masks, which suggests that they had already inhaled gas in some quantity In their pamphlet, "Air-Raid Precautions to be taken by Users of Ammonia" the Ministry of Home Security state

> "Tests have shown that any of the A R P respirators give a certain degree of protection against anhydrous ammonia gas, although they are not designed for the purpose"

In this series, morphia in doses of gr $\frac{1}{4}$–$\frac{1}{6}$ was given to all the shocked and restless patients There is no evidence that this measure was in any way connected with the development of bronchopneumonia

Three patients in the moderate group—cases in which, on admission, acute bronchitis was the essential respiratory lesion—developed the clinical picture of pulmonary œdema about six hours later This condition, therefore, may appear as a delayed event, altering the prognosis appreciably

SUMMARY

An account is given of 47 cases of ammonia gas poisoning resulting from leakage of a condenser into an air-raid shelter

The patients could be classified into mild, moderate and severe types In the mild type the main feature was acute pharyngitis and tracheitis, in the moderate, acute bronchitis, and in the severe, pulmonary œdema

Mild cases, of which there were 9, responded rapidly to treatment and were fit for discharge within a few hours

Of the 27 in the moderate group, 3 patients developed signs and symptoms of pulmonary œdema within six hours of admission and died, 9 developed bronchopneumonia on the second and third days and of these 3 died, 15 patients recovered completely apart from hoarseness, and were discharged after about eight days The fatality-rate for this group was 22%

The severe group contained 11 patients, 7 of whom underwent a rapid deterioration in their general condition and died within two days The other 4 patients made an uninterrupted recovery and were discharged from hospital after nine days The fatality-rate for this group was 63%

The civilian ordinary and duty respirators proved effective against ammonia gas

I wish to thank Dr Allen Daley for permission to publish this article and the medical officers of St Leonard's Hospital, the North Middlesex Hospital and Clare Hall Hospital, South Mimms, for their cooperation, and in particular Dr Arthur Morris and Mr E T Bailey, superintendent and deputy superintendent of St Leonard's Hospital

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[1] Such difficulties were foreseen by Slot, G M J (*Lancet*, 1938, 2, 136) in his paper on casualties sustained in an explosion of ammonia gas in an ice cream factory

ABLE V—INFLUENCE OF A LOW CALCIUM INTAKE IN DEPRESSING OUTPUT BELOW NORMAL EQUILIBRIUM POINT

3 day period (g)	No of cases	Balances		Over 3-day periods					Output per 70 kg body-weight (g)	Daily requirement for maintenance (g) †
		Negative	Positive	Mean intake (g)	Mean output (g)	Mean balance (g)	Output in mg per kg	Balance in mg per kg		
0 09–0 19	2	2	0	0 116	0 474	−0 358	7 98	−6 07	0 56	0 19
0 2–0 29	14	33	0	0 265	0 674	−0 409	11 94	−7 19	0 834	0 278
0 3–0 39	18	39	0	0 349	0 775	−0 426	13 44	−7 34	0 941	0 314
0 4–0 49	5	17	0	0 416	0 892	−0 476	13 53	−7 17	0 949	0 313
0 5–0 59	2	2	0	0 555	1 09	−0 535	17 66	−8 47	1 235	0 412
0 6–0 69	2	8	0	0 618	0 957	−0 339	14 77	−5 25	1 035	0 345
0 7–0 79	4	11	2	0 751	0 951	−0 200	17 64	−3 2	1 228	0 409
0 8–0 89	4	17	3	0 842	1 025	−0 183	20 09	−3 46	1 402	0 467
0 9–0 99	6	13	10	0 946	1 009	−0 063	18 93	−1 04	1 325	0 441
1–1 09*										
1 1–1 19	6	3	12	1 165	1 155	+0 010	18 86	+0 48	1 322	0 44

* Insufficient data   † Per 70 kg body weight

or any margin of safety, and thus represents a deficit for growing children and women during pregnancy and lactation In round figures, if the minimum calcium requirement is taken as 0 45 g daily then the optimum or ideal calcium requirement for a child is 1 g daily (obtainable in 1 quart of milk, Sherman 1937), for an adult at least 0 7 g daily (Sherman 1937), and for pregnant and lactating women 1 4–2 g daily (Coons 1935, Toverud and Toverud 1931, League of Nations Health Organisation Technical Commission on Nutrition, 1938)

Dietary consumption of calcium —The carefully compiled data of Sherman and Stiebeling (1936) in America, and of Orr (1937), Leitch (1937), and Crawford and Broadley (1938) in this country are in agreement that insufficient calcium is taken by large sections of the population If this applies in peace-time, how much more must it apply during war Most of our staple foods contain little or no calcium, so that it is possible to eat an abundantly nutritious yet calcium-poor diet Analyses of war diets at the present time show that if milk and cheese are excluded the average calcium content is only 0 2 g daily Green vegetables are known to be useful carriers of calcium but their high calcium content does not necessarily mean a high calcium absorption Thus spinach, which contains 0 078 g % of calcium, supplies the body with scarcely any of that mineral because of its oxalic acid content (Finke and Sherman 1935) There is a danger of serious calcium insufficiency in the population unless adequate amounts of milk or cheese or both are taken, or calcium is added in some form It was this danger of calcium deprivation which no doubt decided the Government to fortify with calcium a staple and cheap food such as bread The consumption of bread is high, and by its enrichment with calcium it would be possible for all classes to obtain an optimum amount of calcium

TABLE VI—COMPARISON OF THE CALCIUM METABOLISM OF ADULTS UNDER AND OVER FORTY

Under forty		Three day periods		Over forty		Three day periods	
Case	Age (yr)	Output in mg /kg body weight	Balance in mg /kg body weight	Case	Age (yr)	Output in mg /kg body weight	Balance in mg /kg body weight
DH	27	13 3	− 7 85	DT	54	9 9	− 4 33
DI	30	13 5	− 8	DU	50	18 1	−11 7
DJ	29	19 3	−11 23	DV	48	14 3	− 9 87
DK	19	11 2	− 3 85	DW	60	16	− 8 1
DL	36	9 1	− 4 81	DX	53	13	− 7 6
DM	32	10 9	− 6 55	DY	55	9	− 4
DN	19	10	− 5 6	DZ	53	7	− 3 2
DO	39	14	− 9 1	EA	50	12	− 7 6
DP	33	18	−11 9	EB	48	14	− 7 8
DQ	35	8	− 3 4	EC	50	12	− 6
DR	25	12	− 7 1				
DS	30	8	− 5 2				
Mean	29 5	12 3	− 7 05	Mean	52 1	12 5	− 7 02

SUMMARY

In 60 normal healthy adults between the ages of twenty and forty years the mean serum calcium was 10 4 mg, the inorganic phosphorus 3 8 mg and the phosphatase 7 2 units (King and Armstrong), the ranges in that order being 9 9–11 1, 3 1–4 8, and 3 5–13 5

In 15 healthy people aged sixty to seventy-eight, the serum calcium and inorganic phosphorus were not found to be significantly different from those of younger adults The serum phosphatase was slightly raised in these older people, which may or may not be significant

A study was made of 9 normal subjects (33 observations) On a calcium intake of 0 1 g daily all subjects were in a negative balance, there was a total calcium excretion of 4 4 mg, and a negative calcium balance of 2 5 mg per kg of body-weight daily On a phosphorus intake of 0 37 g daily all subjects were in a negative balance, there was a total phosphorus excretion of 10 4 mg, and a negative phosphorus balance of 3 5 mg per kg of body-weight daily. The point at which equilibrium between intake and output of calcium took place was 0 45 g daily for a 70 kg subject This intake of calcium is usually referred to as the minimum or maintenance requirement of the body

It is important to distinguish between the intake of calcium which just produces equilibrium and that which allows for some retention Retention of calcium is necessary to maintain health, and essential to children and to women during pregnancy and lactation

If diets are to contain ideal amounts of calcium, adequate amounts of milk, cheese or both must be included If this is not possible then additional calcium ought to be taken

The calcium metabolism of middle age is no different from that of young adults

I wish to thank Prof E C Dodds for his criticisms, and the honorary staff of the Middlesex Hospital for permission to investigate their cases, quoted in the other papers in this series

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only in having a slightly higher mean and slightly smaller range.

Calculated according to Fisher's "P" test (Fisher 1938) the difference between the serum calcium and inorganic phosphorus of adults aged twenty to forty and of those over sixty is of no significance (for calcium, P > 0 3, and for inorganic phosphorus P > 0 10) The higher mean serum phosphatase in old adults may possibly be of significance (P > 0 05)

TABLE II—COMPARISON OF THE FINDINGS SHOWN IN TABLE I WITH 50 OBSERVATIONS FROM THE LITERATURE

No of cases	Mean serum calcium	Range of serum calcium	Standard deviation
	mg /100 c cm		
60	10 39	9 9–11 1	0 27
50	10 06	9 3–10 8	0 37

Calcium and phosphorus balances and calcium requirements—In the 9 normal healthy adults on a low calcium intake of about 0 1 g daily the output of calcium was found to be consistently greater than the intake (table IV) The daily excretion of calcium averaged 4 4 mg per kg of body-weight and the daily negative balance 2 5 mg per kg, the corresponding figures for phosphorus being 10 4 mg and 3 5 mg With the lower calcium intakes of 0 038, 0 088, 0 116, 0 138, 0 185, 0 206, and 0 25 g daily the calcium output (corrected to a body-weight of 70 kg), although greater than the intake, was restricted This depression below the point at which calcium equilibrium could actually be maintained was greatest with the lowest calcium intake A constant calcium output was reached when the calcium intake rose to 0 28 g daily (0 384 g corrected to a body-weight of 70 kg) In carrying out experiments designed to determine the calcium requirements of the body there seems to be a certain level of calcium intake below which the calcium output does not give a true indication of the amount required for calcium equilibrium This critical level appears to be in the region of 0 38 g daily for a body-weight of 70 kg Approximate equilibrium between intake and output took place on a daily intake of 0 44–0 45 g when corrected to a body-weight of 70 kg The requirement for calcium equilibrium was therefore in the region of 0 45 g calcium daily It seems reasonable to expect that a minimum requirement would exceed the equilibrium requirement, but in the literature these terms are used synonymously

A comprehensive survey of this subject has been made by Leitch (1937) based on a study of almost 400 balances with daily calcium intake varying from 0 08 to 0 742 g Her series comprised 318 negative and 79 positive balances Positive balances were obtained on as low an intake as 0 196 g daily and negative balances on as high an intake as 0 65 g daily The numbers of negative and positive balances equalled one another with a daily intake of 0 50–0 55 g, and she concluded that the true daily maintenance requirement for calcium in her series was 0 55 g This agrees well with Sherman's (1921) estimate and is similar to Owen's (1939) figure for older men

It is abundantly clear from the experimental work of competent authorities that children require a surplus of calcium so that they may store or retain it at the rate of not less than 0 01 g per kg of body-weight daily Failure to do this in childhood adversely affects growth, weight, maturity, powers of reproduction, onset of senescence, and the health of the next generation (Sherman and Campbell 1924, Sherman and MacLeod 1925, Sherman and Booher 1931, Campbell, Bessey and Sherman 1935) When adult life is reached the body does not store calcium above its daily optimum intake except during pregnancy and lactation, or when it is deficient in calcium Much that is irrelevant has lately been written about the dangers of calcium overdosage Overdosage cannot exist among the adult population because the healthy body rejects in the fæces whatever calcium it does not require If children need to store calcium, what of adults nearing or over middle age? There is no evidence at all that middle-aged people behave differently from young adults in respect to their calcium metabolism Large retention of calcium is a peculiarity of growing children only, and a necessary one

Optimum calcium intake—The ideal calcium requirement for health is much greater than the minimum calcium requirement, with which it must not be confused At all times the body steadily loses calcium, but on a low calcium intake the loss is greater than the intake If the calcium is gradually increased a stage is reached when the intake equals the output, this intake is known as the "minimum calcium requirement," but more exactly might be termed "the calcium equilibrium intake" It is doubtful if this amount of calcium is even a true equilibrium requirement Observations on the intake and output of calcium are carried out in hospitals and clinics under ideal experimental conditions and with balanced diets In the home, where balanced diets are not the rule, conditions exist which promote a greater excretion of calcium than in experimental subjects A so-called minimum calcium requirement does not allow for any storage of that mineral

TABLE III—ANALYSES OF SERUM CALCIUM, INORGANIC PHOSPHORUS AND PHOSPHATASE IN 15 PEOPLE OVER THE AGE OF SIXTY

Case	Age (yr)	Serum calcium	Serum inorg phosphorus	Serum phosphatase (units)	Case	Age (yr)	Serum calcium	Serum inorg phosphorus	Serum phosphatase (units)
		mg /100c cm					mg /100c cm		
CJ	62	9 9	3 1	6 4	CV	65	10 5	4 4	12 5
CK	60	10	3 8		CW	70	10 1	3 5	8 3
CL	67	11	3 9	10 4	CX	78	10 5	3 7	7 8
CM	62	10 5	3 7	5 8					
CN	69	10 4	3 8	5 9	Mean	66 4	10 300	3 680	8 53
CO	60	10 4	3 7	10 2					
CP	70	10 1	3 6	7 1	Range	60–78	9 8–11 0	3 0–4 4	5 8–13 6
CQ	67	10 3	3 3	7					
CR	68	10 3	3 7	7 1					
CS	66	9 8	4	8 6					
CT	67	10 1	3	13 6	S D		0 332	0 358	2 37
CU	65	10 6	4	8 6					

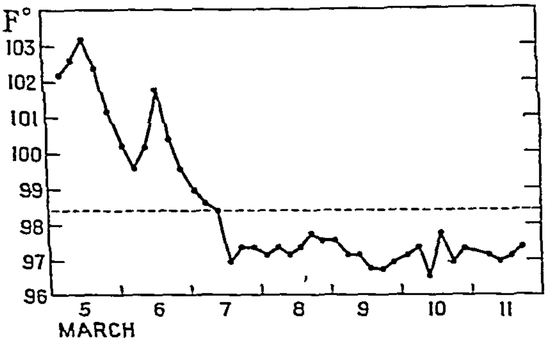
TABLE IV—CALCIUM AND PHOSPHORUS BALANCES IN 9 NORMAL PEOPLE

Case	Age (yr)	Weight (kg)	No of obser vations	Periods of three days										Daily calcium maintenance per 70 kg body
				Calcium metabolism					Phosphorus metabolism					
				Intake (g)	Output (g)	Balance (g)	Output in mg per kg	Balance in mg per kg	Intake (g)	Output (g)	Balance (g)	Output in mg per kg	Balance in mg per kg	
CY	27	57 3	4	0 31	0 76	−0 45	13 3	− 7 85	1 08	2 2	−1 12	38 3	−19 5	0 31
CZ	30	58 7	6	0 32	0 79	−0 47	13 6	− 8	1 07	1 69	−0 62	28 8	−10 56	0 315
DA	54	60	4	0 34	0 60	−0 26	9 9	− 4 33	1 23	2 01	−0 78	33 6	−13	0 231
DB	50	42 7	3	0 27	0 77	−0 50	18 1	−11 7	1 02	1 49	−0 47	34 9	−11 02	0 422
DC	29	43 6	4	0 37	0 86	−0 49	19 3	−11 23	1 17	1 81	−0 64	41 5	−14 72	0 45
DD	19	51 8	1	0 38	0 58	−0 2	11 2	− 3 85	1 28	1 3	−0 02	25 1	− 0 39	0 261
DE	48	57 8	4	0 26	0 83	−0 57	14 3	− 9 87	1 09	1 73	−0 64	29 9	−10 08	0 333
DF	36	58 2	1	0 25	0 53	−0 28	9 1	− 4 81	1 12	1 55	−0 43	26 6	− 7 39	0 212
DG	32	71 7	6	0 33	0 80	−0 47	10 9	− 6 55	1 03	1 62	−0 59	23 4	− 8 22	0 254
Mean				0 34	0 75	−0 41	13 3	− 7 58	1 12	1 71	−0 59	31 3	−10 54	0 31
Mean per day				0 11	0 25	−0 14	4 4	− 2 53	0 37	0 57	−0 2	10 4	− 3 51	

TREATMENT OF BACILLARY DYSENTERY WITH M & B 693

G J BELL, M B Lond , D P M
DEPUTY MEDICAL SUPERINTENDENT OF COLDEAST COLONY
(TATCHBURY MOUNT), SOUTHAMPTON

AN epidemic of dysentery occurred recently at this colony which houses mental defectives of all grades The number of patients affected was 16 Bacteriological investigations carried out by Dr J T Duncan revealed that in this one epidemic there were two types of dysenteric infection *Bacillus dysenteriæ* Flexner W being isolated from the stools of about two-thirds of the cases, and *B dysenteriæ* Sonne from the others In the patients infected with *B dysenteriæ* Flexner the symptoms tended to be much more severe , they exhibited pyrexia up to 104° F , frequent passage of stools consisting of blood and mucus or pure blood, and severe tenesmus The Sonne group only had severe diarrhœa with much mucus and only an occasional trace of blood



The opportunity was taken of treating the condition with M & B 693 This was given in doses of 0 5 g four-hourly by mouth and the average total amount received by each patient was 5 g On this dosage and method of administration no symptoms of intolerance such as nausea or vomiting were shown by any of the patients The results obtained were very satisfactory In all cases treated the symptoms cleared up in 36–72 hours The effect on the pyrexia was immediate and temperatures returned to normal within 24–48 hours After the passing of blood and mucus had ceased there was a period of constipation varying from 2 to 4 days before normal stools appeared In the treated cases there was little variation in the clinical picture The following is an example

An epileptic imbecile aged 27 First symptoms of illness March 5, 1941 Passed frequent loose motions containing blood and mucus Rise of temperature to 103 2° F (see chart) Pulse rate 72–100 Respirations 18–20 Complained of tenesmus M & B 693 one tablet 4-hourly given On the 6th passed only one loose motion containing blood and mucus No complaint of tenesmus Highest temp 101 8° F On the 7th much improved Had one loose motion containing mucus only Highest temp 99° F On the 8th no further symptoms Received 10 g M & B 693 altogether *B dysenteriæ* Flexner W present in stools

The first 2 cases in this series did not receive treatment by M & B 693, and though they were obviously inadequate in number for purposes of comparison the course of the disease in them did differ greatly from that in the treated cases One made a good recovery after exhibiting typical dysenteric symptoms for nearly two weeks The other (a low-grade epileptic imbecile) died after an illness lasting five days

Of the 14 patients who received chemotherapy specimens of bowel material were taken for examination before treatment was begun from the first 8 All gave positive results 5 being found to be infected with *B dysenteriæ* Flexner and the remainder with *B dysenteriæ* Sonne In the subsequent 6 cases treatment was instituted immediately symptoms appeared Specimens for examination were taken at varying periods afterwards, but only in one instance when this was done within 24 hours was a positive result obtained *B dysenteriæ* Flexner being found All patients in this group exhibited typical dysenteric symptoms similar to those shown by the earlier cases

Dysentery bacilli were never found in any specimens taken for examination later than 36 hours after the beginning of treatment with M & B 693 Repeated examinations on all cases treated have so far been entirely negative The specimens for examination were taken by means of rectal swabs In 2 patients there was a recurrence of symptoms of mild degree 5 days and 14 days respectively after the cessation of symptoms but it could not be confirmed bacteriologically that these were either relapses or reinfections They were treated as before with disappearance of symptoms within 24 hours

CONCLUSIONS

Excellent clinical results were obtained by treating Flexner and Sonne bacillary dysentery with M & B 693 The results in the main agree with those obtained by Reitler and Marberg[1] at the Government Isolation Hospital Haifa

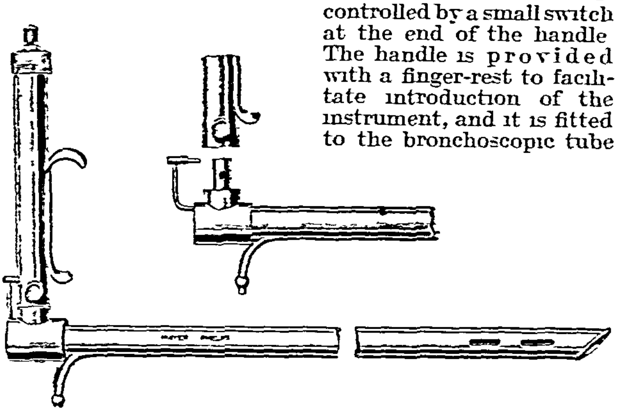
Repeated bacteriological examinations on bowel material from all patients treated have been negative for the presence of dysentery bacilli Further investigations will be made periodically, and if the negative findings are maintained it is evident that the likelihood of patients infected becoming carriers is much reduced by this method of treatment

I am indebted to Dr J T Duncan director of the Winchester laboratory of the Emergency Public Health Laboratory Service, who carried out all the bacteriological investigations and to Dr C J Thomas, principal medical adviser of the Hampshire Joint Mental Health Institutions Committee for permission to publish this article

New Inventions

AN EMERGENCY BRONCHOSCOPE

THE bronchoscope illustrated was designed for bronchial aspiration and insufflation of oxygen in cases of emergency when the facilities of a bronchoscopic clinic are not available The battery for lighting is a dry cell (2 8 v) contained in the handle and the current is controlled by a small switch at the end of the handle The handle is provided with a finger-rest to facilitate introduction of the instrument, and it is fitted to the bronchoscopic tube by means of a screw so that it can readily be removed for sterilisation The bronchoscopic tube is sterilised by boiling and the handle and light carrier by alcohol The built-in tube is used for the insufflation of oxygen and it can be connected to a cylinder by rubber tubing and the gas allowed to flow at the rate of 1 litre a minute The model illustrated is 40 cm long and 10 mm in diameter but the tube can be made in varying lengths and calibre as desired The apparatus is not meant to replace the accepted patterns used in routine practice



The bronchoscope has been made for me by Messrs Mayer and Phelps Ltd

JOHN E G MCGIBBON, M B Lond , D L O ,
Squadron-Leader R A F

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[1] Reitler R and Marberg K *Brit med J* 1941 1, 277

INGROWING TOENAIL

H C WARDLEWORTH NUTTALL
FRCS, FRCSE, DPH
SURGEON TO THE LIVERPOOL ROYAL INFIRMARY

The ætiology of ingrowing toenail has often been misunderstood in the published accounts, and its various effects have been emphasised rather than the essential cause *Even the title is a misnomer, for there is no* ingrowth of the nail The essential ætiology is summed up in two words tight shoes If tight shoes are worn for long a linear ulcer develops from lateral pressure along one or both sides of the nail, usually of the big toe (fig 1A, B and C) Dirt and excessive sweating lead to infection, and overgrowth and swelling of the nail fold follow from venous stasis and œdema (exuberant granulations), this is often accompanied by a fœtid discharge and much pain and disablement Temporary relief may be gained by cutting away the edge of the nail but the symptoms promptly return as the nail grows again Up to a certain stage the condition *may be cured by palliative measures and by wearing* properly fitting shoes, but in many cases these measures fail, largely because the patient persists in wearing tight shoes The following operation gives a radical cure with a minimum of mutilation, and the results allow the patient to go on wearing the shoes which, it seems, are irrevocably decreed by fashion

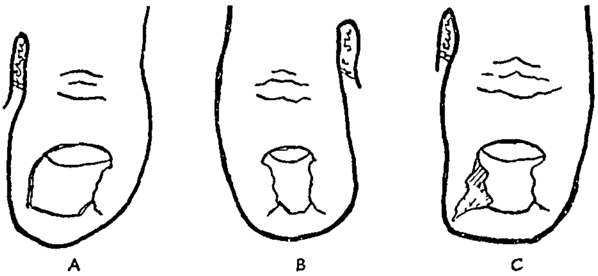

FIG 1—Ingrowing toenail (A) unilateral, (B) bilateral, (C) bilateral with extension

OPERATION

The most convenient position for the foot is flat on the table, and the operator stands at the end of the table The skin of the forepart of the foot having been painted with iodine, local anæsthesia with 1% Procaine is obtained by subcuticular and deep subperiosteal injections over the area indicated in fig 2 When the lateral injections have produced some degree of nerve block the needle is passed gradually under the nail, infiltrating its bed The toe is next fixed by means of a tissue-forceps held by the assistant (fig 3A) It is never wise to allow the toe to be fixed by hand, because however much care is taken the knife is apt to slip and even an expert surgeon may find himself operating on his assistant Incisions follow the dotted lines in fig 3A, clearing any gran tion tissue or lateral extension of it The flap mus dissected up almost as far as the joint line, and incision along the sides of the nail and around the should be carried well down beyond the limits of *nail, and even beyond the tip of the phalanx* The small digital arteries at the sides of the flap are secured by torsion, ligatures tend to pull off The flaps being drawn aside (fig 3B), the nail is dissected from its bed from the free edge upwards, particular care being taken to excise the whole of the matrix at the upper end Unless this is done completely tiny pieces of nail may grow again at the upper angles later, they cause no trouble but spoil the cosmetic effect If the flaps have been properly undercut it will be found that the raw area can nearly always be completely covered, even if it cannot the small area left rapidly skins over The sutures should be of thick silkworm inserted some distance from the margins of the flaps drawn tight with care, otherwise they will cut thro Four usually suffice (fig 3C) A simple dressing of a p of Vaseline gauze the size of a postage stamp, cov with dry gauze and wool, completes the operation patient is allowed to go home and returns a week later the removal of the sutures By this time he or sh usually walking fairly well and within two weeks of operation is back at work Occasionally healing delayed for two or three weeks owing to the gr infection present Drainage is free however, and end-result is as good in these cases as in those wh heal at once

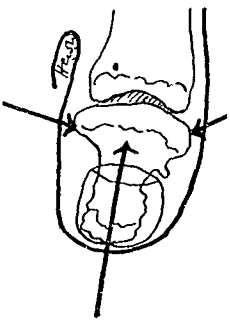

FIG 2—Sites for injectio anæsthetic (arrows)

The operation is radical yet does not shorten the at all, and sensitive patients who wish to wear be shoes are still able to appear with a full complement painted nails by depicting one on the skin The s operation can be used for cases of onychogryphosis avoids the risk of infection of the bone which is alw present when amputation is performed through the di phalanx—a risk which has induced some writers advocate removal of the distal phalanx altoget Although a minor operation its technique is tricky, it is more difficult to perform than amputation disarticulation

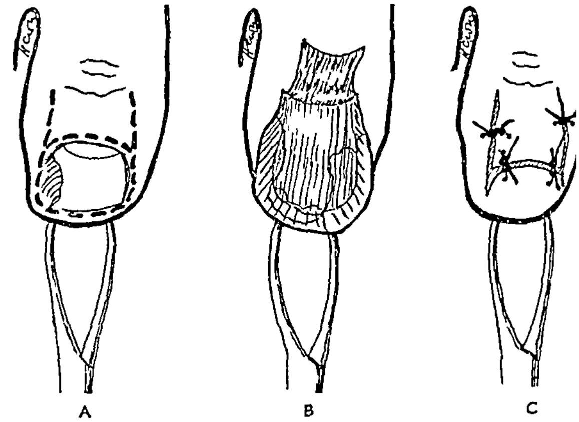

FIG 3—Operation (A) Incisions (B) Elevation of flaps a excision of nail (C) Flaps sutured

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MINISTRY OF HEALTH —The Minister has made the follo acting appointments Mr J C Wrigley, deputy secretar the ministry, Mr E G Bearn, under secretary in gen charge of the preparatory and operational war activities of ministry other than those associated with the Emerge Medical Service, Mr T Lindsay to be a principal assis secretary, Mr P N R Butcher to be an assistant secret and Mr Howell E James to be chief general inspector

THE LANCET

LONDON SATURDAY, JULY 26, 1941

MENTAL FITNESS OF U S RECRUITS

A RECENT advertisement called for men and women ined in occupational, vocational or educational chology to enlist in the British Army for the work selecting personnel This betokens a somewhat dy recognition of the assistance to be obtained m psychologists, and of the fact that the soldier's ntal qualities are at least as important as his ysical in estimating his efficiency, or placing him the job where he will be most useful Examination mental fitness has hitherto had far less attention an the physical examination of recruits , it is more fficult to perform, more difficult to assess, more fficult to check, and therefore much more difficult trust The doubts and delays which have here mpered its reasonable application, except in special stances, are now showing themselves in the United ates, where our tribulations of 1939 are being peated There the psychiatric problem has been lly recognised, and excellent instructions have been rculated for the guidance of physicians examining ecruits[1] , but art is long (especially the psychiatric rt) and time is fleeting, and 50 men a day have to e put through each neuropsychiatrist's sieve An formative account of how this is being done comes rom the Boston area[2]

The physicians concerned have a lively sense of hat the problem meant to the United States last me 2% of the men admitted to the army in 917–18 were found to be suffering from neuro-sychiatric disabilities, hardly any of which were due o war service and most of which had begun at least ive years before , a third of these men had some egree of mental deficiency, a sixth were neurotic, and nother sixth were classified as drug addicts, alcoholics r "constitutional psychopathic inferiority" , and y 1927 almost half of all the cases receiving treatment or disorders attributable to war service were neuro-sychiatric cases Each such case has cost approximtely 30,000 dollars to date Nobody wants to incur uch avoidable burdens this time, but there are more eople to be examined under "Selective Service" han could be given the thorough psychiatric overhaul hat might be desired A compromise has been rrived at Men are examined in the first instance y general practitioners (the local board) , dubious ases can be referred to the specialists of the medical dvisory boards (of which there is one to each ten cal boards) , all men approved as A1 at this stage re called up and examined by the medical induction oards, which are the final barrier before actual ntrance into the army On this board there are a edical director from the A M C , and (in the Boston rea, which is presumably typical) five civilian neuro-sychiatrists and a psychologist (non-medical), the ther civilian specialists being a clinical pathologist, n oral surgeon, an otolaryngologist, an ophthalmo-gist, an orthopædic surgeon, a general surgeon and three physicians The allowance of neuropsychiatrists is therefore generous but not excessive The number of men examined daily by the induction board has varied from 100 to 250 In a given month (February, 1941) a third of all rejections were on neuropsychiatric grounds, and they amounted to 5% of all candidates examined by the induction board If the medical director had not refused to sanction some of the neuropsychiatrists' recommendations for rejection, the number of candidates rejected on these grounds would have been more than half as high again The examination by the neuropsychiatrist took from five to ten minutes, the length of time spent on each case being restricted by the number of available psychiatrists and by the necessity to deliver the candidates to the reception centre on the day of induction In justifying this expenditure of time to those who say it is too little, as well as those who say it is too much, four general principles are stated

(1) Individual interests must for the time being yield to the collective interests of the nation

(2) The army needs men sound in mind and body, it is not to be considered a corrective institution for psychopaths

(3) There are 17 million eligible men from whom to choose an army of 2–4 million

(4) The admission of undesirable candidates to the army not only decreases its efficiency but increases the burden on the nation through supporting these men by the army or by the veterans (pensions) bureau

The first of these propositions will command universal assent , the second is flouted by those misguided patriots among examining doctors who can't see why "a bad hat should get away with it" , the third can arouse in our breasts only envy As for pensions, the Americans have prudently set up a dam by providing[3] for further examination and rejection of recruits, if necessary, without providing governmental care or treatment for neuropsychiatric disabilities incurred before entrance into the army or within the first six months after entrance On this score the difficulty is not to make a sensible enactment but to prevent its being set aside by clamour or political pressure

It is instructive to read the proportions of men rejected for the U S Army on neuropsychiatric grounds by the induction board after the local board (which apparently too seldom invokes the aid of its advisory neuropsychiatrist) had passed them A1 The local board's neuropsychiatric rejections numbered 209 out of 4405 candidates 16% of rejections were for mental deficiency, 5% for insanity, 54% for neuroses (including effort syndrome) and abnormal or psychopathic personality, 7% for drug addiction, stammering or enuresis, 4% for epilepsy, and the remaining 14% for neurological disorders But the medical director on the induction board often (159 times out of 245 in the Boston area during February) quashed the neuropsychiatrist's rejection He did this most often where mental deficiency constitutional psychopathic inferiority, schizoid personality, psychoneuroses, post-traumatic syndromes and epilepsy were the diagnoses, and of 11 men recommended for rejection on account of effort syndrome he reversed the decision in every case It seems that the army doctor was less particular than the civilian Light is cast on this by the official plan for "prehabilitation"

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[1] See *Lancet* May 17 1941, p 633

[2] *New Engl J Med* 1941, 224, 890

[3] United States Army Regulations, Nov 20 1939, para 2 C (1)

Medical Societies

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE

AT the annual general meeting of this society on July 17, with Sir RICKARD CHRISTOPHERS, F R S , the president, in the chair, a paper on the present position of

Yellow Fever in Africa

was read by Dr G M FINDLAY Recent events, he said, had clearly demonstrated the specificity of the mouse-protection test for immunity to yellow fever in the blood of human beings, and had shown that the area which had been marked out by this test as the endemic zone in Africa did coincide closely with the actual distribution of yellow-fever cases The endemic zone now extended from the west coast of Africa just to the north of Cape Verde, along the southern border of the Sahara to the Anglo-Egyptian Sudan , thence bending southwards it crossed the White Nile and extended as far east as, and quite possibly beyond, the Sudan-Abyssinian border , the eastern border of the area extended southwards through the western part of Uganda, thence diagonally across the Belgian Congo to the mouth of the Congo River Any area in this zone was liable to be the site of an explosive outbreak of yellow fever Three epidemiological types of yellow fever could be recognised in Africa—urban epidemicity, rural epidemicity and rural endemicity The first type was carried on by *Aedes ægypti* and was apparently due to the importation of yellow fever from the country into the town in the second type it was impossible to exclude *A ægypti* as a vector since this mosquito was so widely distributed throughout rural Africa The factors favouring rural endemicity were as yet unknown , it seemed unlikely that infection could be maintained solely by the man-mosquito cycle Although 20% of wild monkeys in the endemic zone were known to contain immune bodies in their blood it was not considered likely that monkeys were sufficiently numerous to carry on infection in the absence of man The possibility of other alternative hosts must therefore be considered So far no wild animals other than one ostrich had been found to possess immune bodies in their blood, although in Colombia marsupials and certain other wild animals had been found to possess an acquired immunity The sera of numerous domestic animals in Africa—cows, sheep and goats, horses, pigs, dogs and a camel—had been found to contain virucidal bodies against yellow fever The specificity of the mouse-protection test as applied to animals required further investigation, but the results so far obtained were suggestive The possibility of a reservoir other than the mosquito but with a longer life could not be altogether excluded The two chief problems in relation to yellow fever in Africa were the more efficient control of yellow fever in the endemic zone and the prevention of the spread to East and South Africa with further extension to India and the Far East Infection could be carried either by the infected mosquito or by the infected human host Owing to the greater rapidity and the greater volume of traffic there was now much more chance of the virus spreading from the present endemic area and being carried either by plane, motor-car, ship or train to non-endemic areas If infection reached East Africa there was at present a considerable chance of it passing across to Southern Arabia and India, since the dhow traffic was a replica of the shipping which during the 17th and 18th centuries carried yellow fever between Africa and America

The methods of preventing the extension of yellow fever comprised more concentrated attacks on the breeding of mosquitoes, more efficient control of aerodromes and of people travelling by car from endemic to non-endemic zones In immunisation was to be found a most efficient means of prevention, and it was time that regulations were promulgated to forbid the residence in any yellow-fever area of all non-Africans who had not been immunised against the disease In certain selected areas mass immunisation of the whole population must be considered At present the greatest difficulty in the efficient control of yellow fever lay in the multiplicity of authorities, each of whom was concerned solely with the condition of affairs within its own borders Until there was greater correlation of administrative effort yellow fever would continue to be a menace to the health of Africa and of the whole tropical world

Dr HUGH SMITH (International Health Division of the Rockefeller Foundation), who had recently been in charge of yellow-fever investigations in Colombia, gave a brief account of the present position in South America In the past three years there had been no instance of an outbreak transmitted by *A ægypti*, although there had been many outbreaks of jungle yellow fever In Colombia yellow fever recurred again and again at intervals of one or more years in the same isolated valleys, often within a short distance of a previous outbreak Intensive studies had been made of all outbreaks and so far no other arthropod other than mosquitoes had been found infected On eight occasions, however, virus had been isolated from wild hæmagogus mosquitoes It was very difficult to account for the continuance of yellow fever in these areas, some of which were almost uninhabited A high percentage of monkeys' bloods were positive for yellow fever thus strongly supporting the suggestion that yellow fever could maintain itself in the absence of man Although yellow-fever virus did not pass from one generation of *A ægypti* to another through the egg it was possible that this might happen with other mosquito vectors and this question was now being investigated The absolute impossibility of diagnosing yellow fever on clinical grounds was stressed In eradicating yellow fever it was essential to combine immunisation with eradication of *A ægypti*, but it was not always easy to immunise a high proportion of the population Efforts were now to be undertaken to eradicate *A ægypti* from the whole of the Amazon Valley

Colonel F P MACKIE drew attention to the difficulties imposed on air travellers by the differing regulations in force in different countries Some countries accepted a certificate of non-exposure for 6 days , others insisted that if a person had been immunised against yellow fever he could not be admitted for 10 days , others extended the period to 21 or 23 days —Colonel THOMAS MENZIES asked if combined vaccination against smallpox and yellow fever was recommended It had been practised in certain French colonies —Dr H S STANNUS said he had never seen a case of blackwater in an African, although such cases had been recorded He suggested that they might in reality have been cases of yellow fever —Prof T F HEWER drew attention to the difficulty in diagnosing cases of acute and subacute liver necrosis from yellow fever Such cases, which were not uncommon, might in Africa be associated with black vomit

Dr FINDLAY, in reply, said that it was now generally agreed that people who had been inoculated against yellow fever were immune to the bite of an infected mosquito 10 days later There was no scientific justification for imposing quarantine periods of 21 days or over —Dr HUGH SMITH concurred It was impossible for anyone who had lived in an endemic zone to say that they had not been exposed to yellow fever and therefore certificates of " non-exposure " granted by any country in the endemic zone were farcical So long as immune bodies could be shown to be present in the blood by the mouse-protection test there was no need for reimmunisation If it was impossible to have a mouse-protection test carried out it was advisable to be reinoculated every two years, although there was considerable evidence to show that anyone who had ever had immune bodies in his blood was immune for a considerable number of years Combined inoculation by scarification of vaccinia and yellow fever was not favoured Dengue and yellow fever gave no cross immunity

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INDEX TO THE LANCET, VOL I, 1941

The Index and title-page to Vol I, 1941, which was completed with the issue of June 28, will be ready shortly A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W C 2 Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now principle, long used in bacteriology, is to freeze the plasma, and then, in a high vacuum, to distil off the water vapour into a condenser cooled to a much lower emperature with, say, solid CO_2 This has the dvantage of producing a really dry plasma—perhaps ess than 0 1% residual water—in the form of a light powder Several special methods have been devised on this basis **Flosdorf** and **Mudd**'s "lyophile" pro-ess[4] used solid CO_2 dissolved in methyl cellosolve as the cooling agent, their "cryochem" process[5] enabled arger quantities to be dealt with more efficiently by utilising a chemical absorber of water vapour (calcium ulphate) Both methods suffered from the disad-vantage of being discontinuous, every so often the process had to be stopped to get rid of the condensed water, and then the apparatus had to be re-sterilised and the temperature gradient regenerated To over-come this **Flosdorf** and **Mudd**[6] introduced their "desivac" process, using a specially designed oil-pump, with this up to 100 litres can be dried at a time One of the major difficulties of large-scale drying is the maintenance of sterility, and if the dried product is obtained in bulk contamination is liable to occur while it is being transferred from the apparatus to the storage containers In the small-scale apparatus the drying is actually carried out in the final container which is sealed off when drying is complete **Folsom**[7] makes use of a series of units each drying 250–500 c cm of plasma by a lyophile technique, he claims that it is efficient and relatively inexpensive to set up, a ten-unit set costing about £60, but the special containers needed can only be used once **Greaves** and **Adair**[8] overcame this objection by having a large drying chamber in which stacks of plugged sterile tubes of plasma or serum could be placed and drying actually took place in the plugged tubes The principle of their apparatus was also high-vacuum condensation drying but they used a methyl-chloride refrigeration plant for the necessary cooling and combined it with a highly efficient system of temperature control to obtain the optimum condi-ions This type of apparatus is relatively expensive o instal but once set up is claimed to be almost automatic As much as 5 litres of serum could be dried at a time and modifications of this plant are said o be able to handle even larger quantities Serum ried by this method has been found[9] on reconstitu-ion to maintain its normal physicochemical proper-ies, especially osmotic pressure, but it gives an palescent solution thought to be due to some change, not apparently harmful, in the serum lipids **Brown** and **Mollison**[10] have reported satisfactory clinical results with serum dried in the Greaves-Adair apparatus, but they noted that 5 minutes' vigorous shaking with water at 40° C was necessary to get the powder to dissolve at normal strength, and for concentrated solutions it was best to prepare the solution overnight

The ideal has clearly not yet been reached, and yet another principle is being inquired into This is "spray drying," as used on an industrial scale for the preparation of dried milk Here warm air is used to blow the liquid through fine jets into a chamber, the water evaporates rapidly from the fine particles and is carried away on the air-stream, the dried powder falling to the bottom This produces a fine easily soluble powder of the type required It was probably not applied to plasma drying because of the relatively large-scale experiments needed and the difficulties of effective sterilisation, but research is proceeding along these lines in at least one centre and there is evidence that the difficulties can be overcome

When the method has been chosen, is plasma or serum to be dried? Plasma has so far held the field because it is a by-product of the blood-banks and because of adverse clinical reports on the use of serum The drying plants described will deal with the products of 100–500 pints of blood at a time, and in fact must be fed with these large amounts to work economically and efficiently It is clear that only the large blood-banks can provide such quantities and that the blood will be specially drawn for producing serum or plasma In this case it is far simpler to produce serum from the start—it is easier to prepare, many filtration difficulties are eliminated, and thorough drying is easier in the absence of citrate Satisfactory clinical reports of the use of serum have come from this country[10] and America,[11] and the Canadian Government have chosen serum to send to this country and for their army medical services **DeGowin** has rightly said that "the object of any service supplying blood and blood products should be to make them available as far forward as possible" It is safest in the present war to assume that the forward zone may be anywhere in the world A properly dried serum can be sent anywhere with the minimum of trouble and stores can be accumulated for emergencies without special expensive storage plant It is to be hoped that agreement will soon be reached on the best method to be employed and that adequate quantities of dried serum will then be available for use anywhere

Course in Industrial Medicine at Sheffield—The first of a series of postgraduate courses in industrial medicine arranged by the faculty of medicine of Sheffield University was held on July 4–6, at the Royal Hospital and Royal Infirmary Forty doctors were present when Dr J C Bridge, senior medical inspector of factories, gave the opening lecture on the medical aspects of factory legislation Dr C L Sutherland, chief medical officer of the Silicosis and Asbestosis Medical Board, showed X-ray films of silicosis, asbestosis and byssinosis, and Dr Henry Blyth another officer of the board, silicotic lungs, Dr A I G McLaughlin, a medical inspector of factories, demonstrated the effects of the inhalation of non siliceous dusts in industry, Mr H N Boddy, Ph D (Safety in Mines Research Board) showed quartz dust and silica particles in dried lung tissue, Miss May Smith, D Sc (Industrial Health Research Board) lectured on fatigue, boredom and monotony in factory life, Dr Rupert Hallam discussed occupational dermatitis, Mr E W Murray, director of the Home Office Industrial Museum, lectured on ventilation and heating in factories, Dr J L Grout demonstrated the X-ray appearances of the wrist bones of pneumatic tool-workers, and Dr John Wilkie typical bone changes in fluorine osteosclerosis, and Mr A B Nutt, showed apparatus used in industry to protect the eyes During a visit to Messrs Edgar Allen and Co the class was shown the process of welding and the details of the manufacture of steel castings, and the practical measures adopted to prevent the inhalation of silica dust given off during the fettling of the castings

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[11] Levinson S O Robovits F E Jun and Necheles H *J Amer med Ass* 1940 115, 1163

of registrants, in which concern is shown about the high proportion of rejects

> "To date the number of deferments and rejections has been large, so great indeed that considerable concern is evident in Selective Service, in the Army, and in the country as a whole It is estimated that less than 20% of the 16,500,000 registrants are being classed available for general military service Selective Service local boards at the present time are classing 20% of those physically examined in class IV-F, as being totally disqualified for military service, 12% in class I-B, as being fit for limited military service only, and 68% in class I-A, as being qualified for general military service Of the 68% classed as being qualified for general military service and sent to the Army Induction Station, about 12% are being rejected because of physical, mental, moral, administrative and other reasons Criticism has been abundant and bitter and is on the increase "[4]

A plan is therefore put forward to make men aware of the physical standards required by the army, and to encourage them to seek medical advice in advance in order to make themselves fit to serve Such men will then bring to the examining board a certificate of "prehabilitation" the obtaining of which "will tend to indicate character and the possession of desirable qualities—intelligence, forethought, initiative, fitness and a desire to serve—all of which must go into the making of a good soldier It should serve to diminish the number of rejections, with all the attendant humiliation and inconvenience involved" Evidently too high a standard of fitness for army service may have unwelcome effects on the civilian population But it has to be remembered that many unsuitable men cannot be detected as such until they are in the training camp

There is agreement among the American neuropsychiatrists who have lately written on the subject,[5] in the light of their experience on induction boards, that a great deal can be done by an experienced neuropsychiatrist in five to ten minutes of well-conducted interviewing, and that another ten minutes would not give much more that is practical and necessary for a decision The testing of intelligence may be an essential part of the procedure It could not be carried out by the physician limited to ten minutes for his whole examination, but must be regarded as an additional investigation The Boston induction board has had the advice of a group of Harvard psychologists[6] Group tests were looked on as impracticable "for both administrative and technical reasons" These objections are well known here, but it is surprising that they were regarded as decisive against the method The tests used by the Boston psychologists were, however, less suitable to group testing on the whole than the progressive matrices test of RAVEN which has been much employed in this country The subjects were referred by the psychiatrist as suspect of being below the mental age of 12 years (the critical level of capacity set by the U S Army recently, but questioned by the writers as too high) though it is well recognised that the basic question is not mental age but "is this man equal to the demands that will be made on him by the army?" Very brief examination by the psychologist disposed of the few candidates who were below the 10-year or above the 14-year level, those in between required more attention Self-administered tests,
with printed instructions (comparable to those whi
have also been widely used in the Army here), w
found unsatisfactory in Boston because many of t
subjects were unaccustomed to reading and w
therefore handicapped in grasping what they had to
The examiners say that they felt keenly the lack
non-verbal material that would be adequate and n
time-consuming, probably our experience with n
verbal tests could be of use in this connexion T
Boston psychologists advise flexibility in the use
individual tests "It is important," they say, "
have clinicians who are qualified to use their o
judgment concerning the techniques that will ena
them to give a reasonably accurate approximati
of intellectual levels" Out of 5100 men pass
through the induction station during 16 days, 1
were referred by the neuropsychiatrist for psych
metric examination, 79 of these were given a rat
of less than 12 years, 120 a rating of 12 or over T
regular psychological examination of recruits
deferred until they arrive at the reception stati
where a fairly elaborate series of tests is applied

DRIED PLASMA AND SERUM

The Ministry of Health's regional blood-transfus
services are now producing significant quantities
blood, plasma and serum, and are planned on a sca
to provide these materials in excess of local needs
some of the regions have a surplus already Accordin
to *Science* of June 13, our American colleagues think
in terms of a hundred million quarts What is to be
done with these large volumes, little of which will b
required for use immediately after collection? In thi
country it is likely that liquid plasma or serum wil
always be preferred since it is available for instant use
but for overseas or for reserve stores intended to kee
more than a few months dried plasma or serum has grea
advantages, it is stable, transport weight and spac
are relatively small, and, so long as there is a prope
supply of pyrogen-free distilled water at the receivin
end, it can be readily reconstituted by simple solutio
in distilled water Numerous methods for preparing
dried plasma have been described, they all aim
at distilling off the water without denaturing
the proteins and in such a way that the produc
is easily soluble, sterility must be maintaine
throughout

The most obvious method is simple in-vacuo distilla
tion, allowing the water to be boiled off at a tempera
ture well below 37° C There is usually an arrange
ment which allows the liquid plasma to be run into
the distillation chamber in a continuous stream o
spray without stopping the process An efficien
system of this type was described by AYLWARD,
MAINWARING and WILKINSON,[1] but although the
product was satisfactory they found the method
unsuitable for large-scale production HARPER
ESSEX and OSTERBERG[2] used an essentially similar
technique which they incorrectly call "spray distilla
tion", their account[3] of clinical experience with
their dried product brings out one of the disadvantage
—the residual water content may be as high as 8%,
which diminishes its keeping qualities A second

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[4] J Amer med Ass 1941 116 1777

[5] Aita, J A *Proc Mayo Clin* May, 1941, p 294 and 307

[6] *New Engl J Med* 1941, 224, 898

[1] Aylward, F X, Mainwaring, B R S and Wilkinson, J F *Brit med J* 1940, 2 583

[2] Harper, S B, Essex H E and Osterberg, A E *Proc Ma Clin* 1940, 15 689

[3] Harper S B Osterberg, et al *J Amer med Ass* 1941, 11 1760

may regress and disappear, and that symptoms tend to undergo spontaneous remission. Certain general conclusions may nevertheless be drawn. Operative excision of a deposit will always promptly relieve the acute bursitis to which it has given rise, and symptoms do not tend to recur; operation may be performed under local anæsthesia, requires only a few days' hospitalisation, and should be followed by return to work with full movement in 3 weeks. Irrigation, while it relieves an acute bursitis and clears the bursa of suspended calcareous debris, does not necessarily affect the initial tendinous focus which may recur, nor should it be undertaken in outpatients. Diathermy and short-wave therapy are only to be regarded as ancillary and postoperative forms of treatment, and immobilisation alone is pernicious because of adhesion formation. If special surveys of this type become popular the management of the case with radiographic findings but no symptoms will assume some importance. Bosworth advocates routine excision of large deposits, since they inevitably cause trouble at some time; the smaller ones should be observed occasionally. What is clear is that calcification in the tendinous cuff of the shoulder-joint capsule is a continuous and often self-limiting process for which it can no longer be asserted that operation is necessary on the results of a single observation.

A LONG SYMBIOSIS

The Reading Pathological Society met for the first time on July 13, 1841, at the then two-year-old Royal Berkshire Hospital, and today the two centenarians are still cronies. The society has always met at the hospital, and the hospital at once gave it free use of the library on condition that all the books "whether already purchased or added in the future" should be the property of the hospital. The enterprising and lively society soon realised how important a library was for the distribution of knowledge, especially perhaps to those working in the comparative isolation of country practice, and by 1883, when a new library was opened in the west wing of the hospital a valuable reference collection had been amassed largely through the society's efforts. At the commemorative meeting of the society on July 17, in recognition of this, the Rev. Harvey Thursby, chairman of the hospital board, formally presented the books to Dr. George Halpin, president of the society, as a centenary gift. Dr. G. O. Lambert, who gave the centenary oration, chose as his subject "The Reading Pathological Society—One Hundred Years in Retrospect" and illustrated his address with pictures of past members, the society's crest, and the president's badge, an effigy of Imhotep designed by the late Dr. Jamieson Hurry. Speaking of the function of medical societies, Raymond Crawfurd once said that men's minds are massaged by rubbing against each other. The Reading Pathological Society has a record of a hundred years of such beneficial friction behind it and we have every confidence that it will continue to rub along.

GLYCOGEN DISEASE OF THE LIVER

Some confusion still exists over the biochemical and clinical findings in glycogen disease of the liver, partly owing to conflicting data in the numerous cases reported, and partly to a failure to differentiate clearly between the various diseases which may give rise to excessive glycogen storage in the liver. Ellis and Payne[1] consider the following biochemical findings to be typical: a low fasting blood-sugar which fails to rise after the injection of adrenaline; a delayed fall in blood-sugar after the ingestion of glucose; and a rise in blood-sugar which sometimes occurs in the half hour after the ingestion of lævulose. The glycogen and cholesterol of the blood are raised and acetonuria is found. Mason and Andersen[2] tried to classify the reported cases under two divisions—cases in which the main deposit of glycogen is in the liver, and those in which it is mainly in muscle, including that of the heart. They have singled out subgroups under these headings according to the degree of hepatomegaly and the presence or absence of fructosuria or galactosuria, cases of abnormal insulin regulation including diabetes mellitus, and cases in which there is an apparent inability to transform glycogen to dextrose in the liver. They suggest that glycogen storage disease of the liver should include the cases in which the chief deposit of glycogen is in the liver, and that "von Gierke's disease" should be employed only for cases where excess deposit of glycogen in the liver results from inability of the liver to break down glycogen. The cause of excessive storage of glycogen has excited considerable controversy. Von Gierke himself considered that the liver glycogen was persistent fœtal glycogen which is comparatively stable. Endocrine theories incriminating the adrenals, pituitary or pancreas have been put forward. Hyperinsulinism certainly would account for the low fasting blood-sugar or the occasional attacks of hypoglycæmia, but it does not explain the acetonuria. Ellis and Payne and others have said that the high dextrose-tolerance tests suggest an abnormally slow rate in the storage of sugar as glycogen, and that the enzyme responsible for glycogen storage and breakdown is reversible. In these circumstances it would be difficult to explain how the glycogen was originally stored in the liver in such large quantities. Mason and Andersen have reported enzyme and chemical studies in an affected child from birth until death at the age of 2 months. They think their case was due to a defect in the reversible enzyme system in the liver, whereby the intermediate stages in the conversion of glycogen to dextroses were interrupted. They point out, moreover, that as carbohydrate metabolism is associated with a complex system of enzymes, the concept of a single enzyme "glycogenase" should be discarded. Their theories and experimental evidence have gone far towards elucidating the cause of the disease and give a more satisfactory explanation of the divergent biochemical findings than any other.

TOXICITY OF SULPHONAMIDES

In man the most common toxic effects of the sulphonamide drugs are on the blood, so that it seems more reasonable to measure their toxicity by their destructive action on the blood of mice than by determining the lethal dose. Richardson[1] has used such a method in testing the toxicity of four of these drugs and has shown a relationship between their chemical structure and hæmolytic activity. For each drug he incorporated graded amounts in the diet of 50–60 mice for 14 days and then studied the changes in their hæmoglobin and reticulocytes, and in the formation of abnormal blood-pigment. He also investigated the relation of the blood concentration of the drugs to intake and the distribution between plasma and erythrocytes. The minimum intakes of the four drugs required to produce hæmolysis expressed in g. per kg. per day, were: sulphanilamide 0·12, sulphapyridine 0·31, sulphathiazole 0·52 and sulphanilylguanidine 1·3, so that, for the same dosage, sulphanilamide was twice as injurious to the blood as sulphapyridine, four times as injurious as sulphathiazole and nearly eleven times as injurious as sulphanilyl-guanidine, which is poorly absorbed from the gut. There were striking differences in the distribution of the drug between plasma and cells. With sulphanilamide and sulphanilyl guanidine most of the drug was in the cells, with sulphapyridine the distribution was more nearly equal, whereas with sulphathiazole the greater part was in the plasma. It was found that the minimum concentrations in the erythrocytes required to produce hæmolysis were,

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[1] Ellis, R. W. B., and Payne, W. W. *Quart. J. Med.* 1936, 5, 31.

[2] Mason, M. D., and Andersen, D. H. *Amer. J. Dis. Child.* April, 1941, p. 795.

[1] Richardson, A. P. *J. Pharmacol.* May, 1941, p. 99.

Annotations

PERIODIC DULLNESS

Anyone who has lived with epileptics must realise that many of them suffer from periods of dullness, the characteristics of which are unusually slow response, failure of memory, especially for recent events, and a mild degree of confusion Not uncommonly there is a change of emotional tone The patient may be more irritable or more apathetic than usual But the main change is often in the intellectual, rather than the emotional sphere, and the school-teacher or the nurse reports that the patient "seems half dazed" Careful observation shows that in many cases these periods are self-limited, lasting perhaps for hours perhaps for some days They are not part of a general mental deterioration, they bear no relation to sedative drugs, and they are not pre- or post-fit phenomena How are we to explain them ? The most obvious thing is to class them as epileptic equivalents or variants and leave it at that In some cases one is led to suspect that the patient is suffering from repeated very slight attacks of petit mal, with constant interference with the stream of consciousness, and this can sometimes be demonstrated by getting him to read out loud when the little breaks in consciousness become obvious Short of these there may be serial attacks so slight as not to be clinically demonstrable Whatever their explanation, these dull periods are a very serious manifestation of the complaint Putnam and Merritt[1] give details of 10 cases in which periodic dullness was a prominent symptom They are able to correlate it with abnormal electric rhythm in the cortex, the abnormality usually consisting of slow square topped waves of the type associated with psychomotor attacks rather than with the wave and spike formation of petit mal attacks or absences They further show that it can be removed clinically and on the electroencephalogram by treatment with sodium diphenylhydantoinate (Epanutin) The evidence for the periodicity and self-limitation of the dullness in some of the cases they cite seems incomplete, and its disappearance at the same time as the removal of major and other attacks by drug treatment suggests that the dullness might be a direct outcome of the attacks Nevertheless, their clinical results are sufficiently encouraging to lead them to consider whether periods of dullness and slight mental confusion in subjects not liable to fits might be expressions of similar alterations in cortical rhythm and could be removed by similar means

CERTIFICATION OF INJURIES IN WAR-TIME

When war broke out local emergency committees had ready for distribution to all medical practitioners a memorandum from the Ministry of Health explaining how to issue certificates for the payment of "injury allowances" Doctors agreed to furnish these certificates without fee and in a memo just issued (Ministry of Health, No 248) revising these instructions the Minister of Pensions thanks them for their generous cooperation Under the Personal Injuries (Emergency Provisions) Act 1939 allowances are paid to those rendered incapable of work in two distinct categories—the allowance to be replaced by a pension where disablement is prolonged

War injury is defined as physical injuries caused by the discharge of any missile (including liquids and gas), the use of any weapon, explosive or other noxious thing, the doing of any other injurious act either by the enemy or in combating the enemy or in repelling an imagined attack by the enemy, or by the impact on any person or property of any enemy or allied aircraft or anything dropped from it

War Service injury is defined as any physical injury to a volunteer arising out of and in the course of the performance of his duties as a member of the civil defence organisation

Thus both war injury and war-service injury mea physical injuries only Injury to the brain or to t eyesight as a direct result of concussion, cases of sho originating from direct exposure to bomb explosion blast in which the incapacity for work starts from t time of the incident, collapse from heart failure as direct result of an air-attack and similar casualties ma be accepted as physical injuries The definition do not cover neurasthenia or similar sickness in which t symptoms are induced merely by apprehension and fea of enemy activity and a certificate should not be issu to these patients, if they are insured they are entitl to health-insurance benefits Insured persons incapab of work because of war or war-service injuries a disentitled to sickness benefit for incapacity arising fro that injury, but after 26 weeks modified sickness disablement benefit may be paid, while people who a injured while incapable of work because of some oth disability do not receive a war or war service inju certificate until the other injury ceases to be the cau of incapacity Injury allowances are administered the area officer of the assistance board, acting as age of the Ministry of Pensions

CALCIFIED DEPOSITS ROUND THE SHOULDER

Last year R L Patterson and P D Wilson[1] discuss the value of irrigation of the subacromial bursa in t treatment of the painful shoulder, while dramatic rel could often be obtained in attacks of acute bursitis the noted that the effects on areas of calcifying tendinit were not equally satisfactory A great part of th difficulty in estimating the results of treatment of calcified lesions in this situation lies in the lack of knowledge of the natural history of these deposits, and for this reason Bosworth[2] has studied the shoulders of 5061 presumably normal employees of the Metropolitan Life Insurance Company of New York over 3 years Radiography was always preceded by careful screening, since only by inspection during full rotation of the humeral head can every deposit be picked up and its fullest extent visualised Some degree of calcification was present in 2 7% of the total and was half as common again in men as in women, the age incidence rose steadily up to 50, when it fell off abruptly Half the cases were bilateral and the right side was affected twice as often as the left in the remainder No relation could be demonstrated between the deposits and focal sepsis, rheumatism or other disease, and the blood-calcium was invariably within normal limit Occupational incidence, however, was striking, in all age-groups typists were affected roughly twice as often as clerks, a finding that supports Codman's[3] views on the rôle of continued abduction in the ætiology of supraspinatus rupture and tendinous calcification Trauma did not seem to be causative, though it occasionally precipitated the onset of an acute bursitis As regards site, the deposits were found in the supraspinatu, infraspinatus and teres minor in that order of frequency and only occasionally in the subscapularis Repeated screening showed that deposits could accumulate gradually and disappear over a period of years without ever giving rise to symptoms In fact, only 70% o the radiographically positive cases developed symptoms during observation, but it was noticed that the larg plaques, 1 5 cm or more in diameter, invariably caused pain or acute bursitis at some stage Symptoms ranged from a mild occasional twinge to a disabling attac of acute bursitis, and the commonest complaint wa of nocturnal discomfort and limitation of abductio The difficulty in assessing the value of a particular li of treatment is associated with the fact that 30% o cases are asymptomatic, that all but the largest depo ay regress and disappear, and that symptoms tend to ndergo spontaneous remission Certain general conusions may nevertheless be drawn Operative excision a deposit will always promptly relieve the acute ursitis to which it has given rise, and symptoms do ot tend to recur, operation may be performed under cal anæsthesia, requires only a few days' hospitalisaon, and should be followed by return to work with full novement in 3 weeks Irrigation, while it relieves an cute bursitis and clears the bursa of suspended calareous debris, does not necessarily affect the initial endinous focus which may recur, nor should it be ndertaken in outpatients Diathermy and short-wave herapy are only to be regarded as ancillary and postperative forms of treatment, and immobilisation alone s pernicious because of adhesion formation If special urveys of this type become popular the management of he case with radiographic findings but no symptoms ill assume some importance Bosworth advocates outine excision of large deposits, since they inevitably ause trouble at some time, the smaller ones should be bserved occasionally What is clear is that calcification n the tendinous cuff of the shoulder-joint capsule is a ontinuous and often self-limiting process for which it can no longer be asserted that operation is necessary on he results of a single observation

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Special Articles

THE CASE FOR A NATIONAL HOSPITALS BOARD

G STEWART SMITH, M A (Admin), M D Manc

MOST writers on hospital policy seem to agree that ne form of regionalisation is desirable The latest ort in this direction, the Nuffield Provincial Hospitals ist, *which is an attempt to implement and extend the* ommendations of the Sankey Commission, is at sent only at the stage of discussing boundaries and eres of influence, *and it is by no means certain that* will have the necessary prestige and persuasive power break down the barriers which have hitherto pre- ited the full success of every coordinating scheme der the Nuffield scheme the voluntary and municipal spitals, within both the divisions and the regions, are ected to achieve a large measure of coordination and Central Hospitals Council is to be in charge of major s of policy and to be a supreme directing council the outset it has been decided to invite the provincial mbers of the British Hospitals Association to be a leus of this body which will in fact develop into a ovincial Hospitals Board This leaves unsolved two ge questions which are really the crux of the matter

Is there still a need for the two types of hospital to exist by side , if not, is a merger of the two systems desirable practicable ?

2 What is the best type of central controlling body for the spitals ?

A UNIFIED HOSPITAL SYSTEM

The efforts at coordination between the voluntary and unicipal hospitals have had only a small measure of ccess, mainly because of the essential independence of e units in the voluntary system and the absence of any al urge to combine The P E P report says, “ The mplete merging of the two systems, if it comes, will dently not be completed for a very considerable me ”, but public opinion has moved far since 1937 hen this report was published The voluntary hos- tals are coming to depend to an increasing degree on ntributory schemes and are pressing for further help m the rates—that is, they are becoming less dependent voluntary subscriptions and are getting paid for larger proportion of their work Under the Nuffield ust plan the local authorities will no doubt be expected pay for much of the cost of regionalisation both by a levy and increased donations The removal of the gma of pauperism from the local-authority hospitals ich the 1929 act brought about and their consequent reased use by a widening section of the community e helped to narrow the gap between the two systems large centres the differences between the type of per- admitted to the voluntary and municipal hospitals based not on income level but on the type of disease n which the patient is suffering, and these differences not sufficient to justify the maintenance of two tems It is often maintained that medical work, ecially medical research and teaching, flourish best in atmosphere of freedom found in the voluntary hos- ils, but it has yet to be proved that they cannot urish equally well under a unified hospital system

fter the war some increase of hospital accommodation r the pre-war level will be necessary and extensive uilding will have to be carried out The voluntary pitals, *who find difficulty* in keeping up with their sent commitments, can hardly be expected to provide expansion , on the other hand, if the programme is ned out by the *municipal hospitals* they will gradually rtake the voluntary hospitals and become the more ortant of the two systems It may be that the field scheme, which *would encourage* the hospitals to a for the division or region as a whole and is prepared ubsidise within the limits of its small income any ital, voluntary or municipal, which fits into this , will succeed, but to quote the P E P report again, e ultimate control will rest in the hands of those who these services, of those who pay for *them* and of e who provide them ” If the local authorities and a degree of representation proportional to their financial support, as seems likely, the coordinated service will become more and more municipalised In any case a merger cannot result in a completely voluntary service

The Minister of Health will presumably watch the development of the Nuffield scheme and if it succeeds might encourage regional planning by financial support He might do this by making a direct grant for hospital services, by taking hospital provision into consideration when making the block grant, or by defraying a proportion of the cost of any divisional or regional scheme of which he approved This would have the advantage of fostering regionalisation with a small measure of central control through finance while giving much local autonomy and leaving medical practice but little disturbed Any local schemes are bound to need financial aid, either from rates or from the Exchequer Rate aid would tend to bring into the scheme narrow municipal considerations and would also have the great disadvantage of levying the heaviest burden on the areas least able to bear it In this connexion it is noteworthy that the richest counties have the best hospitals If the grants given were placed in the hands of the divisional and regional councils along with other monies from voluntary sources, contributory schemes, local authorities and so on, the councils would have the necessary powers to carry out their work

Under such a scheme, *since the various hospitals would* be distinguished chiefly by the nature of their work, and since the staffs would be paid and not honorary and each hospital would have an outpatient department the reasons for maintaining any superficial distinction between systems would disappear and it should be possible to merge the two There would then be no need to abolish private consultant practice entirely, but the visiting staffs, being salaried, would have their independence curtailed’ to the extent that they would be obliged to carry out their duties in a satisfactory manner The increasing subsidies and the narrowing of the gap between the two systems would necessarily lead to a fall in voluntary subscriptions, especially if the local authorities claimed a large share in the management of the hospitals they supported, so that before long the voluntary system might cease to exist

THE CENTRAL CONTROLLING BODY

Since opinion is united in advising a regional development, the next big question is who is to control the regions It has been suggested that *no council run on* voluntary lines can do this, especially since the general history of joint boards has been unsatisfactory, nor for the reasons already mentioned and because of the unsuitability of municipal boundaries for this purpose should control be given to the municipalities Control is likely, therefore, to pass into the hands of either the Ministry of Health, as full nationalisation, or of some ad hoc body Mr Somerville Hastings, who takes a Labour view in politics, puts forward the idea of his party *that nothing* short of complete nationalisation of all the medical services will do It is also noteworthy that the Association of Trade Union Approved Societies at their *meeting* in 1939 passed a resolution recommending nationalisation of the hospitals Nationalisation would have these advantages

1 Planned regionalisation could be made efficient A detailed survey could be carried out and the recommendations arising therefrom implemented, *since difficulties* due to local-government boundaries could be overcome

2 Finance would be simplified

3 The hospitals would be subject *to Government* inspection and report, and since all the data would be kept in comparable form it would be possible to compare the work and efficiency of the separate institutions

4 Since the staff would be full time employees, private consultations would presumably take place at the hospitals, so there would be an end to the waste of money *in maintaining* consulting rooms in what are often, sentiment apart, unsuitable premises Another result of nationalisation would be that non medical and nursing staffs would have *more equitable* conditions of service

5 Medical education, both undergraduate and postgraduate, could be planned purely on a basis of making the *maximum* use of the clinical material available, leaving the details to special committees in each area Nurses, whose organisations for joint action are notoriously poorly developed, would have

when expressed in molecular units sulphanilamide 11 3, sulphapyridine 11 9, sulphathiazole 10 6 and sulphanilyl-guanidine 10 micromols per 100 c cm erythrocytes This uniformity suggests that the chemical grouping responsible for hæmolysis is the sulphonamide nucleus common to all four drugs, and that the various substitutions which profoundly alter therapeutic action have no effect on hæmolysis except so far as they alter the absorption or distribution of the compound Differences in absorption and distribution may account for Richardson's finding that cyanosis was produced by sulphanilamide and sulphapyridine but not by sulphathiazole or sulphanilyl guanidine As the dosage of the latter two drugs was increased the proportion absorbed steadily diminished, so that a concentration in the erythrocytes sufficient to produce cyanosis was probably not reached in the limits of Richardson's experiments His work, by drawing attention to the importance of molecular concentration in the red cells in determining the occurrence of hæmolysis, may point the way to the development of more effective compounds with less toxicity

ABSENTEEISM IN WAR FACTORIES

Why do some workers in war-factories stay away from work more than appears, at first sight, to be reasonable ? The employers blame the men and the men blame the employers, and whatever may be the root causes of the trouble (if the word is not a little too comprehensive) it is most important that they should be sought and dissolved in a spirit of harmony Team work is essential for most enterprises and especially for our present one of seeing that the doctrines and practices of the *Herrenvolk* shall not prevail in the world Important visitors to two shell-filling factories have reported[1] that absenteeism is causing considerable dislocation of work From a somewhat limited survey they have arrived at conclusions about absenteeism which appear to be sound and of general application, In the winter absenteeism varied between 15 and 20% , on the adoption of a three-shift instead of a two shift system the figure fell immediately to 10%, rising again later to 12% Women stayed away more often than men and there were always more absentees from the morning shift than from the other two It was not surprising that Saturday afternoon and Sunday morning were the periods more in favour with the workers for taking a rest In one week 26% of the women and 16 8% of the men played truant on Saturday afternoon , 22% and 18 4% did the same on Sunday morning

The main causes of absenteeism appear to be these transport difficulties , lack of adequate living accommodation near the factories , imperfect working conditions, especially the arrangements for getting food in canteens , and, last but not least, the 7-day working week It is pointed out that most workers have to travel three or four miles to work, some of them as much as thirty Without adequate provision of special trains and omnibuses it is idle to expect workers to be punctual or regular The select committee regards it as a primary duty of the Ministry of Supply to see that transport facilities are adequate Hostels should be built near the factories and accommodation provided for the workers at a reasonable cost Continual watch should be kept on canteen arrangements and prices, and the supply of food to factories given reasonable priority The committee finds that the Sunday atmosphere is not conducive to maximal effort " No man," the report says, " can work seven days a week for any length of time and maintain his output, and this is even more true of women " The abolition of Sunday work, except for maintenance or for real emergency, is therefore recommended In the committee's opinion the men appointed to manage the Royal Ordnance factories should have first class abl but it appears that the Ministry of Supply is handicap in its choice by the Treasury scale of salaries A rev of this scale is thought to be an urgent matter clear implication is that the character and personal of the management play an important part in determ ing whether or not the workers stay away from factories for seemingly trivial causes, and indeed i well known that the presence of a bullying foreman manager has the effect of raising appreciably the rat sickness absenteeism Where workpeople are made feel that they are co-partners in an important urgent task the rate of absenteeism falls , it may e be difficult to get them to take holidays—an attit into which the question of wages also enters number of places is diminishing in which the work are treated as if made of inferior clay and even in th that remain there are signs of a change of heart

LUPUS IN EDINBURGH

Fortunately lupus vulgaris is no longer the com disease it was Whether war conditions will produce influx of new cases remains to be seen, but no inci has yet been noted Its treatment is always tedi so that cases tend to collect in the clinics which tak special interest in them One such clinic is at Edinburgh Royal Infirmary, where for a number years Dr Robert Aitkin has spent a great deal of time in treating this affliction He has lately summaris the cases dealt with in his department Two importa facts stand out from his analysis—that 25% of the cas began during school life, and that 50% followed cervic adenitis A big factor in the fall in incidence must b that glands in the neck are now for the most part treated by general light baths rather than surgically But purer milk supply, slum clearance, and regular medic inspection of school children have also helped Th high rate of cures (735 cases out of 957 in the last te years) at the Royal Infirmary is undoubtedly due to th employment of the Lomholt lamp for local treatmen Many of the patients have now been free for as long a six years Dr Aitken urges the need for long continue treatment and careful follow-up, and above all a con tinuity in nursing His figures show that the optimisti outlook which is a feature of his clinic is fully justified

Mr William Gissane has been appointed clinica director of the Birmingham accident hospital and rehabilitation centre and will take up his duties early in September Mr Gissane, a surgeon specialist to th L C C , is at present in charge of the accident unit at St James Hospital and of the fracture unit at Lewisham Hospital The new accident hospital has found a hom in the building of the Queen's Hospital, which closed it doors as a general hospital at the end of March

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Feathering the Stork's Nest —The Ministry of Health (circular 2437) has arranged with the Board of Trade that after Aug 1 expectant mothers will b given 50 coupons to buy materials to make clothe for their baby before it is born The coupons wil be distributed through the local welfare authoriti and will be issued on the production of a certificate from the doctor or the midwife booked to atten the birth If the mother is attending an ante natal clinic the certificate should be signed by th medical officer of the clinic The Ministry of Healt urges that the coupons should be supplied as soon as th likelihood of birth can safely be assumed and sugge that this will usually be in the sixth month of pregnanc Where a diagnosis of twins is made and confirmed t mother is entitled to 100 coupons The doctor's ce ficate should state the name and address of the expect mother , her national registration number , and approximate date on which the confinement is expect

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[1] Seventeenth Report of the Select Committee on National Expenditure London H M Stationery Office 1d

[1] *J phys Med* 1941, 4, 68

The hospitals, when merged into one system, would ise a monopoly The assets would be national

The day-to day running of the hospitals would be in the ls of the local, divisional and regional committees The d would carry out general lines of policy for which the ster of Health would be responsible An annual report, m up so as to give some real information and not to act cloak, would be published, and Parliament would be able ise questions of policy when the financial vote was under nderation

The board would be a small one with not more than ten abers with full executive powers They would be chosen the Minister of Health and would be mostly experts—lical, nursing and lay with some representation of medical hing Advisory committees would be set up by the board deal with such special aspects as clinical education of dents, finance, nursing and so on The directors could be ointed for a fixed period, made variable so as not to permit rastic change and removable, say, by the Prime Minister the Minister of Health acting in the name of the Privy ncil, as in the B B C

Regional development would be encouraged and regional ncils would have a measure of freedom Data would be ected in a standardised form and a report made annually the working of each unit and each region Visitors, lical and lay, would carry out inspections to ensure that easonable standard was maintained and to give the advice ich only people with authority and a detached outlook give

The board would have to be more in touch with the public m is the B B C , whose governors, at all events until lately, l not represent a cross section of public opinion, and there uld be scope for an advisory committee representing tients' interests, without executive power but with access the board In each of the corporations so far established has been difficult to maintain a desirable degree of independence without allowing an excessive remoteness from all public ntrol

7 Staffing of such a service would probably be on general ivil Service lines, but with the promotion on merit which at esent exists in the public corporations

A board of this type, provided that nationalisation is und to be necessary in order to secure coordination, ould be in a better position to maintain the essential atures of the voluntary system than a special depart-ent of the Ministry of Health, and would at the same ne allow of some local autonomy

TWO OTHER PLANS

The work of the University Grants Committee has led the suggestion that grants to hospitals might be dis-nsed by a committee working on similar lines and so der nationalisation under either a Government depart-nt or a public corporation unnecessary The com-ttee consists of a full-time chairman, eight part-time mbers and a secretary, and it has the task of advising Government as to the application of grants made by rliament towards the cost of university education e committee has full discretion in allocating this ney and can make any inquiries which would help it form an opinion, but it does not interfere in internal nagement or attempt to cramp the freedom in which iversity education flourishes Needless to say, gross fficiency would lead to forfeiture or reduction of the nt The objection to control of this kind, which is ular to that exercised by the King's Fund for the ndon voluntary hospitals, is that although it would applied, through the divisional and regional councils ere would remain two parallel systems It is doubtful o whether the mechanism would be strong enough to ercome the difficulties in the way of coördination which ve been described, and as far as hospitals are concerned re would still be no national policy nor would the spitals be an intrinsic part of the public-health services, ich is most desirable

Robson, in his book on the Development of Local vernment, suggests another possible alternative to ionalisation By the Education Act of 1902 volun-y schools receive rate aid in return for a measure of trol by the local authority, who have the power to oint two of the six managers The teachers are pointed by the managers, but the local authorities can o the appointment on educational grounds, and local horities have the right of inspection and of regulating secular education The voluntary schools maintain the fabric of their buildings but the local authorities pay the teachers and provide the stationery As applied to hospitals such an arrangement would mean that in return for substantial rate aid local authorities would have considerable representation on the boards of management of the voluntary hospitals and might in certain circumstances exercise a deciding voice in policy If applied to a regional scheme, this plan would imply the setting up of special joint boards of local authorities, which have not up to the present been a conspicuous success Moreover, just as the arrangement permitted the continuation of the disagreeable feature of having two systems of elementary education, a similar one would retard the development of a coordinated hospital policy

Neither of the last two schemes seems to me to have the advantages of a well chosen, strong, semi-independent national hospitals board

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MEDICINE AND THE LAW

Overdose of Local Anæsthetic

THE fatal administration of a local anæsthetic ten times stronger than the intended dose was investigated at an inquest lately held in Bath A patient suffering from gallstones was advised to have an operation A solution of Decicain was injected as an epidural anæsthetic The honorary anæsthetist at the hospital asked the sister for a 0 1% solution, telling her that it was to be used for a nerve-block By a regrettable misunderstanding the theatre sister thought that a 1% solution was asked for After the injection the patient had a convulsion Oxygen was given and artificial respiration was applied , an antidote to the decicain was injected and there was an injection of adrenaline into the heart , the heart was massaged In spite of these efforts the patient died The coroner's jury found that the overdose had been accidentally administered and attributed no blame to anyone The coroner suggested that, to avoid such errors, the proportions of the drug should be prescribed in writing This might fix responsibility as between the medical man and the sister, but even written instructions are not proof against human fallibility

Defective's Claim for Illegal Detention

In Innes *v* General Board of Scotland a mental defective's claim for £1000 damages on the alleged ground of illegal detention failed in view of the time-limit prescribed for such actions by the Public Authorities Protection Act Innes had been received into the Baldovan Institution on an order dated May 11, 1932, which expired on June 30, 1933, and which was not validly renewed in terms of the 1913 Act His mother repeatedly requested his release and eventually took proceedings whereby the court held the order for detention inoperative after June 30, 1933 The General Board for Scotland appealed unsuccessfully, and it was found necessary to deal with this kind of situation by statute in March, 1940 There was no doubt that the continuance of the detention had been justifiable on medical grounds, but courts take a strict view in cases where the liberty of the subject has been infringed It may be recalled that the same point arose in England in the Winterflood case in 1938, when the position also required the attention of the legislature The English act of 1913 contemplated that the order for detention of a mental defective should expire at the end of a year but could be continued in the patient's interest after examining medical experts and certificates In the Winterflood case there was a gap between the date of expiration and the appropriate date of renewal it is easy to understand that institutions concerned with hundreds of patients cannot always make sure of synchronising the two dates Parliament then passed a law to allow a margin of time to cover these administrative steps The statute for Scotland in 1940 had the like effect When, however, the action for illegal detention was launched recently in the Innes case, it was clear that it was not begun within six months of the date when the wrongful detention ceased This six-months rule, enacted by the Public Authorities Protection Act of 1893, was a bar to the claim against the Board of Control regional and divisional representatives to watch their interests, and this would lead to a levelling of some of the glaring inequalities in the conditions of service

Against these undoubted benefits must be set some probable disadvantages

1 The voluntary hospital system has a long and honourable history Its units are independent and proud of it, and while this has led to rivalry and overlapping it has also kept the more progressive units in close touch with the advances in medical knowledge, since their prestige largely depends on their ability to convince the public of their prowess This is probably less true of the non-teaching hospitals, and still less true of the very small units The system of choosing the honorary staffs and the competitive element in private practice has helped to maintain keenness, since success in private consultant practice is based on the reputation gained in the hospital wards and outpatient departments Some oppose nationalisation because they believe the competition of private practice to be eminently desirable Others fear that nationalisation will bring with it the dead hand of excessive central control, with a rigidity of outlook and the loss of the conditions under which medical teaching and research have flourished , if the hospitals alone were nationalised, without a full state medical service, this great danger would be lessened, but it is likely that, as has happened in New Zealand, one event would soon be followed by the other A criticism of the Emergency Hospitals Services is that there has sometimes been *a failure to take full advantage of local knowledge* , all questions of moment are referred to Whitehall so that the regions are by no means autonomous and the scheme is in reality highly centralised Centralisation of this type, often unimaginative, taking no note of local conditions and local feeling, and perhaps in the administrative charge of people with no special knowledge of hospitals would be deplorable

2 The cost of the nationalised hospitals would be high, since, apart from the extension of their work which would undoubtedly follow nationalisation, the medical, nursing and lay staff would no longer be expected to work for unreasonably low wages On the other hand, the economies effected by the regional and divisional mechanism, including the saving on bulk purchase, a pooling of equipment and the closure of inefficient units, might be considerable The bill would be paid largely out of forced contributions from all sections of the community, most of it as at present coming from the higher income groups If the hospitals were financed on an insurance basis, on the analogy of the War Damage Act, the healthy would pay towards the cost of the sick and people would no longer have to carry the financial burdens of illness at a time when they are least able to bear them

3 Whole time government service tends to stifle initiative for several reasons (1) Government departments do not usually punish for bad work but may refuse to promote (2) Salary scales are more or less automatic and there is not sufficient inducement to staffs to improve themselves and the service (3) Promotion is to a large extent by stepping into dead men's shoes, since most Government grading schemes make little allowance for exceptional ability (4) The staff are often remote from the central department which recommends promotions

On balance the disadvantages of running the hospitals as a department of the Ministry of Health seem to outweigh the advantages, since it is probable that sufficient attention would not be paid to the merits of the voluntary system and there would be a tendency to excessive rigidity and over-centralisation

GROWTH OF PUBLIC CORPORATIONS

Since neither municipal management nor direct management through a Government department appears to be satisfactory and joint boards have many disadvantages and are difficult to get working efficiently, the suggestion that hospital management might be in the hands of an ad hoc board, moulded on the general lines of the boards at present managing some of the public utilities has been much discussed

One of the most remarkable developments in administration has been the growth of the public corporations The idea dates back to the old Improvement Commissions and Turnpike Trusts, which were gradually changed into Government departments or merged into the local authorities Three of the present bodies, the National Health Insurance Committee (1912), the Road Board (1910) and the Port of London Authority (1908), were in existence before the last war and more rec
the following have been added

Forestry Commission (1919)
British Broadcasting Corporation (1926)
Central Electricity Board (1926)
Coal Mines Reorganisation Commission (1930)
Area Traffic Commission (1930)
London Passenger Transport Board (1933)

These public corporations supply such impc
needs that state regulation is necessary and yet
enjoy a greater measure of independence than a
state department can provide They are also in
touch with the public than a state department
is and are not dependent on the political comple
the Government They have been popular becaus
are a compromise which people of various political
can accept They are run by the national auth
but their ability to collect capital from private
and to pay interest gives them the support of uph
of private enterprise , also they are fairly free
political interference

The Post Office is often quoted as showing that a
department can carry out these functions equally
but it is significant that the changes considered nec
after the Bridgman Report were all in the direct
the organisation seen in public corporations The
corporations mentioned have the following featur

1 They all control important services which must
on business lines but must be responsible to the public

2 They all have virtual monopolies

3 Their revenue and expenditure should at least b
so as to ensure financial independence, while loans at lea
subject to Ministerial sanction

4 Except in the case of the Forestry Commission, men
of Parliament are not allowed to sit on the boards

5 They are responsible to a minister and he is answer
for them in Parliament, but he will not answer questions
the day-to day running of the services and so Parliament
control is remote This tends to remove the excessive cau
sometimes associated with Government departments, w
are extremely sensitive to Parliamentary criticism

6 There is public ownership and control of the a
The assets of the B B C are entirely owned by the corp
tion , those of the London Passenger Transport Board
vested in the community

7 The boards usually consist of between five and e
members of which one or two are full-time and the rest
time They are usually appointed for a fixed period but
always for the same period, so as to ensure continuity
directors of the B B C can be removed by the Privy Cou
those of the Central Electricity Board only by Parliam
Generally speaking, the boards are set up by the minister
not directly elected Except in the case of the B B C
members are mostly experts and power tends to be in
hands of the senior paid official

8 The Port of London Authority is composed larg
consumers' interests, since there is a compact and o
body of consumers, while the consumers' interests in
B B C and Central Electricity Boards are represented
through advisory committees

9 Parliament has a general control of their policy and
tainly has the direct ultimate control, since it can al
remove what it has set up

10 Conditions of service vary much in these different
porations and are not the same as those in the Civil S
In the corporations it is easier to secure reward for ment
promotion may be rapid

A NATIONAL HOSPITALS BOARD

When the hospitals are considered in the light of
points a good case can be made out for setting u
National Hospitals Board It is presumed that org
tion would be on a regional basis, probably run by
sional and regional councils having many of the fea
suggested in the Nuffield Trust Scheme While h
administration cannot be described as a comm
enterprise, many of the features in the list given w
apply

1 The hospitals form an important public service
should be responsible to the public Much of the
this service should be on business lines and a well const
board would give the amount of flexibility which is as
for that service as for a business enterprise

e has been held up as rather more than a snob for not king the Jordan baths Do we know all the facts? Some time ago a patient of mine with hyperpiesia went up to see a specialist who later wrote him a letter which I saw After recalling rather in the manner of prosecuting counsel that his father died of cerebral hæmorrhage at the age of 72 and his mother of cancer at 70, he went on to state unhesitatingly that the patient was born with, had been suffering all his life from, and was still suffering from the results of intestinal toxæmia A strict regime was prescribed, no meat, eggs only if absolutely fresh, and on no account must anything be cooked in an aluminium utensil Taboo to tobacco and alcohol, fie on all gluttony He must come up and have a course of colonic lavage and osteopathic manipulations, he must have intramuscular injections and take pills of two kinds, further a salve will be sent to him and a vaccine made from the flora of his intestines Woe to him if he follow not the precepts of this prophet, but if he does he may yet walk among the blessed How do we know that Naaman hadn't received some such missive from the hydropathic establishments on the Abanah and Pharpar?

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The certificate menace grows apace Owing perhaps to the increasing mistrust spread among us by the Little Lad over the water, panel patients now seem to require not only N H I certificates but also sundry additional slips of paper to show to various interested parties such as employers, insurance companies and so forth Among the newer types of official certificate is one, inappropriately coloured yellow, for those injured in air-raids When the stout-hearted victim is doing his best to recover from half a dozen fractures and various blast injuries it seems a trifle redundant that he or she should have to be re-certified unfit for work as often as once a week, a monthly certificate would save paper, ink, postage and—what is seldom considered by the official mind—the doctor's time The conscription of women has given rise to an entirely new type of certificate which has not yet attained the dignity of print and has to be written out in full

> Mrs (or occasionally and most regrettably, Miss) , being x weeks pregnant is at present unfit for any other kind of national service

Tempora mutantur The time-honoured boast of the sergeant-major that the army can do what it likes with you except put you in the family way no longer needs even that qualification

* * *

Last night dear Percy, our mess bore, was holding forth on how Nature thought of everything first, the hypodermic syringe of the mosquito, the smoke-screen of the cuttle-fish and so on, when one of our younger members, tiring of these immense profundities flippantly interjected, "What about an air-gun?" But, of course, Nature does have a most excellent air-gun, whose missile provides the air which onrushing peristalsis compresses Not only does her ordurous pellet give off gas behind itself, where being more compressible it acts as a pusher, like the back rows of the scrum—sometimes slipping round, I suspect, and getting off side when the muscle-tone is slack, for which we pay a costive penalty—but it also gives off gas in front which, like the pilot engine before a royal train, or the bag of waters in labour, goes forward to clear the course A dozen aspects of this entertaining mechanism present themselves—how in the upright position gas will tend to accumulate at the hepatic and splenic flexures sort of ammunition dumps, how this air-gun is held as all guns should be when not in use with barrel pointing downwards, how at the moment of discharge the barrel becomes nearly horizontal—or would be if the Jove-aping dignity of man and the closet-designer allowed Is it likely that Nature wouldn't utilise a product she can't help forming? Yet there is little in the textbooks about it Isn't it important enough? It is of vital importance to king and cowherd Then there is the comparative anatomy the machine-gun method of the rabbit, the bomb of the herbivore, the torpedoing of man What a subject for a thesis, "The Aerodynamics of the Intestine"!

Parliament

Priority for Milk

In the House of Lords on July 15 Lord DAWSON once more voiced his anxiety about our milk supplies for the coming winter The production of milk is like a reputation, very easy to lose and difficult to regain, and unless we are to face a curtailment of our milk we must act at once The cow gives us more value for our money than any other animal, the egg-producing fowl and the pig coming next, and they all deserved special consideration But apart from their high nutritive value milk, cheese and eggs helped enormously in the preparation of winter foods such as cereals, potatoes, carrots, beans and even onions Indeed it was almost impossible to think of cookery in this western world without milk and eggs Lord Dawson congratulated the Minister of Food on the improvement in the cheese position and on his store, actual and prospective, of preserved milk Lord Dawson further urged the manufacture of sprayed whey powder, which could be prepared from waste products In designing our food we must be influenced by neither prejudices nor interests, and give knowledge pride of place

The Duke of NORFOLK's comforting reply on behalf of the Ministry of Agriculture that dairy herds in this country are increasing, lost some of its reassurance when he admitted that next winter there may be a slight shortage of milk Lord DAVIES reported the incidence of a new infectious disease—the black market instead of the black plague—and the discussion which followed was enriched by a wealth of controlled reminiscences and shopping sagas The House felt sympathy with Lord WOOLTON when he confessed that he found it extraordinarily difficult to retain a proper sense of perspective in dealing with food Complacency was the latest of modern crimes, but he felt that no-one without the skin of a rhinoceros could be complacent as minister of food At first he had been inclined to think that the public were the best judges of whether they were being adequately fed, but before the war there was no acute consciousness in this country that so many hundreds of thousands of people were suffering from malnutrition The country has become more sensitive to this issue during war-time than ever it was in peace, and it is good that it should be so Yet he would venture the speculation that there are fewer people suffering from malnutrition now than two years ago Food is certainly more equitably distributed than it was then This year the nutritive values of foods have declined, but next year they should be as high as they have ever been in the last 15 years He was hoping for some improvement in the variety of the nation's dietary, which partly explained the new yellow ration books During the winter he had no doubt that with the help of New Zealand and the United States we should secure all the milk that we required in one form or another for the National Milk scheme, for children, for adolescents and for invalids

A Stepping-stone

The scanty attendance at the second reading of the National Health Insurance Contributory Pensions, and Workmen's Compensation Bill showed that at least the House found nothing objectionable in the measure Indeed they welcomed it, with some exasperation, as far as it went, but that was not nearly far enough Second-reading debates, as Mr BROWN said, give members who have long-cherished ideas and ideals opportunities to get their dreams a-going, and the debate on July 15 demonstrated a tepid approval of the bill but a strong disquiet at the glaring discrepancies in our present system of social insurance People with the same need receive different benefit, the sick breadwinner and his dependants are treated differently from the unemployed worker and his family, the disabled man and the disabled woman do not receive equal help, benefits vary from one approved society to another, some insured people have difficulty in finding any approved society to accept them Mr GRAHAM WHITE spoke for the House when he said, "Let the bill be passed as soon as may be, and let us concentrate upon the wider proposals to follow the deliberations of the Beveridge Committee"

The bill which was introduced on the 29th birthday of N H I by Mr T JOHNSTON, proposes an increase of

In England Now

A Running Commentary by Peripatetic Correspondents

WHEN Russia was attacked Mr Churchill lost no time in declaring that this made no difference to our objective which was, is, and always will be, the crushing of Nazi Germany The bulldog has his teeth into the dachshund and no poodle, peke nor macaroni hound shall pull him off, nor will he loosen his grip to consider what the other end of the dachshund is doing Would to Heaven we had a like clarity of view in our fight against tuberculosis Who is our enemy ? The bacillus tuberculosis ? Surely not Would we abolish it from these islands if we could ?—and have a rising generation perpetually Pirquet negative, defenceless against attack which would inevitably come in time ? And if we don't know who is our enemy, neither do we know who is our friend, who it is that gives most of us immunity—the mildly infected cow, the pooler of milk, or the ambulant spitter who sprays the streets with his saprophytic guests ? Until we do know, the host of T O s, health visitors and whatnot is an army without an objective, hesitant Sometimes though rarely the enemy is fairly clear Recently in an isolated community in the west of England two cases of tuberculous meningitis, several of pleurisy, a crop of adenitis occurred in the children attending the state school, where it emerged a schoolmistress with a liquid cough was disseminating the seeds of death with the *rudiments of learning* *And that is only the first harvest*, for tubercle has two incubation periods—very roughly of three months and twenty years—and a long time must elapse, and memory fade, before the second harvest is gathered to the grave Even here we don't know whether the catastrophe was due to the quantity of bacilli that were sprayed over the children or their quality, their virulence Suppose the schoolmistress had been an old woman, who had had tubercle for years, and harboured what to her was an almost harmless bacillus, would she have vaccinated the children against a robuster germ, and been a benefactress ? I dunno, but until we know these things the fight is feckless

* * *

One of the things which like the profession of medicine appears to be due for a complete overhaul after the war is our national system of education It has received some hard criticisms, more especially from those who have passed through the prep school to public school and university curriculum It has been said that the system tends to turn out everyone cut to a pattern and that many of its products are tainted with at least some trace of totalitarian doctrine People seem to forget that though you can take a horse to the water you can't make him drink In fact if you take him too often to the water the horse may develop a loathing for water and a taste for beer, like the horses in the all-night beer gardens of Hamburg which the R A F presumably have now laid low In more medical language the pedagogue may easily produce immune bodies against the doctrine that he wishes to inculcate In my own case a healthy distrust for all authoritarian doctrine was first inculcated in me by one of the masters at my prep school who when he was not telling us of the virtues of compulsory games was expounding the duty of loyalty to the cricket captain Even at that early age I had a suspicion that compulsory games were encouraged (they are a post-Arnold development) rather for the convenience of the masters than for their positive value to the boys, while as for loyalty to one's cricket captain it was of the same order as " theirs not to reason why " however big a boob one's captain happened to be All the same, my early training or immunisation has been of great value for after all " das Fuhrer-princip " *is nothing but loyalty to* one's cricket captain writ large, while a belief in the mystical value of compulsory games is in all respects equivalent to a belief in the philosophical values arrived at in a hypothetical nordic stone age Nevertheless the curious thing is that however much one may loathe the totalitarian system it is very hard to loathe the individual totalitarian

B, for instance, whom I had last seen in 1935, was a typical little Prussian He had become, so I was told,
quite openly the leader of the Nazi party in the Ca
but when I ran into him, either by accident or his
in the main street of Las Palmas, it was difficult
hatred for him He was a broken man, for both
had been lost flying over England Major D,
other hand, was a different type According to
statement, and no-one was in a position to co
him, he was an Italian air ace, but this had not pr
his crashing at an early stage of the proceed
Abyssinia and he was now on his way from
soners-of-war camp to another He was obsess
the idea that London was 'completely flattened
ground and though I assured him that I had bee
less than a fortnight before nothing that I co
could shake his fixed belief People with ob
may be interesting as psychological cases but it's
to work up anything so strong as a feeling of ha
them

The Italian medical men whom I met as prisone
one and all only too pleased to be finished with
and only too ready to talk of their experiences
Africa I learnt a number of interesting thing
them C, I found, had in this war been wise
generation and kept well away from Ethiopia I
ally *he does not seem to have wasted any* of his h
knowledge on the town from which he derives h
One tip the Italian medical officers showed me is
recording All their quinine tablets were heav
pregnated with methylene-blue There were am
Italians therefore no " quinine resistant " ca
malaria such as occurred in our army in the la
nor was it necessary to carry about, as our Fren
leagues did, bottles of Tanret's solution I w
surprised that the Italians were relieved that *the*
finished with the war when a day or two *later I*
into Abyssinia by way of Gallabat and *Metema*,
which the Italians had withdrawn a few days previo
What had once been flourishing little towns had now
utterly destroyed, while the whole earth on which
stood was pock-marked with bomb holes Bom
fact when used *systematically produce an* effect
concentrated shelling, though here, since the groun
hard and rocky, the craters were small and sh
Scattered over the ground were thousands and thou
of clips of Italian bullets, water bottles, helmets
some places it recalled the Caledonian market on a
day F, who was with me picked up an excellent
of stirrups and stirrup leathers Someone had in
panic thrown away a splendid python skin nearly f
feet long, while everywhere lay Chianti flasks, em
is true, and, more curious still, bottles of Italian m
water from a spa not far from Rome The tra
of all this liquid refreshment must have been no
undertaking To anyone who knows the modern I
there has always been something comic about Muss
efforts to revive the glories that were Rome, b
laughter was one of the emotions that Gallabat
up it was soon submerged in pity for those who ima
that their national prestige could be enhanced by m
more deserts to add to those they already poss
Primarily their education must have been at faul
instead of making them immune to all authori
doctrines it had merely set up a chronic infe
associated with hypersensitivity However muc
own educational system needs overhauling that o
Italians and Germans is even more in want of re
tionary change It will be no *light task to* desen
them for all time against authoritarian myths, but u
we do there is little chance for the peace of the worl

* * *

So King Leopold is quite a stout fellow after
Though why the M O I who had the informatio
the time shouldn't have told us seems extraordi
It will, however, do him good , a spot of obl
especially if unjust, *seems to have a very tough*
effect The present Archbishop of Canterbury h
dose of it in the last war, while the quality of
Prime Minister's fibre is due to some extent to
Cassandra years when he chewed the orange-pe
outcastry I confidently predict that if P G Wode
survives the storm caused by his broadcasts, wh
have not heard, he will produce a firmer Jeeves, a
fibrous Wooster No, the man I am sorry for is Naa
For thousands of years now and for thousands of edi

Letters to the Editor

PREMARITAL AND PRENATAL TESTS

SIR,—In this country it has always been found to be e policy to avoid legislation which is in advance of blic opinion Public opinion would almost certainly in opposition to legislation on American lines enforcing assermann tests, but it would probably raise no jection to such tests being carried out as a routine pregnancy if obstetricians recommended it Medical inion carries great weight—more weight than we rselves often give it credit for. In our prenatal clinics is not the expectant mothers who object to blood- ts, it is the doctors in charge of the clinics who still se objections to their routine performance During e last five years, over 4000 specimens of blood for amination have been taken in the Kensington clinics thout the slightest difficulty In fact, some patients mment adversely on other clinics where the investiga- ons made are less complete.

As your leader of July 12 aptly puts it, any case of suspected syphilis discovered and treated is a gain the nation. It is a pity that the routine performance Wassermann tests, which had been slowly gaining ound, has been discontinued by some hospitals during e war ; the tests are more necessary now than ever, d the idea of blood-testing and transfusion has become popularised that there can be no difficulty in obtaining ie blood for examination. As the adjunct to a full renatal overhaul and as a routine measure carried out every case without exception, it can have no bad sychological effect on the individual patient Public pinion is now bringing expectant mothers to private doctors, clinics and outpatient departments early in pregnancy ; the issue of milk at a cheap rate is encouraging this tendency All things seem ready for the institution of a routine prenatal blood-test throughout the country if the obstetricians would agree among themselves to establish the principle Experts in venereal disease would be repaid by the lessened incidence f congenital syphilis

A premarital test represents a new idea, hitherto alien o Britain, and the question needs to be considered in all ts aspects It is a much more difficult question than he prenatal test Most of the expectant mothers with ositive blood reactions in the Kensington series of cases ave either been latent cases of long standing or congenital cases , in only one or two instances was the infection recent one. By intensive treatment during pregnancy ne has had a reasonable degree of confidence that the aby, apparently healthy at birth, will remain healthy he question at issue is whether, if the mother's positive est had been discovered before marriage, a better or ven as good a result would have been obtained Would he marriage have been cancelled ? Some of them have een happy and successful marriages and surely a ist-minute cancellation for such a reason would cause vere psychological trauma to both parties ? It would e an unenviable task in any case to inform the bride- room within a few weeks of the announced wedding at his prospective bride was a congenital syphilitic the best of circumstances one feels that a shadow of isease and possible guilt would be thrown over the arriage, and it is conceivable that it might have the fect of causing the wife to try to avoid a blood-test, ould she become pregnant, instead of seeking early eatment It is certainly much easier for the doctor break the news of a latent positive test in the mother oth to her and to her husband, tactfully, and without ndue psychological reaction, when they have already een married for some time

It is possible that arguments as strong or perhaps stronger might be raised to support a test before marriage, and many of us still feel that we are waiting to be convinced on the matter Should the desirability of a premarital test be established, it should be brought about voluntarily by the introduction of premarital clinics where tests could be taken, rather than by attempted legislation

It would seem a pity to restrict the function of a premarital clinic solely to the performance of Wassermann tests which after all only affect a small proportion of the population A short routine examination on life insurance lines would seem of definite advantage, both to the prospective couple and to the state From the sociological as well as the medical point of view such clinics, which have often been proposed present interesting possibilities on the psychiatric side For most couples no advice would be necessary and the doctor would only need to wish them luck In other cases, however, much good might be done by answering questions and relieving doubts The whole subject seems worthy of discussion as a part of postwar reconstruction

Kensington VIOLET RUSSELL

URINARY DISINFECTION

SIR,—Your leader of June 28 mentions the use of small doses of a sulphonamide in the control of urinary infection. In Helmholz's case a dosage of 0 125 g of sulphathiazole twice daily had succeeded over a period of seven weeks, in keeping a chronic and apparently incurable infection in check, without causing any general toxic effects There are records of other cases successfully treated over much longer periods, in which the drug used was given at a rate half of that employed by Helmholz As far back as March, 1940, a Cape Town urologist told me of a middle-aged woman patient with normal excretion, whose *B coli* infection had been controlled for over eighteen months with doses of 0 25 g of sulphapyridine taken once every forty-eight hours The experimental omission, on a number of occasions of several doses had invariably been followed by a return of the bacilluria A Brisbane pædiatrician subsequently showed me the notes of a similar case of a child where the same drug and the same dosage was employed

The administration of such small quantities of a sulphonamide appears to be attended with none of the symptoms of intolerance (gastric upset, mental depression, dermatitis, and damage to the kidneys or blood-forming organs) recorded with the higher dosages ordinarily employed , but proof of this can be obtained only after prolonged observation of a large number of cases In the selection of the appropriate drug and dosage regard must be paid to bactericidal power and to rate of excretion Sulphathiazole appears to be the most active of the sulphonamides in common use but, on account of its more rapid rate of excretion, it seems unlikely that one dose repeated every forty-eight hours would be efficacious Whichever drug is used in such minimal amounts, it is certain that the concentrations attained in the body fluids must be very low One is tempted to ask what effect this light dosage may have on rendering bacteria drug-fast

Dagenham Essex. ROBERT FORGAN

"SCIATICA"

SIR,—Foot-trouble as a possible cause of sciatica has not been mentioned in the present series of letters, although well known by many A short note of three such cases will help to emphasise this point

CASE 1 —In 1931 a woman of 37 started pain in the left buttock, thigh and leg The pains occasionally shifted to the area supplied by the anterior crural nerve Treatment, including an energetic course at Bath, produced only slight temporary improvement, followed by exacerbation of the sciatic pains, so that the patient became almost crippled I suggested a trial of an instep-arch support owing to extension of pain and tenderness to the left foot I thought that metal or other hard substances, which could not be altered in shape or thickness, ought to be avoided Having decided to use thin wedges of sole leather I found that Messrs Freeman, Hardy and Willis stocked the kind required. It consists of a special form of insole with compartments into which thin wedges of leather can be inserted. The front compartment

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Continued from previous page

lice, owing to the fact that they do not desire any publicity, d feel it may reflect on the child's future As regards cases lmitted to the clinic, but not reported directly to the police, action is taken It is very difficult to obtain histories, d in many cases parents or guardians are reluctant to give formation It is considered to be undesirable to press iestions, lest the children fail to return for treatment, as has ppened on previous occasions

3*s* a week in the sickness benefit—memorable since for the first time men and women are to receive an equal increase—and the disablement benefit is to be increased by the same amount Further, the bill provides a new income-limit of £420 per annum, which will bring in something like 500,000 more people. The income-limit under the Workmen's Compensation Act will also be raised to £420 There will be an increase of 2*d* in present premium of 3*s* 6*d* for men and 2*s* 11*d* for women, 1*d* to be paid by the contributor and 1*d* by the employer In future the public-assistance authorities will be prohibited from taking into account the first 10*s* 6*d* of national insurance benefit The changes under the bill will begin in January next year Mr Johnston explained that the panel doctor's capitation fee will be increased, but the amount plus a mileage grant is still under consideration

Mr James Griffiths said social insurance had its roots deep in nineteenth-century life and welcomed this expansion He warned the House that we might not have so long to build up a peace economy as we had taken to build up a war economy Part of the trouble at present was that the workers were thinking of the past and the employers of the future Dr H B Morgan as a former insurance practitioner criticised the working of what he dubbed an elementary medical service There were no hospital arrangements or facilities for pathological and biological investigations The poor general practitioner working in an environment of disease, bad housing and dietetic ignorance, was told to sift cases but was given no proper facilities for diagnosis Dr Morgan had left insurance practice disappointed and disillusioned No doubt the Minister had acquired some medical knowledge by inoculation but Dr Morgan had been hampered in his work at every stage by the administration of medical services under the Ministry of Health He urged the Minister to deal with these men in a spirit not of bureaucracy but of decent humanity, giving consideration to the difficulties of their job

Mr Ernest Brown in summing up said he did not want Dr Morgan to think that he had overlooked that there was more than a cash side to the insurance scheme There was a medical side too, and he was sure that one of the things that the Beveridge Committee would have to consider was how the doctors, the public and the state could get the best, from the point of view of preventive medicine, out of the provisions that had been made, or might be made in the future

The Pharmacy Bill in Committee

The House of Commons when it examined the Pharmacy and Medicines Bill in committee, on July 15 and 16, made no great changes in it The Government accepted an amendment to clause 1 moved by Captain G S Elliston making it unlawful for any medicine to be compounded in branch businesses belonging to chemists unless there was a registered pharmacist in charge

Clause 3 provoked a lively discussion Dr Russell Thomas welcomed it as a sign that Parliament was taking an interest in the advertisements of medicine, otherwise he believed it to be futile in that it would not affect the patent medicine trade, the list of diseases defined was meant to be impressive, but sufferers from diabetes would use patent remedies until the disease was diagnosed, and there was nothing in the Bill to prevent a person using all sorts of eye-drops until cataract was diagnosed Mr H Strauss asked if the clause was directed against any advertisements in existence If not it looked as though it was not the best way of dealing with an actual evil It would be better to make it a criminal offence to publish a false statement in connexion with the sale of a medicine Miss F Horsbrugh said that the diseases specified in the clause were among those included in the recommendations of the Select Committee of 1914 Two more had been added She assured Captain W F Strickland that there was no intention to make any difference between municipal and voluntary hospitals If there was any doubt as to whether all the hospitals were covered the point would be re-examined Dr H B Morgan said he was in favour of the bill as a whole but he was not sure that this was not a most dangerous clause Would a doctor who had been struck off the register for some minor offence be unable to advertise some cure which he had discovered, or was he only to be allowed to do so with the sanction of Ministry of Health ? He claimed that such a man be allowed to exploit his discovery, to advertise it and keep it secret if he wished to do so Miss H said that if a doctor who had been struck off the made a discovery he could communicate it through people such as members of Parliament and local a ties The clause was agreed to

Mr. James Griffiths was anxious that the compo tion of medicines should be stated in English E Brown said that it would be difficult to describe eve preparation sold as a medicine intelligibly except t nation of pharmacologists The ideal would be every single thing used in the making up of the should be described in such simple English terms Shakespeare might make a poem out of them Robert Bird appealed for quantitative disclo Prof A V Hill sadly remarked that the art of descriptions in unintelligible terms had been developed Mr Brown promised if the House w accept his amendment of " accepted scientific name other name and descriptive of the true nature " at stage he would re-examine the matter before the rep stage, and his offer was accepted

Sir Thomas Moore's amendment to exempt h from defining the compound parts of their prep was turned down with some firmness An ame by Captain Elliston extending the date when the would come into operation from January, 1942, to J 1942, was accepted

Three new clauses were moved Mr Brown's prop that inspectors under the Food and Drugs Act sho enforce sections 3, 4, 5 and 6 of the Act was added to bill Further discussions on what Mr Brown called t professional and technical enforcement are proceedin Sir E Graham-Little, after discussion, reluctantl withdrew his proposal to forbid the sale under a fanc proprietary name of a preparation listed in the B P or B P C, when Mr Brown pointed out that th innocent-looking proposal would make the measure int a new bill Sir Dymoke White's clause restricting th distribution of new proprietary medicines to chemist was turned down

QUESTION TIME

Additions to our Food

Mr G Mander asked the Parliamentary Secretary to th Ministry of Food into what form of food the minimum dail requirements of the most important vitamins and mineral were being introduced, whether he was aware that th United States of America were anxious to send us syntheti vitamins occupying negligible shipping space, and whethe advantage would be taken of this —Major G Lloyd George Steps are being taken to obtain from the U S A such quan tities of vitamins as are desirable to supplement the amount available in the form of natural foods Medical and scientifi advisers consider that the only mineral deficiency which to be feared under war-time conditions is calcium Recom mendations for dealing with this possible deficiency are no under consideration In answer to a further question fro Mrs Rathbone, Major Lloyd George promised to giv speedy consideration to the addition of calcium in both whi and wholemeal flour bread

Venereal Disease in Jamaica

Dr H B Morgan asked the Under Secretary of State f the Colonies whether he was aware that a visit of inspect paid to the venereal disease clinic in Kingston, Jamaica, ha revealed that, amongst the patients found awaiting appro priate treatment, were two young girls, seven years of age that these children were diseased not by hereditary infectio but by direct contact, how many such cases existed i Jamaica, and what steps had been taken or were bei taken to ascertain the perpetrators of such crimes with a vie to punishment —Mr George Hall replied I have n knowledge of the two cases mentioned, but, although n definite figures are available, the medical officer in charge o the Kingston clinic estimates that a quarter of the childr attending the clinic are infected by direct contact Th governor reports that cases are from time to time reporte to the police who press the charge, but that such cases ar very difficult to establish In many instances where a chil is infected, the parents are very loth to give information to t

Continued at foot of opposite page

lown into subgroups, it is not surprising that the chief predilection for private attendance was among those with higher incomes, but even among these a state service was preferred to extension of the panel system The questions posed may have been unduly simplified, and he validity of the survey is subject to the usual errors of ampling, but such surveys are being relied on to a onsiderable extent both in the U S A and more recently n this country as a gauge of public opinion It seems justifiable to regard these results as evidence that the general public believes that the present medical services are not satisfactory and that a state service would be advantageous, particularly for its less wealthy sections

CLINICAL RESEARCHER

Public Health

Medical Care for Norfolk Evacuees

ON July 1 a scheme was introduced in Norfolk for the home treatment of accompanied children, mothers and other adults evacuated to reception or neutral areas in that county Dr T Ruddock-West, county medical officer of health, drew up the plan of campaign which has been approved by his council and the Ministry of Health Briefly the idea is to pay a quarterly capitation fee of 7*s* 6*d* to district medical officers for each evacuee they attend at the request of the relieving officer This fee is to cover travelling expenses and the usual medicine and appliances provided under national health insurance, but where an illness involves continuous attention for more than three months 30*s* will be paid, whether the illness continues over the whole year or not Back payment is to be made to the district officers for the work they have already done and as some doctors may not have kept records of their evacuee patients the payments will be assessed in proportion to the claims submitted next September at the end of the first quarter

Beginning at the other end the scheme works equally simply Evacuees will apply to the relieving officer in the usual way for a medical order and on application to him will receive a combined evacuee medical order and report form to cover the current quarter The patient takes this form with him and the medical officer keeps the order until the end of the quarter, recording the date of each visit or attendance at his surgery on the back of the form No fee will be paid unless the claim is supported by the completed medical report, and in cases of acute illness where a patient is seen before a medical order has been made out the appropriate forms should be obtained forthwith from the relieving officer The scheme does not of course cover unaccompanied children for whom the Ministry of Health made provision (circular 1882/1939) through the local medical emergency committees

From the Annual Reports

STOCKPORT AND PRESTON

Dr John Yule reports that in Stockport 583 out of 1833 deaths, in 1939 were certified as being due to heart disease of which 412 were over sixty-five Of 177 men and 277 women who had survived their seventy-fifth year, 85 men and 133 women were certified as having died of heart disease and 29 men and 50 women of other circulatory disorders Only 6 male and 17 female deaths are referred to senility, but with the exception of 13 male and 18 female deaths from cancer, 2 male suicides and 3 male and 10 female deaths from accident, it would not be amiss had all the rest been attributed to senility Similarly in Preston Dr F A Sharpe reports that, of 1435 deaths at all ages 802 were of people over sixty-five, of whom 365 were certified as having died of heart disease and 107 from other circulatory diseases, 24 people over seventy-five had their deaths attributed to senility, but, excluding 14 deaths from violence, 23 rom cancer and 2 from peptic ulcer the remaining 310 might also have been ascribed to senility

All death tables of recent years show two great shifts rom those of the past—a steady increase in the proportion of deaths over sixty-five, and in those attributed to heart disease This does not mean that heart disease s increasing, or that people with diseased hearts live onger than they did formerly, but that the potential ife of the heart determines the length of our existence, and as the adventitious causes of death are reduced or eliminated more of us die from the natural failure of our potential In neither town was there any fatality from heart disease in children under five years, and only 21 in Stockport and 10 in Preston in people under forty-five

CHINGFORD

This borough is on the extreme fringe of London, it is mainly residential and has not grown with the rapidity of Ilford The population is 39,460 and in 1939 it had a birth-rate of 16 9 the very low infantile mortality of 22, crude death-rate of 6 8 (comparable rate 7 8), and maternal mortality of 1 5 with one death only none from puerperal fever Its cancer death-rate was low for such a unit (1 2) made up of 48 deaths, of which 22 were from cancer of the gastro-intestinal tract, 4 of the lungs, 6 of the breast 8 of the genito-urinary organs (3 males and 5 females) and 8 (5 males and 3 females) various There is some doubt whether the brisk rise in recent years of recorded cancer of the lung can be attributed entirely to better diagnosis or is partly due to highway conditions (tar-spraying and exhaust fumes)

Dr G B Murray, records a substantial rise in notified tuberculosis in 1939 over that of recent years 53 pulmonary cases, which is about 30% above the expected number, and 17 other cases—nearly 3 times the number reported in any of the previous five years, of the new cases 32 were transfers from other districts There were 19 deaths from tuberculosis

From the School Reports

LEICESTER

Dr E K Macdonald's school report has a bearing on the complicated question of nutrition In classifying about 11 000 children into the four grades of nutrition, he found 82 obese children whom he placed in a group apart and made the subject of a special inquiry carried out and recorded by Dr K McAlpine Two types of obesity were distinguished—that with and that without definite sex manifestations The number of cases so far scrutinised is too small and the inquiry has not gone far enough for Dr McAlpine's findings to be reckoned as more than suggestive, but if pursued they may throw much light on many obscure points in development Fatlings have always been puzzling, by some observers they are grouped with the "excellent," by others with the "bad", but probably obesity in children is usually, if not always, due to faulty endocrine balance Many observers have noticed that some evacuated children tend to obesity which in incidence suggests the influence of a psychological and not a nutritional factor

Infectious Disease in England and Wales

WEEK ENDED JULY 12

Notifications —The following cases of infectious disease were notified during the week smallpox, 0 scarlet fever 732, whooping-cough, 4840 diphtheria 773, paratyphoid 293, typhoid, 25, measles (excluding rubella) 5368, pneumonia (primary or influenzal), 531, puerperal pyrexia 129, cerebrospinal fever 184, poliomyelitis, 7 polio-encephalitis, 0, encephalitis lethargica 3, dysentery, 68 ophthalmia neonatorum, 99 No case of cholera plague or typhus fever was notified during the week

Of the 293 cases of paratyphoid 63 were reported from the county of Chester (Birkenhead 28 Bebington 16 Wallasey 14) and 146 from Lancaster (Liverpool 79 St Helens 18 Manchester 15 Widnes 4 West Lancs 4) smaller aggregations from Staffs (Stoke 11 Stafford 6) and Northants (Brixton R D 4), remaining cases widely scattered

The number of civilian and service sick in the Infectious Hospitals of the London County Council on July 9 was 1412 including scarlet fever 129 diphtheria 261, measles 158 whooping-cough, 517 enteritis 16 chicken pox 47 erysipelas 43 mumps 8 poliomyelitis 1 dysentery 1 cerebrospinal fever 37 puerperal sepsis 8 enteric fevers 17 german measles 6 other diseases (non infectious) 82 not yet diagnosed 81

Deaths —In 126 great towns there were 3 (0) deaths from enteric fever 3 (1) from scarlet fever 26 (4) from whooping-cough, 8 (0) from measles, 21 (0) from diphtheria, 41 (3) from diarrhœa and enteritis under 2 years and 6 (1) from influenza The figures in parentheses are those for London itself

Liverpool Manchester and Nottingham each reported a fatal case of enteric fever There were also 4 deaths from diphtheria at Liverpool

The number of stillbirths notified during the week was 183 (corresponding to a rate of 36 per thousand total births) including 13 in London under the transverse metatarsal arch and the toes may, or may not, need a very thin wedge Into the compartment opening along the inner edge, one, two or three leather wedges are inserted to obtain the greatest possible degree of comfort I much prefer these separate leather wedges to one thick wedge of moulded rubber As a precaution the supports were put in the shoes for both feet, and on leaving the shop the patient was able to walk in comfort for the first time in 18 months All sciatic pains disappeared soon afterwards The supports were used for eight years as there was a tendency to recurrence of sciatica when they were left out of the shoes while engaged in strenuous housework They have not been needed during the past year

CASE 2 —In 1937 a sister of this patient had an attack of subacute sciatica which did not yield to medicinal treatment as quickly as desired She then obtained instep supports similar to her sister's The pain quickly subsided, and she left off using the supports after six weeks There has been no return of pain

CASE 3 —A man of about 55 had to give up working as a village postman owing to very severe " sciatica " After treatment in bed for some weeks, at home and in hospital, he attended the outpatient department for about a year He was then told that nothing more could be done to relieve the pain He was still in misery every time he put his foot to the ground His son heard of the benefit derived by the first patient from instep arch supports and got a similar pair His father put them in his boots on a Saturday afternoon and promptly went to see a cricket match He announced, on returning home, that he had had no pain, nor did the sciatica return subsequently

Haynford, nr Norwich ALLAN EDWARD MAHOOD

DI-IODOTYROSINE IN TOXIC GOITRE

SIR,—Mr Wass underestimates the material which exists in this country for the study of thyrotoxicosis If he had referred to the synopsis of three lectures on Toxic Goitre which I delivered in May, 1939, at the British Postgraduate Medical School (*Brit med J* 1939, 2, 436) he would have found that I had used di-iodotyrosine as suggested by Harington in over 600 cases This was given in the form of tablets prepared by Messrs British Drug Houses, the dose employed being usually 2 tablets thrice daily—equivalent approximately to 40 minims of Lugol's solution in 24 hours Since 1938 we have added considerably to the series treated in this way in my clinic, though we do not now employ di-iodotyrosine as a routine for reasons which seem to us cogent—viz, it is relatively expensive and it is no more efficient than is Lugol's solution, though its portability makes it a convenient method of administering iodine But it is, I think, misleading to suggest that di-iodotyrosine has the advantages over iodine which Harington believed on theoretical grounds it might possess, he has never claimed that it exhibits any of these virtues in practice I think, therefore, that Mr Wass is over-optimistic if he hopes to influence favourably with di-iodotyrosine cases which fail to respond to iodine or which have become recalcitrant to its action

Harley Street W 1 CECIL A JOLL

VILLAGE SETTLEMENTS IN WAR TIME

SIR —Dr McDougall is not strictly correct when he says in his letter of July 19 that " the association of a general hospital cheek by jowl with a sanatorium is something new in medical organisation in this country " Although the name of Osler is not primarily associated with the war on tuberculosis, it was ever uppermost in his thoughts On many occasions he stressed the importance of a sanatorium being run in conjunction with a general hospital As a tribute to this ideal, the Osler Pavilion, which is the sanatorium for Oxford and district and at the same time a unit of the Radcliffe Infirmary, was opened in 1926 by Mr Neville Chamberlain, then Minister of Health This association has undoubted advantages—the patients are within easy reach of any type of consultant, are near their relatives, and yet have all the benefits of a sanatorium No less is this so from the teaching point of view—the students have ready access, and pulmonary cases can be and are used for final examinations Gone are the days when it took most of an afternoon to complete the journey to and from the sanatorium That such a scheme can work is shown by the fact that the number of beds at the Osler Pavilion has more than doubled since 1926 The i portant factor for continued success is the absence dual authorities In the presence of the latter t scheme will break down sooner or later

Oxford JOHN GRIEVE

POSITIVE SYPHILITIC TESTS IN HEALTH PEOPLE

SIR,—The question whether positive syphilis tests m occur in non-syphilitic people, as discussed in y *annotation of May 10 (p 606), requires careful conside* tion If care is taken to use suitable antigens and technique adapted to them, false positive reactions be very exceptional, even in blood from patients suffe from a variety of diseases other than syphilis or fr pregnant women Great progress has been made dur the last decades, but the aim has often been to incre the sensitivity of tests and the necessary specificity sometimes been insufficiently considered In c giving false positive results it is general experience t only one or some tests give positive reactions while oth do not It is often advisable, therefore, not to rely single test The more tests that are performed and *more they agree the more certainly is the result diagno* of syphilis This remains true in spite of improvem in technique and reliability of the tests

False positive results are due to an increased " labil of the serum proteins, and are not true antigen-antib reactions This lability is nearly always sufficie reduced by heating the serum to 55° C or, in s flocculation (clarification) tests by using higher concentrations Since non-specific reactivity is v exceptional even in pregnancy or diseases other *t* syphilis, false positive results in really health*y peo* must be rare indeed The fact that anima*l sera oft* react positively with antigens adapted for the examin tion of human serum must not be taken to imply tha the serum of healthy people sometimes gives positiv reactions The non-specific reactivity of the antige depends on the colloidal structure of the serum, and th structure differs in various animals from the structure man Thus antigens and methods suitable for th serodiagnosis of human syphilis cannot be used succes fully for the examination of syphilitic rabbits, for tha specially prepared antigens are needed with a lowe content of cholesterol It is a lucky chance that huma serum has a relatively high degree of stability Eagle report (*Amer J Syph* January, 1941, p 7) on attempt to distinguish " biologic false positive " reactio from cases of latent syphilis is not available to me present, but I should like to mention a method elaborate in my former department by Witebsky (*Z ImmunFors* 1933, 80, 323) by which it is possible, when th serum originates from a syphilitic patient, to recov the antibodies from the flocculates by elution at 55° and thus to differentiate syphilitic reactions from fal positive ones According to Bier and Trapp (*J Immun* 1941, 40, 465) this method may be improved by usi 10% sodium chloride solution instead of 0 9% saline f dissociation This procedure corresponds to that u by Heidelberger (*J exp Med* 1936, 64, 161) for th dissociation of complexes of pneumococcal carb hydrates and their antibodies

Trinity College, Dublin H SACH

SAMPLE OF PUBLIC OPINION

SIR,—In the large number of bodies that are beginni to occupy themselves in medical planning, little oppo tunity has so far been given for the general public voice its views When the claims and counter clai for a state salaried service versus private practice a being put forward by the profession, these usually inclu the profession's own interpretation of what the pub would like It is to be hoped that medical planne will now pay attention to the results of the Gallup surv you published on July 12 (p 59) Asked to choo between (*a*) all doctors and hospitals under state contr (*b*) extension of the panel system to include everybod and (*c*) having a private doctor, the answers from cross-section of the population were 55% for (*a*), 30 for (*b*), and 15% for (*c*) In other words, more th half the population surveyed was in favour of state co trol and a minority for extension of the panel or f simple private practice When the group was brok

RICHARD FOWLER WARD

M B LOND , F.R C S.E , MAJOR, R.A M C

THE death of Major Richard Ward from enemy tion was reported in an Army casualty list on June 11. was born in 1902, the son of Dr Frank Fowler Ward Ipswich He qualified M R C S from the London ospital in 1926 and took his M B Lond the following year After serving as casualty officer and house-surgeon at the East Suffolk Hospital and as senior house-surgeon at the Derbyshire Royal Infirmary, he joined his father in practice in Ipswich and helped him unofficially at the East Suffolk Hospital where Dr Fowler Ward had charge of the V.D and urogenital clinics During this period Richard went regularly to London where he did post-graduate work at St Peter's Hospital with a view to specialising in urogenital surgery On his father's retirement he succeeded him in his ppointments at the East Suffolk He quickly gained r himself, among his colleagues, a reputation as a agnostician and operator, and a member of the honorary staff has written "Ward's work in his specialty was f a high order and he was developing the same proficiency in general surgery A loyal and pleasant colleague is outstanding qualities to my mind were an intellectual sincerity which made him speak his mind without fear or favour, and a deep devotion to duty" On the reorganisation of the medical staff of the hospital some two years ago he gave up general practice and was elected an assistant general surgeon

Since 1929 Ward had been battalion medical officer of the 4th Suffolks and shortly after the outbreak of war ne was mobilised and went to France with a general nospital returning from Boulogne last summer with his unit He was a member of the town council at the time of his death

He leaves a widow and two young children

Medical News

University of Edinburgh

At a graduation on July 16 the address to the new graduates was delivered by Prof D K Henderson The following egrees and diplomas were conferred —

M D—* D S Fairweather, J A Farfor, ‡C A Green ‡David arley A G MacGillivray, * Hugh Miller, Andrew Paterson, I Ross, † W S Thomson

* Commended † Highly commended ‡ Awarded gold medal

Ph D—A E Sundareson, M B

M B Ch B—P A Adam, R S F Adam, W J Aitken, F G lexander W G Alexander, Alexander Anderson, William Anderon, Winifred A Bailey Helen S Barrett Konrad Bazarnik (Polish chool of Medicine), C L Bikitsha E C B Bramwell A S rown I G Brown J B Brown, M L Brown Robert Brown, atrick Bruce Lockhart, Maud L Buchanan G M Carstairs, osephine A Cartwright T M Chalmers, Edith M Churchward E Claireaux, J R Clark L E S Coghlan O C Colt J F owan J D Crombie Rosina G Dabb A B da Costa W J E arling, Esther A Davidson, F B Davidson Jacob Davidson J A euchars, H S Dewar J S Drummond, J W Drummond A D rysdale E C Eadie Ethel F Edwards A W G Elliott Esther Ewing E C Field D E P Forbes, W R Fyvie T M Galloway, ichael Gandz J A L Gilbert (in absentia), I C Godfrey J M old, I W B Grant, Marie P S Grant, A A Guild, D S Harling lizabeth G Harris K W Horn Henry Hutchison, Katherine I nt Douglas Jaboor, P M Kerr, A M Langwill, *J R Lauckner, ohn Lawson Philippa M Ludlam J M M'Alpin John M Clement, N C M Curdy H M T MacDonald J A Macfarlane R C 'Laren I M MacLeod G C Malloch K L Marks Margaret St C asson Ellis M Matthew, F G Maxwell Smith J C G Mercer , M Merriweather Grace M Mitchell, R C E Moffat *A G C eill D F Nicholson John Orr C A Palfrey, R B Parker, H Parkinson J M'D Paterson M G Pearson H J Powell W T Pretsell Thomas Primrose V T Pugh B C E Richard-n M R Rifaat Winifred B Ritchie, W G Robertson H E obins, H N Robson J D Ross, *J Y W Russell A J Sangster heila P V Sherlock O H Siung Betty V Slesser, J D A M nart, A C Smith C J C Smith Margaret S Smith Margaret S mith, J C W Somerville J J Stevenson, N R Stewart J R Stuart, A P Tait, Helena O M'I Taylor, Mildred S Tie Ten-Quee, Theodore Tie Ten Quee, J E Tinne, W H Toms, Janet C Trotter, Davina M van Weel J W Walford, Margaret J P Walker, Grizel Warnock Elizabeth M Watson, W B Whiston, J G Whitty, John Wilkinson, Jean C Willison J A C Wilson, Sara S Wood, H C Worrall, Kathleen M F Worrall, R K W Yang, and W W Yellowlees

* With honours

B Sc—O H Siung, M B

D.P.H—Olive B Barnetson † G A R Brown, † W D Buchanan, †John Cameron, M de S Craig, †William Giles, Rachel Hunter, † R P Seymour, †Mora A Smeaton and Mona M M'F. Thomson

D M R—† Kenneth Brauer, † Brian Donnelly, G H Illingworth, and † J A Wain

† In absentia

Scottish Conjoint Board

The following have passed the final examination and on July 18 were admitted licentiates of the Royal Colleges of Physicians and Surgeons of Edinburgh, and of the Royal Faculty of Physicians and Surgeons of Glasgow —

N V Appavoo, H K Banda F H Batchellor, S J Blau A H Brambir, William Brown, Mortimer Burdman, David Davidson, W J Dempster, H H Feldman, W J E Fernando, John Fitzsimons, Samuel Gelband E G Gordon H P Hall, H V Hankins, A S B Hebron, M H Hurwitz, James Ireland, Louis Kaywin, Herman Laret, Morris Links, Emanuel Lipschik Mary K McCabe, Alistair McCall, Thomas McMurray, J C MacWilliam, Irving Markowitz, Herbert Pearl, J M Stewart and L J Swirsky

E Edmund Nobel, M.D Vienna, was also admitted licentiate

Royal College of Nursing

The Minister of Health has informed the college that he contemplates setting up machinery for the consideration of nurses' salaries, and that nurses, hospitals and local authorities will be consulted before he comes to any decision on the matter It is understood that he has in mind a modified form of Burnham scale on the lines suggested by the interdepartmental committee The college, however, maintains that machinery dealing only with the salaries of nurses would be inadequate

Specialists for the R A M C

The Central Medical War Committee is asked from time to time to nominate specialists as lieut colonels in charge of medical or surgical divisions Any specialist in medicine or surgery who wishes to have his name considered for a post of this kind should communicate at once with the secretary of the committee, B M A House, Tavistock Square, London, W C 1

Service Award

The D S O has been awarded to Major F McL Richardson, M.D Edin , R A M C , for gallant and distinguished services in the Middle East

Prisoners of War

In a recent casualty list the following R A M C officers were posted as prisoners of war W. S /Captain H A Barker, M B , Captain A R Darlow, M R C S , Lieutenant J A S Mulligan, M B Belf

National Council for Mental Hygiene

The council is holding a public meeting at 26 Portland Place, London, W 1, on Thursday, July 31, at 5 P M , when Mr Kenneth Walker will speak on the need for a positive philosophy of life

Extra Cheese for Vegetarian Diabetics

On the recommendation of the food rationing (special diets) advisory committee of the Medical Research Council vegetarian diabetics are to receive an extra weekly allowance of 8 oz of cheese in addition to the special ration of 8 oz allocated to vegetarians

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Caldecote Hall, Nuneaton, which was taken over by the Ministry of Health last year and later relinquished, has now resumed its normal work of treating neurasthenia and addictions

The Dr Jessie Macgregor prize for 1938–41 has been awarded to Dr Agnes Macgregor for her work on pneumonia in the newborn

Obituary

JOHN DOUGLAS STANLEY

M D EDIN AND BIRM , F R C P

Dr Douglas Stanley, emeritus professor of pharmacology and therapeutics in the University of Birmingham, died at his home at Feckenham on July 5 He was a sound physician and an inspiring bedside teacher, who relied rather upon his own wide clinical experience than upon the written words of the textbooks Sparing of words, he had a dry incisive wit which drove home with emphasis his points and made his lectures memorable

Stanley came of an Ulster family, but began his education abroad, for his father was for some time chaplain at Antwerp, later settling as vicar at Oulton in Norfolk After qualifying in medicine at Edinburgh in 1889, and holding resident appointments at the Royal Infirmary, he completed his studies at the London Hospital and at Lille where he was for a time interne at the hospital In 1893 he went to Birmingham as resident pathologist at the General Hospital and demonstrator in morbid anatomy at the University, and all his life his medicine was founded on a close study of these subjects Some three years later he joined the honorary staff at the Queen's Hospital and the Children's Hospital, and became university lecturer in clinical medicine On the death of Arthur Foxwell he was appointed to the chair of pharmacology and therapeutics He was for some years editor of the *Birmingham Medical Review* and many of his papers there reflect his interest in the diagnosis of diseases of the lung "D S," as he was affectionately called by all, carried his kindness and practical sense into his life outside medicine His old patients and students knew him as a friend and after he retired from his hospitals he continued to serve them well as a member of their boards of management The interests of the Hallam Hospital, West Bromwich, were very near to him and he continued to act as its consulting physician until his death

Stanley retained throughout his life his love of French literature He was a man of wide interests and varied hobbies, amongst which perhaps the chief was the collection of old furniture of which he had a sound knowledge aided by a fine practical craftsmanship in cabinet-making and woodwork On his retirement into the country he parted with a portion of his collection in a sale which attracted considerable attention amongst connoisseurs His Irish glass, china and a selection of illuminated MSS attested his judgment in these antiquarian directions

ROGER NEVILLE GOODMAN

B SC LOND , M D CAMB , D P H

Dr R N Goodman, who died at Oxford on July 9 after an operation, was for 42 years a general practitioner in Kingston-on-Thames, to the freedom of which royal borough he was admitted in 1929 For the last nine years he had been living in retirement at Great Kimble, near Aylesbury

Lafayette

Roger Goodman was born in 1863, the son of Neville Goodman and Maria Cunliffe His forbears were Nonconformist millers and farmers of the Cambridge marches In his youth he sailed with his father round the world and up the Amazon collecting specimens After taking a London science degree he went to Cambridge where he was a scholar of St John's and took the first place in the natural sciences tripos but abandoned an academic career on the death of his father Going on to the London Hospital he qualified in 1887 and held house appointments there and at Brompton In 1890 he took over the practice of E M Shirtliff in Kingston, at first in partnership with A M Daldy, later with J G Owen, E J Woolley and H R Davies, a combination which represented four different London hospitals Almost from the start he was associated with local education, he was a member of the borough and county education committees and on the governing body of the Tiffin School and of the Grammar School, founded in 1305 by Edward Lovekyn whose chantry he was helpful in preserving, obtaining for both the playing fields they needed During the last war he acted as hon anæsthetist to the Epsom War Hospital and later was president of the Surrey branch of the B M A

"To an undergraduate visiting Dr Goodman's hom for the first time twenty years ago," writes T F, " was a little alarming After dinner, at which he nothing but milk pudding, we would sit in his consul room, surrounded by piles of new books I conf that I wanted to be a writer 'But hadn't you be *know* about something before you write?' he ask And when he saw my drawings he remarked that seemed to have drawn first and decided on the subject a wards Such forthright comment cannot always ha pleased patients, colleagues and fellow-townsmen, all were wise to profit by his intelligence and knowle He was serious-minded he did not need the flippa or the sentiment that others use to bypass facts purpose, indeed, was never escape he was honest, feet were squarely on the ground, and the patient was safe in his hands as anyone can hope to be To th who recognised a brain and character far above t average of the profession it seemed that he should ha had more important work to do, but perhaps his wo was as important as any "

At the age of 70 Dr Goodman retired to a house at t foot of the Chilterns, retaining and refreshing tastes th made retirement a happy change of occupations Here h was the shrewd and friendly neighbour, the observer of rar plants in the hedgerows and of the migrating of toads and glow-worms, the student of social and economic movements, and when the crisis came it found him dropping naturally into responsible offices He became a member of the county food control, he was responsible for keeping the register for the medical war committee, and he was the warden to whom everyone turned for help He even started growing belladonna in his field In his reply to those who conferred on him the civic freedom ten years earlier he suggested as his epitaph "He did not know—but he was willing to learn" And it was given to him in large measure to learn to know his fellow men, so that his life was increasingly of service to them

Dr Goodman was twice married, first to Louise Harvey Marriott, matron of Surbiton cottage hospital, who died in 1931, and then to Emily Green Horner, who survives him Dr Neville Marriott Goodman, only child of the former marriage, is a deputy senior medical officer of the Ministry of Health

CHRISTOPHER ROWLAND ALDERSON

M C , M R C S , MAJOR, R A M C

Dr. C R Alderson died in a prison camp on March 20 Born in Bradford in 1893 he joined the Liverpool Scottish in 1913, transferring to the Royal Engineers two years later, and in 1916 he was awarded the military medal He received a commission in 1917 and after the Armistice he saw further service in North Russia and was awarded the military cross After demobilisation in 1920 he studied medicine at University College Hospital, qualifying in 1925 He held house-appointments at the Seamen's Hospital, Greenwich, and the Prince of Wales' Hospital, Tottenham, before he settled down in practice at Eastbourne, also acting as assistant anæsthetist to the Ear, Nose and Throat Hospital there He was recommissioned as a major in the R A M C (T.A) in April, 1939, and was reported missing on June 19 of the following year

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Surgeon Lieutenant D A Prothero, whose death is announced, qualified in 1935 and took the diploma in anæsthetics of the Royal Colleges two years later Just before the outbreak of war he applied for a short-service commission in the Royal Navy A shipmate who served with him for over a year until the time of his death writes

"I had many opportunities of appreciating David Prothero's skill and clinical acumen and the abundant good nature which endeared him to us all His postgraduate work had given him a firm grasp on his work, and we came to rely upon his abilities"

ORIGINAL ARTICLES

SOME NUTRITIONAL DEFICIENCIES IN MAN

L S P DAVIDSON
B.A CAMB, M D EDIN, F R C P
PROFESSOR OF MEDICINE IN THE UNIVERSITY OF EDINBURGH

DIETARY deficiency may result directly from an insufficient intake of the necessary food factors, or indirectly from failure in their absorption or because of enhanced demands conditioned by increased metabolic requirements The great majority of clinical syndromes due to dietary deficiency result from an inadequate intake or faulty absorption of vitamins or minerals No clear-cut symptoms develop from insufficiency of carbohydrate or fat other than loss of weight and energy due to a low calorie intake If the protein of the diet is excessively low over a long period, œdema occurs, wounds heal very slowly and imperfectly, and a marked wasting of muscles develops, as a result of the hypoproteinæmia

In normal times fully developed syndromes such as beriberi, scurvy, pellagra and rickets are now uncommon in civilised countries The only exception to this rule is anæmia due to iron deficiency which I have own to be present in at least 50% of women and fants belonging to the poorer classes Minor degrees deficiency in vitamins and minerals are however, ommon The clinical manifestations of such subinical states are somewhat vague, the patient usually omplaining of general ill health loss of appetite and ergy, and sometimes an increased tendency to infecons In children there may be in addition a failure maintain a satisfactory weight and rate of growth nd a proper development of the bony skeleton and eeth The conception that such states of vague ill ealth are due to deficiencies of vital food factors is ased on special chemical methods of assay of the blood nd urine and on the clinical benefits which occur when e dietary deficiency is corrected In some cases of etary deficiencies it is extremely *difficult* to apportion he various manifestations present to a lack of individual od factors Thus, fatigue unduly easily produced and ss of appetite are apparently the earliest symptoms ertaining to deficiency of both vitamins B_1 and C he development of perfect teeth and the prevention of ental caries is dependent on an intake of adequate mounts of vitamins A C and D as well as of calcium ollicular hyperkeratosis is claimed to be a dermal hange induced by deficiency of vitamins A, C and the complex

It is a widely accepted dictum that when a person iffers from malnutrition owing to dietary deficiency, the eficiency is seldom single Even if one clinical syndrome ominates the picture multiple deficiencies are generally resent, although to a less degree This dictum should pply equally to deficiency states conditioned directly by he ingestion of an insufficient or badly balanced diet or directly by a failure in digestion and absorption Its cceptance is a wise procedure for it necessitates in every se of deficiency disease the most careful consideration f the dietary history and a full examination of the linical state in general and of the gastro-intestinal tract n particular Finally it postulates the need for supplyng a diet adequate in all essential nutritional principles his aspect was clearly demonstrated by a nutritional xperiment carried out under my direction some years go Several hundred children belonging to the poorest lasses, whose parents were mainly unemployed, were iven a daily supplement of vitamins A and D in a apsule, while an equal number of children from the ame school were given a similar capsule containing rachis oil At the end of six months no significant ifference was found in the two groups in regard to gain n height or weight or resistance to infection Since it as been clearly proved that a supplement of a pint of ilk daily will produce a remarkable improvement in utrition of children who are taking a poor diet, it must e assumed that the experiment failed to achieve this esult because only two out of the four vitamins which were deficient in the diet were supplied while the important deficiencies of iron and calcium and first-class *protein so necessary for growth were not corrected* The conclusions reached were that a deficient diet should be corrected by the giving of adequate quantities of the natural foods and that supplements of vitamins should be employed only for the treatment of established states of deficiency disease Nevertheless, I have often had patients under my care with a fully developed deficiency disease clearly conditioned by *an insufficiency of one* particular food factor with no clinical evidence of other deficiency syndromes, in spite of the diet being grossly defective in many respects or intestinal absorption being gravely impaired

The *object of the present communication* is to illustrate this aspect with the case-histories of nine patients suffering from a variety of deficiency states, all of whom I investigated during the spring of 1941 and demonstrated at a clinical meeting at the Western General Hospital, Edinburgh The nine cases are divided into three groups group 1, three cases of manifest scurvy, group 2, three cases of severe nutritional iron-deficiency anæmia in children, group 3, three cases of nutritional deficiency due to a failure in absorption of food factors from the small intestine, secondary to surgical interference

GROUP 1 · MANIFEST SCURVY

The three patients were elderly men aged 64 68 and 74, who for various reasons were living alone and undertaking their own catering and cooking All had small incomes and admitted that with the increased cost of living they had been forced to curtail their expenditure *on food For at least six months they had made no attempt to do any cooking and lived on* a diet of white bread, margarine, jam and tea supplemented on occasions by bought cooked meat sausage rolls or mutton pies No fresh fruits or green vegetables had been eaten for at least six months, potatoes were very seldom eaten, while *milk* was purchased in quantities sufficient only for tea The clinical manifestations of all three patients were the same—progressive weakness and loss of appetite and the development shortly before admission to hospital of pains in the limbs due to widespread bruising and *hæmorrhage into the muscles* The capillary-fragility tests were positive Sponginess and bleeding from the gums was absent in all three cases Two of the patients were edentulous and one had very septic teeth A considerable degree of anæmia was present the hæmoglobin percentages being respectively 58, 26 and 55 In two of the cases treatment with ascorbic acid produced a reticulocyte crisis followed by a *rise in the red cells* and hæmoglobin In one case no response was obtained until supplementary iron treatment was given, when a satisfactory improvement quickly resulted This patient had a hypochromic blood picture and had been losing blood from hæmorrhoids for a *long time* Accordingly it is suggested that ascorbic acid will only produce its specific hæmatological effects if the material required for the formation of erythrocytes and hæmoglobin is available in adequate amounts None of the three patients had free acid in the gastric juice, and this finding on theoretical grounds at least, suggests the possibility of impaired digestion and absorption of vital food factors It is therefore, of interest to note that, despite the achlorhydria and the ingestion of a grossly deficient diet none of the patients showed any clinical symptoms or signs to indicate a deficiency of vitamins A B_1 B_2 complex or D, with the exception that one patient had a smooth atrophic tongue which might be ascribed to deficiency of the vitamin-B_2 complex

The administration of a well-balanced *diet* with large quantities of ascorbic acid rapidly caused a complete disappearance of all the clinical manifestations of scurvy and the restoration of normal health

GROUP 2 IRON-DEFICIENCY ANÆMIA IN CHILDREN

The three children were aged 5, 6 and 8 years and came from one family They had been shockingly neglected by an alcoholic mother who had been drinking heavily for at least two years They were admitted to hospital *in a dirty*, verminous condition The striking feature

Notes, Comments and Abstracts

HEALTH OF PALESTINE

THE report for 1939 of the Department of Health of Palestine is more comprehensive than might be expected in these disturbed times Its chief interest lies in the comparison of the health of the three chief races Jews, Arabs and Christians, for the health services are in essence similar for all The results, however, do not tell us of differences in health due to true racial causes (though they appear to do so), but of the uses made of the health services and of how far this use is influenced by prejudice, energy and obstruction The cost of the services was 3 9% of the total estimated government expenditure Unfortunately 1939 was much disturbed by political strife which prevented developments of health work, but in spite of this the health of the population was remarkably good and there were no important epidemics The recorded incidence of infectious diseases was the lowest for many years, and the death-rate from them half that of 1931 The total population was 1,501,698—roughly 60% Moslems, 30% Jews and 10% Christians and others The birth-rate was twice as high in the Moslems (46 4) as in the Jews (23 0) Both rates are falling, that of the Jews more rapidly than that of the Moslems The death-rate of the Moslems is much more than double that of the Jews In 1939 the respective rates were 17 4 and 7 6 Here again both rates are falling, but that of the Moslems more rapidly Infantile mortality was 121 5 per 1000 live births among the Moslems and 54 among the Jews, in Christians the rate was 101 These rates are the lowest ever recorded and show a sharp decline from previous years

In the 29 main towns there were 7799 deaths, of which all but 671 could be classified There were 66 suicides, 344 homicides and 290 deaths from other violence The numbers of homicides and suicides are exceptional before 1938, when troubles became serious, the rates were comparatively low Diarrhœa caused 1336 and pneumonia 1258 deaths, then, in order, come heart diseases 617, cancer 364, cerebral hæmorrhage 311, and nephritis 276 The reported incidence of malaria was 3394 cases with 15 deaths, of typhoid 1235 cases with 134 deaths, of paratyphoid 175 cases with 2 deaths Tuberculosis gave 461 cases with 207 deaths, which seems hardly credible In this connexion we are told that the population in general has not been exposed to tuberculosis as much as most civilised communities, and that a progressive increase in morbidity and mortality may be anticipated unless proper prevention and control measures are instituted It is satisfactory to note that there has been no increase in tuberculosis in the past ten years A survey carried out in 1934 included Mantoux testing of 18,737 Arab children, and 15% gave positive responses A more recent test returned 13 6% positive Ophthalmias are a formidable problem in Palestine, for trachoma is widespread, epidemics of acute conjunctivitis (Koch-Weeks) are perennial and gonorrhœal ophthalmia apparently common In a population of 304,532, blindness in one eye was found in 8534 (present in 47 from birth) and total blindness in 3462 (present in 78 from birth)

MEDICINE UNDER TOTALITARIANISM

MOST people now realise the unhappy position of the arts in the countries where, under a totalitarian regime, all human enterprise must be harnessed to the cart of the state (or dragged unwillingly at the cart's tail) In Italy, at any rate, medicine is in the same uncomfortable situation, judging by a contribution to *L'attualita medica* (1940, 5, 198) which has somehow succeeded in reaching this country In this article, which is called "How to spread Italian culture," L Verney remarks in language recalling the old-fashioned religious tract that "we must strain every nerve to make Italy a cultural lighthouse, diffusing abroad the spirit of latinity", and this "not for sentimental reasons, but because of the resulting repercussions in the political and economic spheres" He complains that there is a lamentable neglect in foreign countries of Italy's contribution to medical knowledge, as he looks through the review columns of foreign periodicals he scarcely ever finds a review of an Italian book "It seems," he argues, "that our pu lishers do not think of sending books abroad for review otherwise this silence is inexplicable" There may, fact, be another explanation Other measures a advocated, such as the establishment in foreign countr of depots for the sale of Italian books and periodical translation of Italian literature into other language exchange of research workers and students with ot countries "Cultural propaganda must reach the le of the new Italy It must become worthy of our r destiny" Verney seems to feel no doubt that t offspring of the marriage between medicine and the st will be received with enthusiasm by the inhabitants less enlightened countries The war rather restricts t range of the activities he advocates, but his plans presumably part of the New Order which is to issue fr a German-Italian victory

STILL'S VERSES

THE small volume "Childhood and other Poem (John Murray, pp 152, 5*s*), by the late Sir Freder Still, recalls the old Greek epigram, so brilliantly tra lated by Cory, another lover of children

> They told me, Heraclitus, they told me you were dead,
>
> Still are thy pleasant voices, thy nightingales, awake
> For Death, he taketh all away, but them he cannot ta

"Pleasant voices" almost exactly describes the charac of these verses, for they are rather the exercises of accomplished and scholarly mind than the inspi effusions of a poet They will be treasured by *all* w knew their author, but can scarcely make a wider *app* to the lover of poetry, for with all their *felicity* language, and polished and careful art, they *lack the fi* and ardour of original thought

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Births, Marriages and Deaths

BIRTHS

HAWKINS—On July 15, at Oxford, the wife of Captain G F Hawkins, R A M C—a son

RITCHIE—On July 15 at Greenock, the wife of Surgeon Lieut Commander T H W Ritchie, R N V R, of Sanderstead Surrey—a son

MARRIAGES

ALLEN—FOXTON—On July 12 at Buckland Newton, Dorse Michael George Allen, M R C S, to Aileen Foxton

BATTLE—KING—On July 5, at Aylesbury, Richard John William Battle, F R C S, to Jessie Margaret King

BURNEY—HUMPHRIES—On July 14 in London, Dudley Burne M R C S, to Dione Humphries

GILLESPIE—WEST—On July 12 at Caversham, Ernest Harp Gillespie, M B, to Margery Bridget West

HARPER—POCOCK—On July 12, at Limpsfield, Ernest Harold Ca Harper, F R C S, major R A M C, to Barbara Pocock

LANCE—MEREDITH—On July 18 in London, Norman Du P Lance, M R C S, lieutenant R A M C, to Maureen Meredit

ROBERTSON—BLEICHROEDER—On July 19 at Kingston, Jo Albert Robertson, M B, captain R A M C, to Be Bleichroeder

DEATHS

HANNA—On July 13, William Hanna, M D Belf, D P H, Claughton, Birkenhead

HAWKINS—On July 12, at East Grinstead, Arthur Hawki B A Camb, M R C S, late of Bedford, and Eastbourne

MORE—On July 19, in London, Lancelot Paxton More, M B Ed colonel late R A M C

MORRIS—On July 6, in Boscombe, Arthur Hugh Morris, C B E, M R C S, D P H, colonel, late R A M C, aged 69

Appointments

BLISS, THEODORE, M R C S R S O at Royal South Hants a Southampton Hospital

COWAN, H A, F R C S E D L O temp ear, nose and thro surgeon to the Essex County Hospital, Colchester

DALEY, M DOREEN, M B Lond resident asst in obstetric the British Postgraduate Medical School London

GISSANE, WILLIAM M B Sydney, F R C S clinical director of t *Birmingham Rehabilitation Centre and Accident Hospital*

HENDERSON EDWIN M B Belf, F R C S E deputy medic superintendent at Boundary Park General Hospital, Oldha

MEADOWS S P, M D Lond F R C P temp asst physician Hereford County Hospital

*__PARKER J N__, M B Manc D P H deputy medical sup intendent at Baguley Sanatorium nr Manchester

* Subject to confirmation

DISCUSSION

The nine cases reported clearly indicate how, in the presence of a diet apparently grossly deficient in many factors, a single clear-cut deficiency syndrome may dominate the clinical picture Moreover, the dominant syndrome may be that of a particular vitamin or mineral deficiency in one patient and a different picture may be present in another ingesting an apparently similarly deficient diet In the group of patients with manifest scurvy, it would be easy to argue that the dominant picture was scurvy because of the widely accepted view that vitamin C is one of the vitamins that man is unable to synthesise or store in the body for any length of time But if this simple explanation is correct, it would be necessary to explain why the three young children with severe iron-deficiency anæmia, whose requirements of vitamin C should be high in view of the demands of growth, showed not a single sign of the scorbutic syndrome A study of the three cases of indirect dietary deficiency resulting from diarrhœa, small intestinal hurry and reduction of available absorptive areas in the small intestine showed that each developed entirely different clinical pictures Why did the patient with the gastro-jejuno-colic fistula who had the most severe and the most prolonged diarrhœa show no obvious signs of vitamin or mineral deficiency and only loss of weight ? Why did the boy of 19 develop pernicious anæmia with no signs of neuritis or dermatitis, while the woman of 60 developed an iron-deficiency anæmia with typical pellagrous skin and tongue lesions ? At present no answer can be given to these and other questions, but it is apparent that there still exist many gaps in our knowledge of deficiency diseases in man which can be bridged only by careful study of the factors which affect the absorption, synthesis, storage and utilisation of vital constituents of food Finally, the accepted standards of minimal amounts of vitamins and minerals needed to prevent the appearance of clinical symptoms and signs obviously requires reconsideration

SUMMARY

A fully developed deficiency disease due to lack of one particular food factor may be present although the diet is defective in many respects or intestinal absorption is gravely impaired

This is illustrated by three cases of manifest scurvy in elderly men, three of severe nutritional iron-deficiency anæmia in children, and three of nutritional deficiency due to failure of intestinal absorption after operation

The different clinical pictures seen in these cases cannot be explained on our present knowledge of the absorption, synthesis, storage and utilisation of foodstuffs, and further detailed studies of the factors influencing these are needed

I wish to record my thanks to Professor McNeil and Professor Learmonth for allowing me to investigate the patients in group 2 and group 3

REDUCTION OF DUST-BORNE BACTERIA BY OILING FLOORS

JOHN C THOMAS, M R C S

MAJOR, R A M C , OFFICER IN CHARGE OF A MILITARY LABORATORY

IT is becoming increasingly recognised that floor dust plays an important part in ward cross-infection, and it is reasonable to suppose that it may be equally important when it accumulates in places occupied by large numbers of people—for example, in air-raid shelters This hazard is undoubtedly enhanced by the inadequate ventilation associated with the blackout

Most dust organisms are innocent saprophytes, but the presence of pathogens in many circumstances is now well established Owing to the ease with which they are recognised, most of the work done on dust pathogens has been concerned with hæmolytic streptococci They have been recovered from the dust of burn wards and puerperal and scarlet-fever wards (Cruickshank 1935, White 1936, Allison and Brown 1937), and under experimental conditions van den Ende, Lush and Edward (1940) have shown that a group-B (Aronson) streptococcus retains its virulence in dust for at least 4 weeks I have confirmed this with group-A strains, and have repeatedly grown *Streptococcus pyogenes* from the air, bedclothes and dust of wards in which there have been outbreaks of follicular tonsillitis Recently, during a single sweeping of such a ward and its annexes, 102,000,000 of these organisms were recovered from the dust (Thomas 1941) Other pathogens known to persist in dust are *Corynebacterium diphtheriæ*, the pneumococcus and the tubercle bacillus, and a number of viruses probably retain their virulence there also

This paper describes experiments made in hospital with spindle oil,* which was shown by van den Ende and his colleagues to be highly effective in reducing aerial contamination from dust It is interesting to note that it has taken more than 30 years and the present conditions to demonstrate the importance of an oil which was the main constituent of 31 dust-laying oils investigated by Heise in 1909

Most of the experiments were made in the hospital canteen Other experiments were made in a ward during an outbreak of acute streptococcal tonsillitis (mixed types 3 and 6), during which large numbers of β-hæmolytic streptococci were recovered from the air, while a smaller series of tests was made by oiling the operating-theatres corridor The experiments were made in collaboration with the team of workers at the National Institute for Medical Research, as part of a larger investigation into the problems of air-borne infection (Andrewes et al 1940)

METHODS OF AIR SAMPLING

Air counts were made, usually on 10 c ft volumes, on 4 in plates of a 1/500,000 gentian violet blood-agar (prepared by adding 2 ml of 1 in 10,000 aqueous gentian violet solution to 100 ml of melted nutrient agar just before adding 10% horse blood), which Garrod (1933) showed to be a selective medium for certain aerial pathogens † The plates were incubated aerobically for 18–24 hours and the colonies counted as total organisms , total α-hæmolytic organisms , and β-hæmolytic streptococci The last were picked off into serum broth and tested after 15 hours for soluble hæmolysin production , positive strains were examined serologically by the late Dr F Griffith, of the Research Institute for Streptococcal Infections, Hammersmith A few plates were incubated anaerobically and yielded almost pure cultures of streptococci (Fuller and Maxted 1939) In all, 1026 plates were exposed, 703 in the canteen and 323 in the wards

The medium was tested before use by exposing a number of plates simultaneously with others of plain blood-agar both in a ward with a high streptococcus/saprophyte ratio, and in the canteen where the ratio is reversed In each case Garrod's findings were confirmed (table I) There is a considerable reduction in the total count (about 95%), due almost entirely to a reduction in saprophytes, the streptococci being almost unaffected The gentian violet blood agar medium inhibits the growth of *Bacillus subtilis* and moulds, and yields plates entirely free from spreaders In the same table are given comparative figures for two other experiments, A and B (not directly related to spindle oil tests), in each of which the reduction ratio is of the same order That it is lower in experiment A than in experiment B is directly referable to the fact that the dust saprophytes had already been artificially reduced in A, while in B they were allowed to accumulate

A number of methods are available for enumerating bacteria in air, none of which is perfect The simplest is to expose petri dishes and allow organisms to precipitate on them for a given time Counts by this method, however, vary considerably with experimental conditions of their appearance was intense pallor, which was due to severe hypochromic microcytic anæmia The hæmoglobin levels on admission were 17%, 23% and 45% The youngest child, with the lowest hæmoglobin, showed much œdema, especially of the lower limbs, which was thought to be due partly to the severe anæmia and partly to hypoproteinæmia The children's intelligence was satisfactory and no evidence of organic disease in any organ was found A careful investigation of their diet showed that for at least a year before admission to hospital no fresh fruit, green vegetables or eggs had been consumed One pint of fresh milk for the whole family was purchased on rare occasions Their meals consisted essentially of white bread, margarine, jam and tea, sweetened with condensed milk Sometimes, when their father found time to cook, they were given a soup of some kind, or more rarely a stew Fried chip potatoes were eaten fairly frequently at tea On occasions a mutton pie or some cooked meat was purchased Cod-liver oil was never taken

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* Spindle oil is a crude, heavy petroleum oil, used extensively in the cotton industry as a lubricant The samples used had the following specifications colour, yellow , odour, strong , cloud test at 0° C clear , specific gravity 0 886 kinematic viscosity 53 21 centistokes at 20° C 22 3 centistokes at 37 8° C, Redwood viscosity 201 sec at 70° F 95 sec at 100° F 52 sec at 140° F flash point (Pensky Martin) closed 178° C (352° F) open 187° C (369° F) The oil was supplied by Stemco Ltd under the name Yellow Oil No 2

† A smaller series of experiments suggest that crystal violet and methyl violet 6B exert a similar selectivity in the same concentration

Despite a diet which appeared to be grossly defective in many respects, these growing children were of normal height and weight, showed no undue capillary fragility or other hæmorrhagic features suggestive of scurvy, no clinical or radiological signs of rickets, and no dermal, neural or cardiac changes suggestive of vitamin-B deficiency Gross dental caries was present On a well-balanced diet, with the addition of ferrous sulphate, there was a rapid rise in the hæmoglobin level, and in a few weeks the children were restored to perfect health

GROUP 3 DEFICIENCY DUE TO FAILURE OF ABSORPTION

Case 1 —Female aged 60 The patient was sent to Professor Learmonth because of diarrhœa and frequent vomiting, with a suggested diagnosis of subacute intestinal obstruction Three months previously she had had a gastro-enterostomy performed in London for pyloric obstruction A few days after the operation she started to vomit, but as air-raids were frequent and the patient very nervous the vomiting was attributed to functional causes The patient returned to her home in Scotland, where she ate a diet which became progressively less and less satisfactory both qualitatively and quantitatively She says that this reduction in her diet was made because she was afraid to eat in case pain and vomiting recommenced About one month before I saw her a watery diarrhœa began, the number of motions being as high as 9 daily, incontinence developed and vomiting began again Anorexia was severe, weight was rapidly lost and the tongue became painful, red and fissured Pigmentation of the skin, especially of the parts exposed to sunlight, was noticed, and by the time the patient was admitted to a nursing home, the classical picture of fully developed pellagrous skin lesions was observed The temperature was elevated and the patient was mentally dull A moderate degree of iron deficiency anæmia was present, the blood-count being red cells 3,400,000, Hb 62%, colour-index 0 91, white cells 9800

Recognising the nutritional aspects of the case and suspecting that the gastro intestinal symptoms were not due to intestinal obstruction from adhesions, Professor Learmonth put the patient under my charge She was given large doses of nicotinic acid, yeast and iron by mouth and liver extract by injection Within 48 hours the vomiting and diarrhœa had ceased and appetite had returned Within a week a remarkable improvement was observed in the pigmentation, glossitis and dermatitis, and within six weeks the patient was restored to perfect health and normal weight

Case 2 —Male aged 19 At the age of 16 the patient developed acute appendicitis Perforation occurred, with subsequent peritonitis Appendicectomy with suprapubic drainage was carried out A fæcal fistula developed later, which would not close According to his operation notes, an ileo-transverse colostomy was performed, with exclusion of the distal loop The fistula closed after three months but subsequently recurred At a later date an operation for subacute intestinal obstruction was performed Despite further surgical procedures the fistula never closed, injection of uroselectan through the abdominal sinus indicated that a communication existed between the cæcum and the rectum In addition to the loss of much food residue through the external fistula, vomiting and diarrhœa were constantly present and the boy's condition steadily deteriorated

By the time he was admitted to the wards of the Western General Hospital under the charge of Professor Learmonth he was grossly emaciated and very pale Physical examination revealed no evidence of organic disease in the heart, lungs or abdomen other than the features already recorded His blood-count was red cells 2,500,000, Hb 60%, colour index 1 16, white cells 7000, the blood picture was typical of pernicious anæmia The test meal showed a histamine fast achlorhydria and a sugar-tolerance test showed a flat blood sugar curve characteristic of poor intestinal absorption Despite the long history of anorexia, vomiting, diarrhœa and external loss of intestinal contents no clinical evidence of scurvy, pellagra, neuritis or tetany was found

The patient was given 4 c cm of Campolon by injection and ferrous sulphate tablets by mouth A reticulocyte rise of 14% resulted, but the blood-count remained stationary for twelve days Between the fifth and seventh day, 30,000 units of vitamin B_1 was given by parenteral injection From the twelfth to the twenty-fifth day of treatment, 2 c cm of Anahæmin was given every second day, and thereafter on every third day during the period of this therapeutic investigation The reticulocytes rose to 17% on the ninth day after the commencement of treatment with anahæmin, but the red-cell and hæmoglobin levels remained stationary during the next 18 days He was given 500 mg of ascorbic acid daily concomitantly with the iron, liver extract and vitamin B A third rise of reticulocytes to 11% occurred and the blood-count began to improve, a gain of half a million erythrocytes being made during the next ten days Large daily doses of nicotinic acid were now given but no further improvement in the blood count resulted Finally the protein of the diet was increased to 150 g daily, and the red cells steadily rose to 4,500,000 and the hæmoglobin to 88% in four weeks, with a corresponding improvement in the patient's general health and strength

As the fistula was still discharging Professor Learmonth decided to operate At operation it was found that the loop of small intestine which had previously been anastomosed with the transverse colon was the jejunum and not the ileum The length of small intestine available for absorption was about four feet This was considerably less than indicated in the records of the previous operation Unfortunately the patient only survived the operation for a few days, death being due to peritonitis resulting from leakage at the fifth and last anastomosis performed for the restoration of the continuity of the bowel Histological examination of long strips of the stomach, extending from the fundus to the pylorus, showed the mucosa to be healthy, no evidence of glandular change or muscular atrophy being present

These findings clearly indicate that the blood picture of pernicious anæmia in this patient was not the result of a failure in the production of Castle's intrinsic factor by the stomach but was conditioned by defective absorption It is in this group of the megalocytic anæmias that I have often found the response to parenteral liver therapy unsatisfactory until it is supplemented by ample amounts of vitamins and minerals and in particular by a high protein diet

Case 3 —Male aged 45 Twelve years previous to admission to hospital the patient had a duodenal ulcer which perforated At operation the perforation was closed and the peritoneal cavity drained Recurrent epigastric pain eventually led to a gastro enterostomy being carried out in 1938 Twelve months later the patient began to have a watery diarrhœa, with two to six motions daily In January, 1941, two months before admission to the wards under the charge of Professor Learmonth, a rapid deterioration set in, the patient having as many as 36 stools a day Four stones in weight were lost during this period On physical examination the patient was found to be still fairly well-nourished, the skin being soft and elastic and the weight being approximately 10 st There were no abnormalities of the heart or lungs A mild hypochromic anæmia (Hb 86%) was present A history of tingling and numbness and carpopedal spasm suggestive of tetany was obtained, but the blood calcium was normal A diagnosis of gastro-jejuno colic fistula was made on clinical grounds, and this was confirmed by X rays and subsequently at operation Some ten days after the operation the patient developed a pulmonary infection from which he died At autopsy bronchopneumonia and empyema were found There were no signs of peritonitis Correction of the gastro-jejuno colic fistula had been successfully accomplished

It was remarkable that despite the prolonged and severe diarrhœa and the fact that so much of the absorptive area of the small intestine had been short circuited, the patient showed only a marked loss of weight, and no dermal, glossal, neural or vascular features suggestive of deficiency of any vitamin

DISCUSSION

The nine cases reported clearly indicate how, in the presence of a diet apparently grossly deficient in many factors, a single clear-cut deficiency syndrome may dominate the clinical picture Moreover, the dominant syndrome may be that of a particular vitamin or mineral deficiency in one patient and a different picture may be present in another ingesting an apparently similarly deficient diet In the group of patients with manifest scurvy, it would be easy to argue that the dominant picture was scurvy because of the widely accepted view that vitamin C is one of the vitamins that man is unable to synthesise or store in the body for any length of time But if this simple explanation is correct, it would be necessary to explain why the three young children with severe iron-deficiency anæmia, whose requirements of vitamin C should be high in view of the demands of growth, showed not a single sign of the scorbutic syndrome A study of the three cases of indirect dietary deficiency resulting from diarrhœa, small intestinal hurry and reduction of available absorptive areas in the small intestine showed that each developed entirely different clinical pictures Why did the patient with the gastro-jejuno-colic fistula who had the most severe and the most prolonged diarrhœa show no obvious signs of vitamin or mineral deficiency and only loss of weight? Why did the boy of 19 develop pernicious anæmia with no signs of neuritis or dermatitis, while the woman of 60 developed an iron-deficiency anæmia with typical pellagrous skin and tongue lesions? At present no answer can be given to these and other questions, but it is apparent that there still exist many gaps in our knowledge of deficiency diseases in man which can be bridged only by careful study of the factors which affect the absorption, synthesis, storage and utilisation of vital constituents of food Finally, the accepted standards of minimal amounts of vitamins and minerals needed to prevent the appearance of clinical symptoms and signs obviously requires reconsideration

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Air counts were made, usually on 10 c ft volumes, on 4 in plates of a 1/500,000 gentian violet blood-agar (prepared by adding 2 ml of 1 in 10,000 aqueous gentian violet solution to 100 ml of melted nutrient agar just before adding 10% horse blood), which Garrod (1933) showed to be a selective medium for certain aerial pathogens † The plates were incubated aerobically for 18–24 hours and the colonies counted as . total organisms , total α-hæmolytic organisms , and β-hæmolytic streptococci The last were picked off into serum broth and tested after 15 hours for soluble hæmolysin production ; positive strains were examined serologically by the late Dr F Griffith, of the Research Institute for Streptococcal Infections, Hammersmith A few plates were incubated anaerobically and yielded almost pure cultures of streptococci (Fuller and Maxted 1939) In all, 1026 plates were exposed, 703 in the canteen and 323 in the wards

The medium was tested before use by exposing a number of plates simultaneously with others of plain blood agar both in a ward with a high streptococcus/saprophyte ratio, and in the canteen where the ratio is reversed In each case Garrod's findings were confirmed (table I) There is a considerable reduction in the total count (about 95%), due almost entirely to a reduction in saprophytes, the streptococci being almost unaffected The gentian violet blood agar medium inhibits the growth of *Bacillus subtilis* and moulds, and yields plates entirely free from spreaders In the same table are given comparative figures for two other experiments, A and B (not directly related to spindle oil tests), in each of which the reduction ratio is of the same order That it is lower in experiment A than in experiment B is directly referable to the fact that the dust saprophytes had already been artificially reduced in A, while in B they were allowed to accumulate

A number of methods are available for enumerating bacteria in air, none of which is perfect The simplest is to expose petri dishes and allow organisms to precipitate on them for a given time Counts by this method, however, vary considerably with experimental conditions such as bacterial size, air currents, humidity, and size and position of the plates. With simple plates it is common to find an artificially high saprophyte/pathogen ratio (as is to be expected from the relative sizes of the two types); indeed, unless there are a very large number of pathogens in the air none may be grown at all. Wells's air-centrifuge, in which the organisms are deposited on the sides of agar-lined tubes, is a considerable improvement on simply exposed plates for quantitative analysis. But the apparatus is troublesome to use and difficult to procure, and since its sensitivity to spreaders is high, counts are often difficult to make with any accuracy.

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* Spindle oil is a crude, heavy petroleum oil, used extensively in the cotton industry as a lubricant The samples used had the following specifications colour, yellow , odour, strong cloud test at 0° C clear specific gravity 0 886 kinematic viscosity 53 21 centistokes at 20° C 22 3 centistokes at 37 5° C, Redwood viscosity 201 sec at 70° F 95 sec at 100° F 52 sec at 140° F , flash point (Pensky-Martin) closed 178° C (352° F) open 187° C (369° F) The oil was supplied by Stemco Ltd under the name Yellow Oil No 2

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Bourdillon, Lidwell and Thomas (1941), by combining the principle of Owen's dust-counter with that of Hollaender and dalla Valle's (1939) apparatus for air counts, have recently produced at Hampstead an efficient piece of apparatus for this purpose which they call the “ slit sampler.” ‡

Essentially it consists of a small, air-tight, metal box in which is a mechanically rotated table for the Petri dish turning at a constant, slow speed (2 revolutions per min.). Air is drawn into the chamber by a power-driven pump, through a radial slit, measuring 1.1 in. by 0.01 in., in the top of the box, the rate of flow being controlled by an adjustable valve in the suction circuit. The actual rate of air-flow over the plate is measured by a simple water manometer calibrated by a flow-meter with a single mark equivalent to a flow of 1 c. ft. per min., at which rate the machines are designed to work. Not all the organisms entering through the slit are retained on the plate; some are inevitably carried over and lost. With a constant rate of air-flow, however, this error, though possibly selective, should be constant and therefore of no significance. The efficiency of our machines was believed to be upwards of 70% for organisms of 2μ or more in size. It fell, however, sharply with smaller organisms, and when tested against a single organism spray of *Strep. salivarius* or *Chromobacterium prodigiosum* was as low as 15–20%. There is not this falling off of efficiency with smaller organisms in the high-plate machines, while their efficiency against larger organisms is of a high degree. In the present spindle oil experiments we are dealing with these larger organisms and aggregates and there is no reason to doubt the efficiency of the apparatus for such a purpose. All my experiments have been made with these machines.

TABLE I—AIR-SAMPLING: COMPARISON OF BLOOD AGAR (BA) AND 1/500,000 GENTIAN VIOLET BLOOD AGAR (GVBA) AS MEDIA FOR AERIAL COUNTS

	Preliminary tests				Subsequent tests (total organisms only)			
	Total organisms		β streptococci		Expt A		Expt B	
	BA	GVBA	BA	GVBA	BA	GVBA	BA	GVBA
Plates exposed	92	92	30	30	62	134	45	124
Total count	12,334	3284	35	305	4827	3096	9854	6904
Vol. of air tested (c. ft.)	212	920	30	300	124	1340	90	1240
Organisms per c. ft.	58.21	3.57	1.17	1.02	38.90	2.31	109.8	5.57
Reduction ratio	16.3/1		1.14/1		16.8/1		19.7/1	

In a preliminary control period the efficiency of the slit sampler (SS) was tested simultaneously against simply exposed (SE) plates (table II). The SS plates recovered nearly six times as many organisms in the same time as the SE plates. The most significant increase, however, is not in the total number of organisms but in the finer, more slowly sedimenting streptococci, of which eleven times as many were recovered. This was strikingly demonstrated on one occasion in the epidemic ward when an SS plate grew 39 β-hæmolytic streptococci compared with a single colony appearing on an SE plate. Again, in a clean surgical ward of another hospital we recovered β-hæmolytic streptococci on 5 out of 8 SS plates, although a continuous series of SE plates over a period of days had failed to demonstrate a single pathogen.

TABLE II—COMPARISON OF SLIT SAMPLER (SS) AND SIMPLY EXPOSED PLATES (SE) (100 PARALLEL PLATES)

Mean colonies per plate	SS	SE	RATIO SS/SE
Total organisms	81.79	14.22	5.75
Total α hæmolytic organisms	44.50	8.91	4.99
β streptococci	1.00	0.09	11.11

The slit sampler, moreover, gives remarkably constant results when sampling a steady atmosphere, and yet by reason of its speed of sampling is sensitive enough to reflect in the plate-count any sudden event which increases the aerial flora. In the same ward consecutive plates yielded 84, 84, 98 and 85 organisms of which 24, 22, 24 and 23 were β-hæmolytic streptococci, while an adjacent ward gave comparably steady counts of 34, 26, 30, 29, 31 and 25 total organisms with 9, 9, 10, 8, 6 and 10 β-hæmolytic streptococci growing on gentian violet blood-agar.

EXPERIMENTS IN THE CANTEEN

The canteen is a large, low room of nearly 35,000 ft. capacity, with doors at either end; it is relatively poorly ventilated in winter owing to the blackout. The floor is of plain, unpolished, oak boards. It is open for twelve hours a day and during these experiments was used by probably 1000 people each day, up to 200 people being present at a time. It contains two full-size billiard tables, a table-tennis table, and many tables and chairs, apart from the serving counters. The actual floor space walked on is therefore much less than the total of 2900 sq. ft., and there is concentrated wear on certain parts. The slit samplers were placed in a constant, central position; the slit entrance was 3 ft. from the floor.

Control experiments.—At the outset the canteen wa swept in a haphazard manner by a number of convalescent patients, who raised a considerable amount o dust. The aerial counts rose from a mean of 0.7 organism per c. ft. before sweeping to 24.1 per c. ft. during the actual sweeping period. The fall in the air count as soon as sweeping was completed was very rapid, and even with peaks of 300 or more organisms per plate, the count fell to normal within 30 min. (fig. 1). This is due to the fact that many of the dust organisms are adherent to minute particles of rapidly sedimenting dust (during sweeping a visible film of dust appears on the plates).

With the introduction of organised sweeping the peak counts were promptly halved, the mean sweeping counts being 10.4 per c. ft. for three consecutive days. During this time the men learned to sweep in the same way each day, so that the subsequent counts should be as nearly comparable as possible. These experiments proved the adage “ too many cooks . . . ” for much more dust was caused by a number of men sweeping than by one going quietly about the job (fig. 2). It was often noticed that subsequent dusting produced an even higher peak than that met with during sweeping. This is because during dusting organisms are shaken downwards off walls and other surfaces above the slit samplers, whereas during sweeping the organisms have to rise from the floor before they collect on the plates.

During these experiments the introduction of hypochlorite aerosol “ mists ” had very little effect on the number of dust organisms raised (fig. 1c), and the same was true of scrubbing the floor and treating it with a light petroleum “ cleaning oil ” (fig. 1d). The counts during this control period (with the exception of the haphazard sweeping day), were all of the same order, and it was convenient to take as a control figure 10

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‡ The sampler has not yet reached its final form, and I am grateful to Dr. R. B. Bourdillon and Mr. O. M. Lidwell for allowing me to give this brief description of the earlier machines which we used for this work. Subsequent designs have shown that increased efficiency is obtained by bringing the plate closer to the slit, and experiments with these new high plate machines are in progress. The experiments described here were made with mark II machines in which the plate was at a fixed distance of 20 mm. from a thin square ground slit, as compared with the 2–4 mm. distance in the later models.

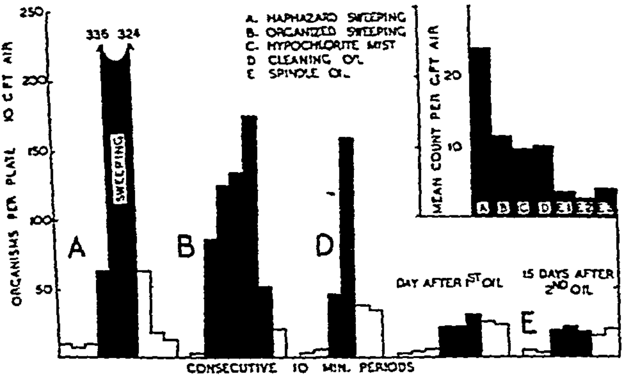

FIG 1—Air-counts during sweeping in the canteen

organisms per c ft of air growing on gentian violet blood-agar (equivalent to 170–200 organisms growing on blood-agar) The mean β-streptococcus count at this time was 0 53 per plate

Spindle-oil experiments—At the end of the control period on Dec 5, the floor was again scrubbed with hot water and soap, and a gallon of spindle oil per 1000 sq ft was then applied It was rubbed in by hand, using a well-soaked bunch of rags until the surface was not more than faintly oily to the touch, particular attention being paid to cracks between boards and in the surrounding wainscot (the same method can be applied to linoleum)

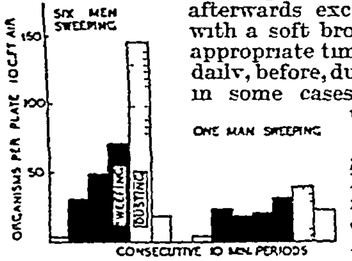

FIG 2—Effect of number of people sweeping upon dispersal of dust in the canteen

Nothing more was done to the floor afterwards except that it was swept with a soft broom and oiled afresh at appropriate times Counts were made daily, before, during and after sweeping in some cases they were prolonged throughout the day

The oil costs 2*s* 6*d* per gallon, with a reduction for large quantities A gallon is sufficient for one application to a ward measuring 20 ft by 50 ft, and is effective for periods up to two months, depending on the amount of traffic Nothing further has to be done to the floor after treatment so that the oil effects a considerable saving in labour and money

The application of spindle oil resulted in an immediate and striking fall in the sweeping peak, which remained low for sixteen days (fig 3) Immediately after the oiling the mean count was 2 4 per c ft 72 colonies only growing compared with 298 on the last control day This low level was maintained for ten days, after which there was a slow, steady rise The mean count during the sixteen-day effective period was 3 66 per c ft air, after which the count jumped suddenly to the pre-oiling level On Dec 22 the floor was oiled afresh with the same effect, the mean count during a slightly lengthened effective period of 18 days being 2 46 per c ft During this period there were two noticeable peaks (fig 3, a and b), on Dec 27, 1940, and Jan 1, 1941 On the night before each of these peaks (Boxing Day and New Year's Eve), the canteen had been used as the buffet for a dance in the adjacent hall, with the result that the tables were left littered with an abnormal amount of debris On each occasion it was necessary to clear this during the experiment and the increased counts are undoubtedly due to the dust raised from these tables over which of course the floor oil had no control When the floor was oiled for the third time, on Jan 11 a proprietary preparation was used which consists mainly of spindle oil with some apparently unnecessary additions The effective period for the third oiling was still longer—23 days with a mean count of 4 08 per c ft

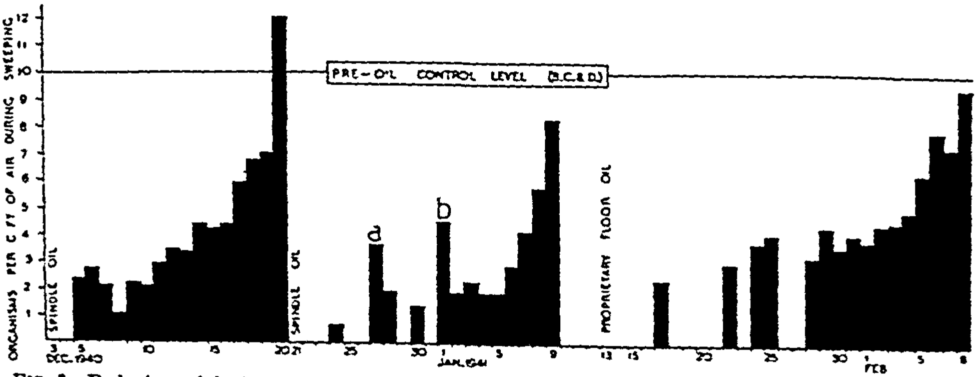

FIG. 3—Reduction of dust-organisms by the application of spindle oil to the canteen floor Mean number of organisms per c ft air each day during sweeping time

There was a significant reduction not only of total organisms but of β-streptococci during the periods when the oiling was effective, although detailed investigations of these organisms were only made during the first-oiling period Then only 49 presumptive streptococci grew on 227 plates, a mean of 0 21 per plate compared with 0 53 in the controls This represents a reduction of 2 5 1

After the oiling of the floor every part of the canteen became cleaner, since no dust was dissipated by people walking about, and any they brought in with them had only to fall to the ground to be fixed This general cleansing effect was strikingly shown by the condition of the billiard tables Immediately after the first oiling, plates exposed while the tables were being brushed gave counts considerably higher than those during sweeping itself, although the tables were 15 ft away from the machines On the third day after oiling this brushing peak was smaller and next day had disappeared nor did it subsequently return during the effective period of the oil although it had constantly been noticed during the control period (fig. 4) The oil, by retaining the dust on the floor had among other things, cleaned the billiard tables This observation may have value in relation to billiard saloons as incubating grounds for infection

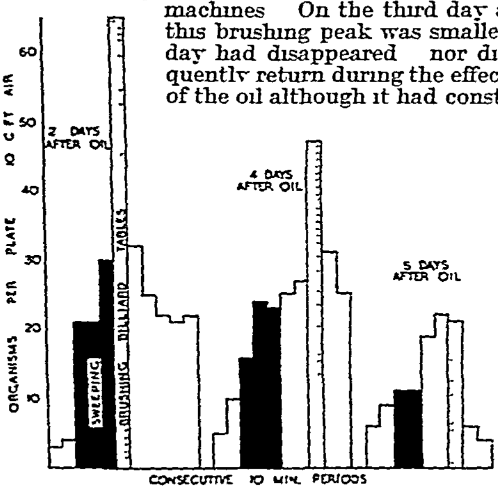

FIG 4—General cleaning effect in the canteen of spindle oil on the floor Counts before and after sweeping the floor and brushing the billiard tables

EXPERIMENTS IN WARDS

Confirmation of the effectiveness of spindle oil in laying dust organisms was obtained in a hospital ward in the course of a more extensive investigation into the problems of prevention of cross-infection A surgical ward was chosen which was divided by a glass partition and door into a 16-bed and a 10-bed section The 16-bed section was used for testing the oil and the 10-bed section as a control At the time of the experiments a mild epidemic of streptococcal tonsillitis was waning, this was mainly due to a type-6 streptococcus, but some patients had exhibited a type-3 infection All the patients at some time or another had given positive throat swabs, and the most likely source was an old chronically suppurating mastoid in one corner of the ward Counts were made simultaneously in both wards, the patients either sitting quietly or lying in bed at rest After a series of control observations the beds were straightened (not properly made but the counterpanes shaken and put straight), counts were made during and after this The wards were swept out half an hour later and the sweeping peak counted (fig 5) On every day and in each ward the same sequence of events occurred in the quiet periods the counts were low, approximately half of the total organisms being type-specific streptococci, during bedmaking a cloud of organisms was thrown into the air, the streptococcus count being more than doubled and the total organisms rising to more than 400 per plate Sweeping in the control ward caused a similar peak in the counts with a rise in the numbers of streptococci in the air In the oiled ward, however, the sweeping peak was almost non-existent Similar results were obtained in a small, single bed cubicle, in which test plates during sweeping grew only two or three streptococci compared with nearly 150 per plate before oiling

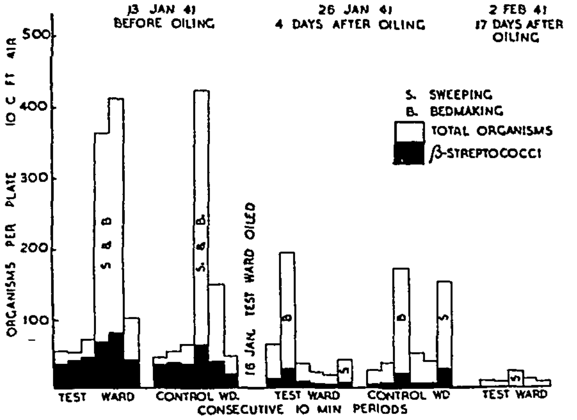

FIG 5—Air-counts in control and oiled wards, showing peaks during bedmaking, and the satisfactory effect of oiling the floor on the count during sweeping An epidemic of streptococcal tonsillitis was present during the earlier counts

DISCUSSION

Spindle oil can be applied to both wood and linoleum; if used directly on concrete it soaks in rapidly and the effect is soon lost, experiments are in hand to find an efficient proofing substance which will prevent this rapid absorption By using it on wooden and linoleum-covered floors the number of organisms projected into the air during sweeping is considerably reduced, and the reduction lasts for increasing periods with each subsequent application, up to a maximum of six to eight weeks The physical dust-laying action is more prolonged than the bacteria-laying effect shown by these experiments After a fourth oiling of the canteen floor the effective dust-laying period ran well into the seventh week, and even at this time counts showed a mean of only 6 5 organisms per c ft of air during sweeping—which was still below that obtained during the pre-oil control days During the control period the dust swept from the floor was dry and powdery, it spread widely and rapidly throughout the air and every part of the room became dusty After oiling the character of the dust was changed it was darker and matted together in large particles which did not rise at all during sweeping (fig 6) It is on this purely physical aggregation that the effectiveness of the oil depends, for the viable pathogens are firmly fixed to the dust particles and so cannot be spread into the air The floor continues to weep minute traces of oil throughout its effective period, at what seems to be a fairly constant rate Analyses of total ether-soluble or chloroform-soluble substances in oiled dust showed little difference up to 29 days in the wards, although there was approximately a 50% reduction in the well-worn parts of the canteen in a fortnight

The oil itself is not bactericidal, serving merely to retain the organisms in the dust They are still viable and may be pathogenic so that the dust must still " regarded as a potential source of infection and should disposed of suitably" (van den Ende et al 194

Spindle oil imparts a pleasant, dark, matt colour to ordinary boards, and the final surface is not slippery There may be a slight slipperiness for a few hours immediately after oiling but this rapidly disappears We have opened the canteen as soon as two hours afterwards, and neither there nor in the wards have we had a fall or accident for a period of more than four months The opinion of men on crutches or on Bohler irons is that the floor surface is much prefe able to polished ward floors Dr van den Ende kind measured the coefficient of friction between our floors an both rubber and leather soles, and compared it with un treated and polished ward floors He showed that ther was no significant difference to worn leather soles, bu that the oiled surface was slightly more slippery to rubber shoe (table III)

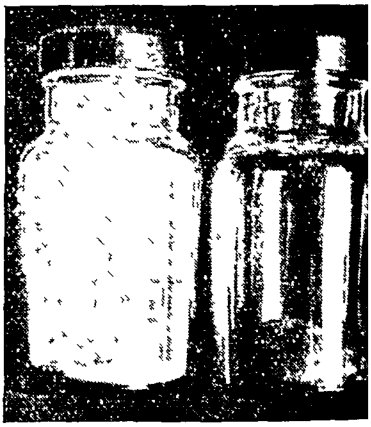

FIG 6—Dust from the canteen floor befo (left) and 29 days after (right) treatme with spindle oil Note absence of du cloud in the oiled sample Both bottl were shaken immediately before t photograph was taken

The ward experiments demonstrate two point first, that large numbers of pathogenic organisms a present in the air of such wards, and secondly, th every common event such as bedmaking or sweepi causes a further cloud of organisms to be projected in the air (cf Cruickshank 1941) At the time of t counts shown in fig 5, dust assays yielded betwe four and five million β-streptococci per gramme Su dust is, therefore, a potent reservoir of infection and mu be respected and treated as such The application spindle oil to the floor does much to minimise this danger, and should prove valuable in controlling the spread o infection not only in hospital wards, but in any place where large numbers of people are collected for any length of time

TABLE III—COEFFICIENT OF FRICTION (λ) * OF OILED AN UNOILED FLOORS (VAN DEN ENDE)

Site	λ (mean of 4 readings)	
	Worn leather/floor	Rubber/floor
Canteen		
Worn oil	0 698	0 917
Fresh oil	0 719	0 816
Ward		
Polished	0 684	1 105
Untreated	0 633	0 983
Oiled	0 652	0 861

* Ratio of force (F) required to move one surface over the other to the total force (W) pressing the two surfaces together $\lambda = F/W$ where λ = coefficient of friction

SUMMARY

The effect of spindle oil on wood floors has been tested over a period of months, both in a crowded canteen and in hospital wards In every case there has been a significant and prolonged reduction (about 80%) in the number of organisms projected into the air by sweeping This reduction applies both to the common dust saprophytes and to pathogenic streptococci

The effective period of the oil is shown to increase with each application up to a maximum of about two months, depending on the amount of traffic on the floor The cost is low and is more than offset by the saving in floor polishes

The oil can be applied to all wood floors, provided polish is removed beforehand, and to either glossy or cork-inlaid linoleum The basis for primary application is 1 gallon per 800–1000 sq ft floor space

Attention is drawn to the number of pathogens which may accumulate in ward dust, and it is suggested that the use of spindle oil on all ward floors would remove much of the danger of infection from this source Its use in any crowded place, such as air-raid shelters, factories and large stores, would have a similar effect and would result in a general cleansing of the air

The value of 1/500,000 gentian violet blood-agar as a selective medium for aerial counts is confirmed, and a brief description is given of the slit sampler, a new piece of apparatus for making these counts

I wish to thank Major General H. Marrian Perry, director of pathology, Army Medical Services, for permission to carry out this work, Colonel E B Marsh for his help, the workers at the National Institute for Medical Research, especially Dr C H Andrewes, Dr R B Bourdillon, Dr M van den Ende and Mr O M Lidwell, Ph D, for their coöperation and the loan of apparatus, and my assistants, Sgt H G Stevens and Cpl T Bury, for their help in the laboratory

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PUNCH PROSTATECTOMY

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THE surgical treatment of bladder-neck obstruction, whether due to adenoma, carcinoma or fibrosis, has given rise to floods of discussion and avalanches of literature The sole conclusion has been, until recently, one or other form of suprapubic or perineal removal Any intelligent man, whether lay or medical, who is approaching the prostatic age views the result of all this discussion with horror Many attempts have been made to side-track what is undoubtedly an ordeal for patient and surgeon alike In 1935 Gershom Thompson and his colleagues at the Mayo Clinic reported a series of 451 consecutive cases without a single death in which prostatic obstruction had been treated by means of the cold punch The operation is carried out endoscopically, usually without any external incision, and it allows of the patient being out of bed the day after operation The treatment can almost be described as ambulatory Confinement to hospital is a matter of days rather than months

Many of us tried to emulate the example of the Mayo Clinic, but most of us fell short It seemed then either that Gershom Thompson and his colleagues were reporting too favourably on their cases or that prostatic disease in America was different from that in this country But on visiting the Mayo Clinic with Mr T J D Lane, it became clear that the results they were attaining outstripped anything we had seen This paper is an account of an attempt to follow the example of Thompson, Emmett and their colleagues We have tried to observe fully the instruction generously given in the Mayo Clinic, and any shortcomings cannot reflect on either the operation or the teaching we received

OPERATION AND AFTERCARE

Most of our cases are admitted to hospital either with, or threatened with, acute or chronic retention of urine On admission a catheter is passed if necessary and, if there is much residual urine, is left in situ Blood-urea examination is carried out, a blood-urea of 100 mg per 100 c cm or less can be ignored so long as urinary output is satisfactory and the other aspects of the case are favourable Routine X-ray and physical examinations are made, and in the absence of contra-indications a low spinal anæsthetic is administered and the prostate and bladder are examined endoscopically Digital rectal examination is often entirely misleading and affords little indication of the degree of obstruction or the amount of prostatic tissue which must be removed to effect restoration of micturition Using endoscopy, diagnosis is made on the operating table and treatment is planned accordingly The Gershom Thompson resectoscope can be used for examination of the bladder, the prostatic urethra and in most cases the ureteric orifices

It consists of an outer sheath carrying an electric bulb and a diathermy electrode A fenestrum is cut in this sheath near its distal end and into this prostatic or other tissue can be introduced by manipulation The inner sheath is removable and ends in a razor sharp cylindrical knife for the purpose of excising such tissue as is ensnared in the fenestrum A continuous flow of water passes through the instrument so that the field is constantly clear Portions of divided prostatic tissue are washed into the bladder, and when the bladder has become distended with water the pieces are released through the instrument during the process of emptying Cutting is continued until the prostatic capsule is exposed and until there is no longer any prostatic tissue within reach. In the interest of the patient an arbitrary time limit of 45 minutes is applied

The aim of the operation is to restore function, so that as much of the enlarged prostate is removed as possible This, in many cases, must amount to about four-fifths, in some as much as 64 g has been removed at one sitting During the course of the operation the bladder becomes choked with prostatic tissue and excision must be interrupted in order to suck the pieces out by means of a large syringe As there is a constant flow of water bleeding points can be identified easily and coagulated by the diathermy electrode At the end of the operation all small vessels are carefully coagulated, the bleeding being satisfactorily controlled, the instrument is removed and a Foley catheter inserted

After-treatment is of paramount importance The bladder and the indwelling catheter must be kept free of clots by repeated irrigation In some cases this may mean washing every 10–15 minutes This is continued until the urine becomes clear and no clots are left in the bladder The nurses who carry out this procedure must be properly trained in it Asepsis is maintained by using a closed drainage system, the catheter being drained into a bottle which the patient is able to carry about with him Most patients are out of bed the day after operation and are allowed to walk about the ward or sit in comfortably heated alcoves Slight rise of temperature after operation is not uncommon but can usually be controlled with sulphonamide The catheter is removed between the second and fourth day The patient is then expected to pass water himself Usually, 6 hours after removing the catheter, he is asked to micturate and the amount of residual urine is checked If a considerable quantity remains in the bladder the catheter may either be left in for a day or two longer or catheterisation may be repeated every 6 or 12 hours until the residual urine is slight If at the end of 6 or 7 days voiding is still unsatisfactory more prostatic tissue may have to be removed, but I now rarely find this necessary Commonly, at the end of a week the patient declares himself satisfied with the ease of micturition and the force and strength of his stream, and it is not unusual for him then to be discharged from hospital. One patient was so satisfied at the end of 4 days that he refused to waste any more time in hospital

DANGERS AND DISADVANTAGES

Urethral stricture, incontinence, recurrence of prostatic obstruction and fistula into the rectum are all mentioned as complications of punch prostatectomy Urethral stricture occurs in one of two situations in the meatus or at the penoscrotal junction Meatal strictures are due to the attempts to force a large instrument through a narrow meatus, they are prevented by simple preliminary meatotomy, and their cure is equally simple Strictures at the penoscrotal junction are due to the necessary manipulation of a large instrument at a point where the urethra is normally fixed and consequently acts as a fulcrum It is usually easily dealt with by the passage of a bougie or by internal urethrotomy This complication occurred in 4 of my series of 230 cases

The danger of permanent incontinence as the result of punch prostatectomy is negligible I have twice seen examples once as the result of my own efforts in the use of a McCarthy resectoscope , and once after suprapubic prostatectomy in another clinic One case of temporary incontinence is worth mentioning

A man, aged 56, had retention unrelieved by repeated catheterisation towards the end of an attack of abortus fever His urine was foul , he had a purulent urethritis and repeated rigors I removed his prostate by the transurethral route and he left hospital on the fifth day able to empty his bladder, but for something like five months afterwards he was incontinent Examination by pin-prick showed anæsthesia around the anus, and almost certainly the incontinence was a result of the spinal anæsthetic He recovered completely

I have not been doing punch prostatectomy long enough to estimate liability to recurrence of symptoms At the Mayo Clinic recurrence is estimated at about 3% It is of little significance, because one can relieve the patient again by operation, and he is again well in a few days instead of a few months Fistula into the rectum has never occurred among my cases

FATALITY

In my 230 cases, all subjected to punch prostatectomy according to the method of Gershom Thompson, 24 died (10 4%) This statement requires amplification It has been my practice to offer punch prostatectomy to nearly every patient who presented himself with gross signs of bladder-neck obstruction It appeared to me that the risks attendant on this operation were not much, if at all, greater than those facing a patient subjected merely to suprapubic drainage without subsequent removal of the prostate Thus my series included many poor surgical risks I found, too, that increasing experience of the operative technique and organisation of the after-treatment of the patient—both of which take time to acquire and develop—brought a reduction in the fatality

Of the 24 deaths, 19 occurred in the first 130 patients , these were operated on while the clinic was accommodated in the annexe of a general surgical ward largely concerned with the surgical treatment of bronchiectasis, pulmonary tuberculosis and empyema Cross-infection of the ordinary surgical type was inevitable, and in addition 3 of my patients succumbed after operation to a *Bacillus aertrycke* infection The causes of the deaths were as follows —

Pulmonary abscess plus pyuria	1
B aertrycke infection	3
Instrumental injury	2
Cerebral thrombosis	1
Stokes Adams syndrome	1
Carcinoma of prostate (anæsthetic death)	1
Advanced renal damage	6
Gross heart failure at time of operation	3
Repeated strokes	1

The average age of all patients in this group of 130 was 68 3 years and of the fatal cases 71 4 years

In June, 1939, my clinic was moved to a separate building in which two wards and a new operating theatre had been provided solely for the treatment of these cases At the same time the organisation of the team of male nurses was completed and I was given the assistance of a surgical registrar, Mr William Cowell Among the first 100 patients admitted to the new department and subjected to prostatectomy there were 5 deaths The average age of this group was 64 9 years and of the five fatal cases 69 years I have classified these 100 patients as (*a*) those who were bad operative risks , and (*b*) those who might be reasonably expected to withstand the surgical onslaught of punch prostatectomy Criteria placing a patient in the first category were cardiovascular disease, hypertension, gross renal insufficiency, obesity and thyrotoxicosis On this basis 47 patients could be placed in the group of bad operative risks , of these 5 died (10 6%) The average age of the group was 69 4 years and of the fatal cases 69 years In the second group of 53 (average age 61 6 years) there was no mortality

I submit that punch prostatectomy abundantly justifie itself on two grounds first because where the patien is a poor operative risk, the fatality is probably lowe than for any other operative procedure which might b attempted upon him , and secondly because where th patient is in reasonable physical condition and sufferin only from bladder-neck obstruction, the operation is th safest in the whole range of prostatic surgery Th following cases illustrate the types dealt with

ILLUSTRATIVE CASES

CASE 1 —A man of 71 Every attempt at emptying hi bladder occupied 10–27 minutes He had had six previou attacks of angina pectoris , another occurred on the 10t postoperative day He left hospital on the 12th day and live in comfort till his next attack of angina carried him off 1 months later

CASE 2 —A man of 72 with pernicious anæmia Red cell 2,200,000 Blood-urea 70 mg per 100 c cm Residual urine 6 pints One month of catheter drainage while the red cel count was brought up to 4,300,000 Punch resection 24 g of prostate removed A year later he was fit, enjoying lif and carrying out his work as a farmer

CASE 3 —Aged 75, with a suprapubic tube, cardia ischæmia and bronchiectasis Prostatectomy refused o many occasions by far seeing surgeons Punch prostatectomy , recovered , now has closed bladder and is enjoying life

CASE 4 —At the age of 70 this patient had had a suprapubic cystostomy Prostatectomy refused on grounds of unfitness At 77 he underwent punch resection with excision of the suprapubic sinus , wound dry and patient emptying bladder in 7 days

CASE 5 —Toxic goitre with septic urine and stone in th bladder Punch prostatectomy and stone crushed Recovered

CASE 6 —Inoperable carcinoma of the stomach Retention of urine for 8 days Punch resection , left hospital o the 8th day

DISCUSSION

It will be clear that several of the cases quoted wer entirely unfit for any serious operation on account o senility or gross cardiovascular disease, and would neve have been fit for suprapubic enucleation Many patient in the series of 230 had foully infected urine and som had calculi which were crushed and removed at the tim of prostatectomy Another advantage of the punc operation is that patients are encouraged to get out o bed , as Mayo and Gershom Thompson[1] say, old me "are like a foundered horse , if they get down it i difficult to get them up, and their strength ebbs awa rapidly" The average postoperative stay of m patients in hospital has been just over 12 days , this figure includes long-stay patients who have been detained for social reasons

Punch resection is an operation carried out on the best surgical principles it is done under direct vision with the operative field constantly in view , incision is by means of a sharp knife and bleeding points are seen and arrested All this sounds simple, but the operative technique is difficult to acquire , in Gershom Thompson's opinion, to put a resectoscope into the hands of a man who is not prepared to study its use is like giving a submachine gun to a small boy who has been reading "Deadwood Dick" Success demands a team and a carefully trained team, and to embark on the operation without such skilled aid is to court disaster But, putting surgical considerations aside, the operation has long been demanded by the patient in America and is now rightly being demanded in this country

SUMMARY

Punch prostatectomy is the operation of choice for bladder-neck obstruction, whether due to cancer, prostatic hypertrophy or median bar It is carried out by an instrument introduced into the urethra and almost invariably without any external incision

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[1] Mayo, C H and Thompson, A *Coll Pap Mayo Clin* 1935, 27, 351

The period of confinement to bed is 1–2 days and the verage duration of stay in hospital about 12 days

The operation can be used on patients who are bad urgical risks and is not contra-indicated by the presence f calculi or infected urine

The safety of the operation excels that of any other nethod of surgical treatment available

CALCIUM AND PHOSPHORUS STUDIES IN THYROTOXICOSIS

AND AFTER SUBTOTAL THYROIDECTOMY[*]

J DOUGLAS ROBERTSON, M D , D Sc St And , D P H.

It is now well established that in thyrotoxicosis there is a disturbance of the mineral metabolism of the body, producing an increased excretion of calcium and phosphorus The evidence for demineralisation was based on an osteoporosis of the skeleton demonstrated radiologically and at autopsy, and on calcium-balance studies where the output of calcium far exceeded the intake The literature has been reviewed by Aub and his collaborators (Aub, Bauer, Heath and Ropes 1929), and more recently by Beaumont, Dodds and Robertson (1940) Although many serum-calcium determinations have been carried out, the results produced little evidence to suggest that much decalcification was taking place There is no unanimity about the level of serum calcium in thyrotoxicosis, whether it is raised, lowered or normal Aub and others (1929), Hunter (1930) and McCullagh (1928) stated that the serum calcium was normal, Leicher (1923) and Wade (1929) found it low, the latter maintaining that the hypocalcæmia varied directly with the degree of toxicity of the case, while Montanari (1928) and Means (1937) noted an elevation Observations on the effect of subtotal thyroidectomy on the serum calcium again by no means agree, various authors finding postoperatively a rise, a fall or no change Aub and others (1929) stated that the serum inorganic phosphorus is within the accepted normal limits in thyrotoxicosis

In the present inquiry, a series of 14 cases of thyrotoxicosis were studied before iodine or other treatment ad been given and again after subtotal thyroidectomy y this means each case studied would act as its own ontrol The serum calcium and inorganic phosphorus ere estimated in each case

Results —Table I gives the findings before and after peration, with the basal metabolism and calcium excretion In table II the results are summarised and compared with those of the 60 normal controls discussed in the first paper in this series[1] It will be seen that the mean serum calcium and mean inorganic phosphorus in the untreated stage of thyrotoxicosis are lower than the normal means, and that after subtotal thyroidectomy the respective means rise and approach normal Calculated according to Fisher's P test (1938) the difference between the serum calciums before and after subtotal thyroidectomy is significant ($P < 0\ 01$) The difference before and after subtotal thyroidectomy is also significant in the case of the inorganic phosphorus ($P < 0\ 01$) If now a comparison is made between the postoperative results in the thyrotoxic patients and in the normal controls, by applying Fisher's P test it is found that there is no significant difference in the serum calciums ($P > 0\ 2$) or in the inorganic phosphorus ($P > 0\ 3$)

ABLE I—SERUM CALCIUM AND INORGANIC PHOSPHORUS OF PATIENTS IN THE UNTREATED STAGE OF THYROTOXICOSIS AND THREE MONTHS OR MORE AFTER SUBTOTAL THYROIDECTOMY

Case	Before iodine and operation				After operation			
	Serum calcium	Serum inorganic phosphorus	Basal metabolism*	Total calcium output†	Serum calcium	Serum inorganic phosphorus	Basal metabolism*	Total calcium output†
	mg /100 c.cm			mg /kg body wt	mg /100 c cm			mg /kg body wt
FD	9 6	3 2	+ 61	19 2	10 1	3 5	− 19	12 1
EF	9 8	2 8	+ 60	46 2	10 8	3 8	− 8	15 9
EG	9 1	3 3	+ 38	29	10 1	4 7	+ 4	14 3
EH	9 5	3 3	+ 36	16 3	10 5	3 7	− 14	19 1
FI	9 6	2 8	+ 29	29 1	11	4	− 17	11 5
EJ	9 7	3 5	+ 28	20 1	9 8	3 9	− 8	13 5
FK	9 4	3 5	+ 21	14	10 8	3 7	+ 3	13 8
EL	10 8	3 2	+ 20	40 6	10 6	3 7	− 4	13 3
EM	10 6	3 5	+ 19	13 9	11 2	3 5	− 4	9 9
FN	9 4	3 5	+ 16	34 7	10 2	3 2	0	16 4
EO	9 5	2	+ 15	34	11	3 5	− 13	7 9
FI	9 2	3 2	+ 14	21 6	10 9	4	− 10	4
EQ	9 9	3 5	+ 7	23 5	10 4	3 9	− 6	18 7
ER	9 9	3 1	+ 6	11 9	9 9	3 3	− 7	10 7
Mean	9 71	3 17	+ 26	25 3	10 52	3 74	− 7	12 9

* Aub DuBois standards   † In urine and fæces

DISCUSSION

In studying the serum calcium and inorganic phosphorus in thyrotoxicosis and their respective variations after subtotal thyroidectomy, the relationship and control of the parathyroid glands must not be overlooked The proximity of the parathyroid glands to the thyroid renders their inadvertent removal a possibility, and it is well known that such a procedure leads to tetany and a fall *in the serum calcium* It is conceivable that milder forms of parathyroid disturbance may occur, causing a slight fall in the serum calcium but without even minor clinical *symptoms of tetany* The findings in such a case were as follows —

TABLE II—FINDINGS IN TABLE I COMPARED WITH THOSE IN 60 CONTROLS

—	No of cases	Serum calcium			Serum inorganic phosphorus		
		Mean (mg /100 c cm)	Standard deviation	Range (mg /100 c cm)	Mean (mg /100 c cm)	Standard deviation	Range (mg /100 c cm)
Untreated thyrotoxicosis	14	9 71	0 46	9 1–10 8	3 17	0 44	2–3 5
After subtotal thyroidectomy	14	10 52	0 45	9 8–11 2	3 74	0 37	3 2–4 7
Normal controls	60	10 39	0 27	9 9–11 1	3 83	0 39	3 1–4 8

	Serum calcium (mg /100 c cm)
Untreated thyrotoxicosis	9 4
1 week after subtotal thyroidectomy	8 7
3 months after operation	10 2

Likely causes of this fall in serum calcium soon after operation unaccompanied by the clinical manifestations of tetany are trauma to the parathyroid glands through manipulation during the operation , and disturbance in the blood-supply to the parathyroid glands from œdema, blood-clot, or infection In order to avoid any such immediate postoperative disturbance in the serum calcium, the cases reported in table I had their postoperative blood analyses done several months after the thyroid was removed It is possible that the conflicting results of various workers on the behaviour of the serum calcium after subtotal thyroidectomy may be explained by the phenomenon described above

A statistical analysis of the blood-serum determinations in untreated thyrotoxicosis appear to leave no doubt that the serum calcium and inorganic phosphorus are diminished and that successful subtotal thyroidectomy in the absence of any parathyroid disturbance brings these blood constituents back to within normal limits In the present series no relationship was found between the depression of the serum calcium and the severity of the thyrotoxicosis such as was reported by Wade (1929)

Competent authorities are agreed that to promote health and to allow for ideal calcium retention an average of 1 g of that mineral should be taken every day, and that this amount should be increased to 1 5–2 g in pregnancy and lactation In thyrotoxicosis there is an excretion of calcium far above normal It seems reasonable to include as part of the treatment of this disease the administration of calcium in sufficient doses to raise the intake well above the normal optimum of 1 g daily, and to exceed 2 g daily when thyrotoxic patients become pregnant

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[*] This is the second paper in a series of four For references and methods of estimation see the first paper, Lancet, July 26 1941, p 97

[1] *Lancet* July 26, 1941, p 97

SUMMARY

There are hypocalcæmia and hypophosphatæmia in active untreated thyrotoxicosis

In the absence of any impairment of the parathyroids, successful subtotal thyroidectomy brings about a rise in the serum calcium and inorganic phosphorus to the normal level

A temporary fall in the serum calcium may take place after subtotal thyroidectomy without clinical manifestations of tetany This is probably due to trauma to the parathyroids or to a disturbance in their blood-supply from œdema, blood-clot or infection

The heavy calcium loss in thyrotoxicosis suggests that a higher intake than the normal optimum of 1 g daily should be taken in that condition

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THE TREATMENT OF SUPERFICIAL GRANULATING SURFACES

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IN treating injuries, especially burns, one often has to deal with extensive granulating surfaces, which are as a rule infected Dressings are painful and trying to the patient, especially when they have to be changed frequently In this condition I have used this modification of the Carrel-Dakin method with success

Two thin pads of gauze (A—B) are required, about six layers thick, and some small rubber tubing (C), tied up at one end and perforated for a few inches with small holes made by a strap punch—the ordinary Carrel-Dakin tube in fact These tubes are laid on one of the gauze pads as in fig 1, so as to divide the surface of the pad into approximately equal parts Each is fastened in place by two sutures (D) The other pad is then laid over the tubes and the two pads are tacked together round the edge, allowing the tubes to project at one corner as in fig 2 The pad is then sterilised

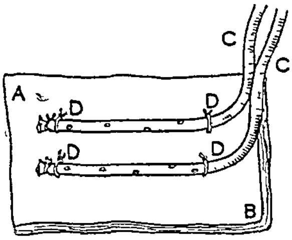

FIG 1

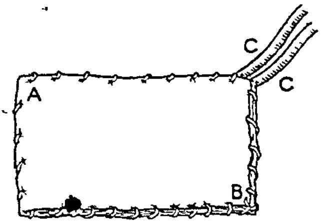

FIG 2

In applying these pads, the wound is first covered with a layer of "tulle gras" or coarse muslin, impregnated with Vaseline, using enough to prevent it from sticking to the wound surface and yet to leave the meshwork of the gauze patent The pad is then soaked in ½% chloramine, the excess fluid being lightly expressed and laid on the vaseline gauze Over this a piece of jaconet or rubber sheeting is laid The dressing is completed by a layer of wool especially arranged round the jaconet, and a bandage, through which the tubes project

The gauze is then kept moist and supplied with fresh antiseptic fluid by injecting the solution down the tubes —e g, 1 oz every six hours The quantity and the time will of course vary with the case This process entails no manipulation of the part and if the solution is warm is usually quite painless, and nothing more need be done for several days Usually the pads want changing every three days, and it is not harmful to a patient to give gas at that interval, should the dressing be painful The surgeon may elect to change the gauze pad and leave the vaseline gauze unchanged

Under this dressing the wound granulates readily, and the spread of epithelium from its edges proceeds without hindrance. Skin grafts take well under it, and it is quite feasible to leave the whole in position to allow the grafts to "take" Partial island grafts adhere q well and extend rapidly The pads can be of any or shape with any number of tubes They can be pared beforehand so that the dressing is very rapid

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Reviews of Books

Bacillary and Rickettsial Infections

Acute and Chronic By WILLIAM H HOLMES, professo medicine, Northwestern University, Chicago Lond Macmillan and Co Pp 676 25*s*

AFTER twenty-seven years of teaching medici Professor Holmes felt a not unusual dissatisfaction w the conventional textbook of medicine, in which accumulated facts are set out in a stereotyped and didac manner He was convinced that the only satisfy method of teaching is to show how medicine slo evolved and thus to learn to understand the relations of medicine to the growth of civilisation It would t be seen that there are few medical "discoveries our present knowledge represents the cumulative exp ences of many generations of priests, physicians, phy cists and philosophers, and the painstaking study a observation of many centuries In pursuance of object Professor Holmes wrote not another introducti to the history of medicine but a true textbook medicine, dealing in particular with rickettsial infectio and bacterial diseases The historical method has be followed throughout—plague, tularæmia, brucella inf tions, cholera, typhoid, dysentery, diphtheria, botulis tetanus, gas gangrene, whooping-cough, hæmophil infections and mycobacterial diseases are all considere from their first recognition down to their investigatio as recently as 1938 Professor Holmes had a fascinati style and there are few so erudite that they will not lea from this remarkable book News has just reached t country of his death two months ago, if he had lived, might usefully have applied the same technique to streptococci, gonococci, and pneumococci, the spi chætes, pathogenic worms, protozoa and viruses

Early Treatment of War Wounds

By WILLIAM ANDERSON, M B Aberd, F R C S, surg and lecturer in surgery, Aberdeen Royal Infirmary, surg director, E M S Northern and North Eastern Distric London Humphrey Milford, Oxford University Pre Pp 96 5*s*

THIS little book is mainly an account of experien gained in the last war It is too short to be more tha an outline, but it contains many practical hints whic should be helpful to surgeons inexperienced in th management of wounds under war conditions Th instructions given are clear and precise without bein unduly dogmatic, and the author obviously has a balance outlook There are some trivial errors, however, and few more serious ones The two most important advanc in the treatment of wounds—the use of the sulphonamid drugs and the closed-plaster method—are only men tioned briefly The right technique must be observe *if these methods are to be used successfully and* safely and some account of it should be included in any up to date book on the treatment of wounds A third of the book is mainly concerned with military organisation and first aid, and will be chiefly interesting to those who are serving in the Army An important place rightly given to delayed primary suture, but it is odd to find Trueta's name associated with the recommenda tion for primary suture when he has written that "it only in very exceptional cases that the wound of gun-shot fracture can be sutured" ("Treatment of w wounds and fractures," p 26) The chapters on wound *of the abdomen and chest are excellent, and* in spite *of the rather scant presentation of recent advances* this should prove a useful book

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The Index and title-page to Vol I, 1941, which wa completed with the issue of June 28, will be ready shortly A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W C 2 Subscribers who have not already indicated their desire to receiv indexes regularly as published should do so now.

THE LANCET

LONDON SATURDAY AUGUST 2, 1941

SINGLE AVITAMINOSES FROM MULTIPLE DEFICIENCIES

WE are accustomed to look upon a deficiency disease as a single entity, produced by lack of one essential food factor The nutrition worker, studying the vitamins in the laboratory, tries by limiting his variables to avoid complicating his results, and his animals most often receive diets as complete as possible except for the one factor being investigated The clinician, too, expects to find his examples of deficiency disease clearly partitioned off as scurvy, rickets, beriberi or pellagra But human dietaries are such that if they are short of one factor they are likely to be short of many The poor person who cannot afford the protective foods, or the person who is compelled by circumstances to live on an over-simplified tinned menu, may be denying himself most of the known vitamins, let alone the unknown ones Moreover certain vitamins have a common distribution, so that a diet composed to a large extent of white bread, for example, will be lacking in most of the vitamins of the B group, and one with no fruit or vegetables will be lacking in C, H and P Thus multiple shortcomings in the diet are not uncommon and it might be expected that these cases would present the classical signs of more than one deficiency disease But in practice patients showing such mixed signs are rare

Professor DAVIDSON in this issue describes three patients in whom a diet apparently lacking in several factors led to manifest scurvy with no obvious signs of other deficiencies On the other hand, three patients whose intestinal absorption was defective developed quite different syndromes, although there was no obvious difference between their diets What determined the symptoms in each case ? There are no doubt many factors which decide what deficiency state appears first in a patient receiving a diet lacking in more than one component The most important of these are the relative degree of each deficiency, the time taken for the effects of each avitaminosis to appear, and individual variations Two diets may seem much alike in their lack of several members of the B group, yet in one a special shortage of nicotinic acid will produce pellagra, while in another the nicotinic acid will be just sufficient but the lack of vitamin B_1 will produce beriberi The time taken for the deficiency diseases to develop varies considerably This is partly explained by differences in the capacity of the body to store the vitamins, so that deficiencies of the water-soluble vitamins, which are not stored to any large extent, tend to develop more rapidly than deficiencies of the fat-soluble ones But even among the water-soluble vitamins differences exist in the rate of development of signs of deficiency Thus if rats are given a synthetic diet lacking all the vitamins they will develop polyneuritis and die The effects of vitamin-B_1 deficiency, in other words, develop so soon that the other deficiencies do not have time to become apparent We must also bear in mind that people differ widely in their food requirements Some of the variations in absorption or utilisation are easily recognised and explained For instance, the absorption of vitamin K depends on an unobstructed flow of bile, the requirement for vitamin B_1 depends on the amount of exercise taken and on the amount of carbohydrate in the diet But in addition, as Professor DAVIDSON points out, there may be individual differences in absorption, synthesis, storage or utilisation which have still to be worked out Meanwhile, consideration of the relative extent of the deficiencies, and the relative rapidity with which the signs develop will often go a long way towards simplifying a puzzling case

THEORY AND PRACTICE IN CHEST SURGERY

THE high death-rate from penetrating wounds of the chest has always weighed heavily on military surgeons In a historical survey RANSON[1] showed that during the Crimean War the fatality from this type of injury was 79% in British hospitals, in the American Civil War the rate was 63% and in the Franco-Prussian War the Germans recorded a rate of 57% During the Boer War the rate in British hospitals was only 14%, the low figure being attributed to good climatic conditions and the predominance of bullet wounds During the last war the British fatality has been given as 27 5%, and in a French unit DUVAL[2] showed that improved methods of treatment reduced the figure of 70% in 1914–15 to 25–30% towards the end of the war

The Finnish campaign gave Soviet surgeons an opportunity of collecting fresh figures At a special unit in a base hospital MATSYEV and LINBERG have recorded the results of their experiences with hæmothorax and thoracic injuries respectively MATSYEV[3] analysed 184 cases of hæmothorax and found that 96 of them were closed and 88 associated with a definite pneumothorax Dyspnœa was generally present and was attributed mainly to the pressure of the enclosed fluid and air which displaced the mediastinum in addition to causing collapse of the lung Some rise of temperature was present in nearly every case even in those with no evidence of infection, in fact, only 10% were admitted to the unit with normal temperatures Severe pain, when present, was referred to the costal margin in a fifth of the cases, and in 2 cases the pain of a gastric perforation was closely simulated On radiological examination, the heart was seen to be displaced in 43 5% of the patients and this was held to be responsible for the acute distress often noted Hæmoptysis was common (75% of cases) and subcutaneous emphysema was present in 28 5% of the total Early and repeated aspiration was adopted as the routine treatment for hæmothorax, and this, besides relieving pressure symptoms, reduced the risk of secondary infection The complication of recurring hæmorrhage as the result of early aspiration was never encountered The most satisfactory time for the aspiration was found to be from the third to the fifth day after injury and 500–1000 c cm of blood was withdrawn at a sitting In just over half the cases a single needling was held to be adequate and attention is drawn to the fact that the blood is usually easily removed, and does not clot on standing Another interesting feature, which has recently been emphasised by Sellors,[4] was that the aspirated blood had a lower red-cell count and hæmoglobin percentage than the circulating blood It is noteworthy that secondary infection only occurred in 2% of the cases of closed hæmothorax though the proportion rose to 16% when there had been an open hæmopneumothorax In any case these figures compare favourably with those of Rose Bradford and Elliott,[5] who found infection in 25% of 450 cases of hæmothoraxes treated during the last war Pneumonia occurred in 17 patients in the Russian series but there was only one lung abscess Secondary breaking down of a chest-wall wound with formation of an open pneumothorax and empyema was observed in 5 cases and is rightly regarded as a very grave complication

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[1] Ranson F T *J thorac. Surg* 1940, 9 278

[2] Duval P War Wounds of the Lung Bristol, 1918

[3] Matsyev, I E *Surgery (U.S.S.R.)* 1940, 9 106

In another paper on the Russian experience in Finland Linberg[6] reviews 972 chest injuries, of which 83% involved the thoracic cavity Only 29 (3%) of these died, and among them were 12 men who had severe wounds elsewhere He suggests that the organisation and standardised treatment had much to do with the good figures obtained Admittedly the patients who reached the special chest unit were only the survivors from a much larger group of casualties, but the opportunity to bring some two-thirds of the patients direct from the front-line posts by aeroplane was no doubt valuable Air-transport was found to be superior to motor transport in every way when it was practicable Other factors believed to contribute to the good results were the sound general condition and physique of the soldiers and the fact that most of the injuries were caused by bullet wounds rather than by shell or bomb fragments Linberg emphasises the importance of establishing special units for the treatment of chest cases and holds that good results cannot be expected when chest casualties are distributed among the rest of the wounded He insists that conservative treatment of hæmothorax has no justification, and in this his view corresponds closely with practice in this country Blood should not be left in the pleural cavity merely because it is causing no symptoms it will ultimately produce severe respiratory disability, and aspiration should never be withheld on account of the fictitious danger of recurrent hæmorrhage Where there is a "sucking" or open wound the muscle and deep layers should be closed, though the skin wound may be left open If the skin is tightly sutured, emphysema and later infection of the chest-wall planes and pleura is a dangerous complication Experimental work on animals by Verhovitch and Ignatsovskaya[7] showed that the most satisfactory way of treating an open chest wound was to repair the deeper layers of the chest wall and drain the pleural cavity by a valvular rubber tube In some cases, as a life-saving measure, they advocate early pneumopexy to minimise the harmful effects of a free and open pleural cavity Their experiments were used as the basis of treatment in Linberg's unit, with good results Foreign bodies lodged in the chest should be removed as soon as possible and at the same operation wounds in the lung or adjacent viscera can also be dealt with

These Russian papers illustrate the pitch efficiency which can be attained in a base hospit unit specialising in the treatment of chest injurie so long as the first-aid and preliminary treatment ar adequate and the patients are transported from th front line with the least possible delay

DIAGNOSIS OF CRETINISM

There is a tendency these days to give thyroi extract hopefully to almost every retarded chil when the backwardness is physical, mental or both What Wilkins and Fleischmann[1] of Baltimore ca "lack of critical analysis and an excess of enthusiasm applied to cases of dwarfism is doubly unfortunat because it obstructs advances in treatment and may raise false hopes in the parents of a mentally defectiv child The list of modern methods for the diagnosi of hypothyroidism as set out by Wilkins and Fleischmann appears formidable, but the "classical" cretin is usually easily recognised at a glance after a little experience The clinical features of hypothyroidism arising during the period of growth fall into two groups. alterations in bodily structure and alterations in functional activity The stunting in growth is well known and hypothyroidism accounted for about 25% of dwarfs in the Baltimore series after diseases of bone and cardiac, renal, intestinal, hepatic and metabolic disorders had been excluded Not only is growth delayed, but the child remains relatively top-heavy, retaining the infant's characteristic disproportionate length from symphysis pubis upwards The naso-orbital configuration also tends to remain infantile, playing an important part in determining the facies of the cretin Retardation of osseous development is an important factor in the anatomical abnormalities of the hypothyroid child, but such osseous changes are unfortunately not confined to dwarfs of thyroid origin, although treatment with thyroid will only produce a prompt effect in them Dental development is similarly affected, but according to Wilkins and Fleischmann a form of epiphyseal dysgenesis is probably the most specific of all the anatomical changes due to hypothyroidism, calcification in the epiphyseal cartilage appears in multiple small irregular foci, eventually coalescing into a single irregular centre They conclude that whereas structural changes are of great diagnostic value in most cases there is a theoretical possibility that a mild degree of thyroid deficiency may exist throughout childhood without producing any characteristic ones, so that functional activities must be studied as well

Mental sluggishness and physical inactivity are present in all cases in some degree and some improvement follows thyroid medication Cardiac output and circulatory rate are constantly diminished, but are difficult to measure The most valuable laboratory tests seem to be those concerned with basal metabolic rate, serum-cholesterol and urinary excretion of creatine Lately Tobias and Stockford[2] of Los Angeles have been seeking for the best measure of what they term the "metabolic speed" of children and have carried out a survey of carpal development, basal metabolic rate and serum-cholesterol in 216 children selected at random From a statistical analysis they find that the level of serum-cholesterol is the simplest and most satisfactory measurement of metabolic activity This is essentially confirmed in relation to the diagnosis of hypothyroidism by WILKINS and FLEISCHMANN. Not only is the estimation of the basal metabolic rate difficult in the young child of subnormal mentality but there are certain fallacies in the test when applied, for example, to obese children whose body-surface area upsets the normal standards The serum-cholesterol level offers a surer guide, for in most children with hypothyroidism it lies between 250 and 600 mg per 100 c cm compared with a range of 100–300 mg in normal children If other causes of hypercholesterolæmia, such as diabetes nephrosis or hepatic disease, can be excluded, then a serum-cholesterol level of over 300–325 mg per 100 c cm is very suggestive of hypothyroidism

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[4] Sellors, T H *Brit. med J* 1941, 1, 825

[5] Bradford, J R and Elliott, T R *Brit J Surg* 1915–16, 3, 247

[6] Linberg, B E *Surgery (U S S R)* 1940, 9, 97

[7] Verhovitch, F P and Ignatsovskaya, N N *Ibid*, p 10

[1] Wilkins L and Fleischmann, W *J Amer med Ass* May 31, 1941, p 2459

[2] Tobias W and Stockford, L *Amer. J Dis Child* April, 1941, p 675

The urinary excretion of creatine is low in the hypothyroid child but there are great differences in the excretion of this substance in normal children so that as a biochemical observation in the untreated cretin it has little value A valuable extension, however, of both the serum-cholesterol test and the urinary creatine estimation is found in the results of giving a single intramuscular dose of thyroxine (2–5 mg) In the hypothyroid child a noticeable decrease in the serum-cholesterol is produced lasting about 40 days, whereas in the normal there is only a slight and transient fall Urinary creatine rises after thyroxine in the cretin but here again the normal standards are variable A still further extension can be made by the use of the thyrotropic hormone of the pituitary. Here the average daily output of creatine in the urine is studied for a control period of 1–2 weeks Thyrotropic hormone in doses of 5–10 units per kg of body-weight is then injected daily for about 10 days, and the daily excretion of creatine measured The hormone is then omitted until the excretion of creatine returns to the base level and finally the effect of thyroid or thyroxin on this level is measured In a child with hypothyroidism, thyrotropic hormone produces no change in creatine excretion or cholesterol level, presumably because the child has no thyroid tissue capable of stimulation, whereas thyroid raises urinary creatine and lowers serum-cholesterol In one type of control in the Baltimore series both thyrotropic hormone and desiccated thyroid produced changes in creatine and cholesterol levels ("positive"), in another neither had any effect ("false negative") A false negative response was found in certain normal children and dwarfs with normal thyroid function, though most of the latter gave a positive response It is clear that biochemistry offers valuable aid in the diagnosis of the cretin and should be more widely used to prevent mistakes There is one other line of inquiry which WILKINS and FLEISCHMANN do not mention—study of the anæmia of hypothyroidism and the possibility of a positive reticulocyte response when thyroid is administered to the cretin but not to other anæmic, retarded children This might prove simpler than the thyrotropic-hormone-creatine method although not as simple as study of the cholesterol level, itself in many cases quite sufficient to confirm the clinical evidence

SANDFLY FEVER

THOSE who fought in the Middle East in the last war will not need to be reminded of the military importance of that comparatively trivial disease phlebotomus or sandfly fever This acute infection, due to a filtrable virus, is conveyed from man to man by the *Phlebotomus papatasii* and possibly other species of a genus which has a bad record for transmitting disease kala-azar in India, oroya fever in Peru Sandfly fever may occur wherever the vectors exist, and in the present field of military operations is common on the Mediterranean littoral, in Syria, Palestine, Trans-Jordania, Egypt, Iraq and India Outbreaks seem to appear in two annual waves, in the late spring and the autumn Over 70% of non-immune people—and this includes most Europeans—get the disease on their first exposure to infection, about 15% of these have a second attack, and some have a third or fourth The severity of the attacks steadily diminishes after the first, and the later ones may not be diagnosable clinically By early and repeated exposures to the disease the indigenous population acquires a substantial immunity to it, and children suffer less from an attack than adults

Among non-immune Australian troops, concentrated in Southern Palestine during 1940, WALKER and DODS[1] saw many cases, in addition to those reporting sick and entering hospital there were many who were not prevented from carrying on their work In the First Australian General Hospital some 1500 cases were seen between May and November, 1940, most of these coming in July, August and September Two types of cases were noted those in which the onset was sudden without obvious prodromata, and those with prodromal symptoms lasting 24–48 hours In both types the onset was associated with mild shivering, but rigors were unusual The temperature rose abruptly to about 102·5° F. in the average case and remained up for more than three days In some cases after several days without fever there was a secondary rise of temperature with a recrudescence of symptoms lasting a day or two The physical signs include a pathognomonic facies The face is puffy and swollen and the complexion red and suffused. Conjunctival congestion is common and hence the popular names "pink-eye" or "dog disease" (*Hundfieber*) The eyeballs are tender to pressure and on movement, and are therefore kept still Frontal headache and pain in the eyes and leg muscles are so severe that sleep is impossible The tongue is furred, and in the cases reported by WALKER and DODS a striking and constant feature was the early appearance of a crop of vesicles on the soft palate, extending to the faucial pillars on each side. These vesicles are devoid of any surrounding mucosal inflammatory reaction, and cannot be regarded as peculiar to sandfly fever, for they may be seen in other virus diseases and were noted in cases of infective hepatitis in Palestine In contradistinction to dengue, where an eruption comes out during the usual secondary rise of temperature, no true morbilliform rashes were seen among the Palestine cases of phlebotomus fever A relative bradycardia was almost invariable after the first day, and an absolute bradycardia was often a striking feature towards the end of the fever, when the pulse-rate fell to 60 a minute or less **Walker** and **Dods** were unable to study the blood-picture adequately, but leucopenia affecting the granular leucocytes only is a typical finding for the first four or five days, and this is followed, it is said, by a leucocytosis up to 15,000 or 20,000 per c mm about the tenth day of the disease Treatment is purely palliative, but sedatives relieve the symptoms to some extent The mortality is negligible

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[1] Walker, A. S and Dods L. *Med. J Aust* 1941 1, 345

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INTRAVENOUS OXYGEN

A correspondent asks why more use is *not* made of intravenous oxygen in the treatment of shock, and points out that the method has been proved practicable During the last war Tunnicliffe and Stebbing[1] worked out such a method with a view to applying it to the treatment of acute cyanosis caused by mustard gas and other respiratory irritants Using simple apparatus they experienced no difficulty in introducing oxygen into a vein at the rate of 600–1200 c cm an hour, and in cases of chronic cyanosis arising from malignant disease of the mediastinum, pernicious anæmia and so on they found that this improved the patient's colour and relieved his dyspnœa In only one case—their first—was any complication encountered, here an old man became temporarily unconscious during the administration, with extensor plantar reflexes, but he soon recovered and was none the worse The only disadvantage appeared to be that the method required the whole time attention of the administrator, and as it is now generally agreed that oxygen should be given continuously this is a serious drawback The method has since been little used, though it was revived a year ago by Singh and Shah,[2] who found that amounts up to 10 c cm a minute could be safely injected from a cylinder, or double this amount if chemically pure oxygen was used, representing some 10% of the patient's requirement They gave up to 350 c cm to six patients with pneumonia and satisfied themselves that there was clinical improvement They mention that oxygen embolism, unless carried to extremes, is not dangerous There is, then, no doubt that intravenous oxygen is practicable and reasonably safe On the other hand, its use in peace time would be confined to the patient whose functional lung is much reduced by extensive pneumonia, and such cases are rare In the treatment of shock without cyanosis it is doubtful whether the method would have any place Here the blood is fully oxygenated in the lungs, and the tissues are only short of oxygen because their blood-supply is deficient The inhalation of pure oxygen relieves this shortage slightly by forcing an extra 2–3 c cm of oxygen into solution in every 100 c cm of plasma To do this by the intravenous route would mean giving the exact amount necessary to oxygenate the hæmoglobin plus a very little more to saturate the plasma In other words, the patient would have to be given a little more oxygen than he was consuming, a procedure which would certainly produce embolism Giving a little less would be safer, but this would only relieve the lungs of their task of oxygenating the hæmoglobin, which they had previously been doing efficiently and without difficulty When the patient is cyanosed the position is different, for unsaturated hæmoglobin is avid of oxygen, and there seems a possible use for the method in cyanosed patients with severe injuries of the lungs or chest wall It is in he gassed case that it might prove most useful, and hile there is a chance that the enemy may still resort o gas warfare it would be well to have the technique orked out more fully and its possibilities explored

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[1] Tunnicliffe, F W. and Stebbing, G F *Lancet*, 1916 **2**, 321

[2] Singh I and Shah M J *Ibid*, 1940 **1**, 922

LIBRARIES NOW AND AFTER

AMONG the less spectacular ways in which our Ameri- an friends are helping us is in solving our library problems Many American libraries have offered individual help to their opposite numbers over here and the Rocke- eller Foundation has been outstandingly generous on a comprehensive scale Dr Arundell Esdaile, president of the Library Association, in a letter to the *Times*, has told how the foundation is financing a scheme promoted by the Library of Congress to make microfilm copies of all important manuscripts in this country, beginning with the British Museum and Public Records Office collections A project of more appeal to our profession is the survey, also financed by the Rockefeller Foundation, which the Association of Special Libraries has undertaken of technical periodicals now reaching this country from abroad, with a view to making those that are received available where they are most needed Medical libraries have been particularly starved of continental literature Our largest professional library reports that its intake of world periodicals has been reduced by half Since the fall of France no medical periodicals have come in from occupied countries and very few from Germany, so that we have had to depend on the few neutral countries to tell us about medical activity and research on the continent during the past year Letters in the American press show that American libraries are beginning to feel the pinch too European periodicals are either not being sent to them, except from Britain, or if sent are often lost in passage And this is no temporary loss, for after the war it will prove impossible to fill these gaps in the libraries Publishers of scientific journals are printing only for their regular subscribers and there will not be enough copies to go round when the gaps come to be filled The cheapening of photographic processes at last brings within the range of even a shallow library purse the possibility of filling their gaps with microfilm reproductions Under the pressure of war, commercial firms have taken up this technique for copying their records on a great scale, and libraries will benefit by the resulting drop in price Hitherto the lack of a cheap reading machine, which is now being produced, has made the microfilm an almost useless plaything except for record purposes Now it may rapidly become the vehicle for a revolution in our library services, making all books available to readers at a distance, as it is already doing through the Surgeon General's Library in Washington

London is particularly rich in medical libraries A correspondence in these columns just before war broke out showed something of the chaotic conditions out of which these libraries were only then feeling their way towards coördination At the moment they are scattered in varying degrees of inaccessibility The Rockefeller Foundation again has made possible their dispersal from the danger zone of bombed London The Royal Society of Medicine has evacuated about a third of its great collections within accessible distance of London, thus ensuring a minimum of dislocation but not a maximum of protection The Royal College of Surgeons, whose buildings have since suffered much damage, took the precaution of sending its library farther afield, where though still in being it is of little use to readers The Royal College of Physicians has had to store its library beyond access The London School of Hygiene library, the latest to join the ranks of the evacuees, aims we understand at a middle course of probable safety and limited accessibility When—in a not too distant future, we hope—these libraries return intact to London the readjustments which will be necessary will offer a unique opportunity to provide some coordinating mechanism for our wealth of medical literature Before the war it was scattered in half a dozen libraries, each of which, being a department of a semi-private institution, was necessarily restricted in its scope and in its use by the profession as a whole Just as the National Central Library acts as a clearing house for the public and academic libraries throughout the country, so the medical profession needs a centre to coordinate its libraries and make them of the fullest use to all medical men The occasion will be there immediately after the war, and in microfilm we have a new technique to exploit which should simplify the difficulties We should welcome the coming opportunity and begin to prepare the plans now for a central cooperative service worthy of our great libraries

PULMONARY LESIONS IN EXTRATHORACIC TUBERCULOSIS

IN an attempt to discover the frequency with which a pulmonary lesion, mild or latent, is associated with extrathoracic tuberculosis, Vaccarezza and Gómez[1] have studied 420 cases of hæmatogenous tuberculous disease, including tuberculosis of the bones and joints, glands, meninges, genito-urinary organs, eyes, peritoneum and skin In 90% they were able to demonstrate, clinically or radiologically, the presence of pulmonary tuberculosis In a large proportion of the cases the pulmonary lesions were active, 36% of the patients presented clinical signs of progressive disease of the lungs The findings certainly accentuate the importance of complete examination in patients with extrathoracic tuberculosis These Buenos Aires workers advocate clinical and radiological examination of the chest and examination of the sputum and gastric contents for tubercle bacilli in every case, and they urge that all patients with tuberculous disease of any part of the body should be segregated in special wards in hospitals While such precautions may be desirable for patients with active disease, it seems unnecessary to adopt them for patients who merely present (as do many healthy people) clinical or radiological signs of old tuberculous lesions of the lung, such as calcified glands at the hilum

ISINGLASS AS A BLOOD SUBSTITUTE

WHOLE blood is the only fluid that will adequately replace blood lost through hæmorrhage, but it possesses practical disadvantages in that it cannot be stored indefinitely and the danger of incompatibility can only be removed by routine blood grouping, for which there is often too little time in an emergency Dried human serum to a great extent meets the requirements of an ideal transfusion fluid, but it is not produced on a sufficiently large scale for universal use and its great value in burns and shock tends to limit its use to these conditions The ideal would be to store red cells and plasma separately, so that cells only could be used for anæmia, plasma for shock and the mixture for acute hæmorrhage Various substitutes have been tried Gelatin solution, which is a colloid, does not easily leave the circulation and has a reasonable viscosity, but it carries the danger of tetanus or anthrax infection, though one would think that this could easily be overcome by using pure bacteriological gelatin However, gum acacia was substituted, and in spite of good results during the last war it is now out of fashion because it is said to cause liver damage Crystalloid solutions do not remain for a sufficiently long time in the circulation Now we have a new blood substitute in isinglass, which is prepared from the swim bladders of fish Taylor and Waters[2] of Toronto say that it can be made sterile, is non-toxic and is practically non-antigenic In a 7%

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[1] Vaccarezza R F and Gómez J B *An Cated Pat Clin Tuber* 1940 2 307

[2] Taylor N B and Waters E T *Canad med Ass J* 1941 44,547

end of the fever, when the pulse-rate fell to 60 a minute or less WALKER and DODS were unable to study the blood-picture adequately, but leucopenia affecting the granular leucocytes only is a typical finding for the first four or five days, and this is followed, it is said, by a leucocytosis up to 15,000 or 20,000 per c mm about the tenth day of the disease Treatment is purely palliative, but sedatives relieve the symptoms to some extent The mortality is negligible

The importance of this malady (apart from its unpleasantness to the sufferer) lies in its tendency to arise epidemically, for outbreaks may make it difficult to keep a non-immune force active in the field during the epidemic season Prophylaxis is difficult on account of the very small size, the breeding habits and the voracity of the sandfly vector The breeding grounds of the insects are rubble, dug-outs, cracks in walls and embankments, and sun cracks in the ground The larvæ penetrate to a depth of a foot or more in loose, slightly moist soil, and the insect hibernates in the larval stage, emerging in the spring The female alone bites, usually after dark, and its powers of flight are limited The erection of parapets, the excavation of tent and hutment floors, and similar earthworks necessary in the field of military activity may facilitate the breeding of the flies Where cracks can be levelled or filled in, especially with tar, the insects can be discouraged from breeding Blackout conditions increase the liability to be bitten, because men prefer to sit outside, on or near the ground, where the flies await them, rather than in dark tents or huts The ordinary mesh mosquito net is useless against these tiny aerial invaders and suitable nets of muslin, or of particularly fine mesh, although efficient in excluding them from a sleeper, feel close and stuffy in a hot climate Their use should, however, be insisted on whenever practicable The use of a pyrethrum insecticidal spray inside huts and tents daily, before sweeping the floors, will reduce the sandflies, mosquitoes and house flies in such places, and an electric fan where available will provide currents of air sufficient to carry the sandflies away If huts and similar dwellings can be built on piles well off the ground they will be comparatively immune from invasion by sandflies No drug, serum or vaccine therapy is available for immunisation against the disease, and the best precautionary measure against undue morbidity in endemic areas is to employ on active operations troops "salted" by previous infection

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[1] Tunnicliffe, F W and Stebbing, G F *Lancet*, 1916 2, 321

[2] Singh I and Shah, M J *Ibid*, 1940, 1, 922

CLOSE-UP OF SPERMATOZOA

THE electron microscope, which gives effective magnifications of 50 000 or more diameters, and has already told us much about bacterial appearances under electron bombardment, has lately been turned on the spermatozoon in the hope of resolving some of the outstanding doubts about its structure. In this apparatus magnetic-field ‘ lenses ’ replace the glass ones of compound microscopes and differentiation depends on differences in density within the specimen rather than on variation in refractive indices or colour. The conditions for examining specimens by electron microscopy are important because the vacuum, the drying of the specimen or even the electron bombardment itself may cause artefacts which can masquerade as normal structure. It seems, however, that Seymour and Benmosche[1] have seen more clearly than hitherto a normal human spermatozoon and their pictures—three are needed to include a single sperm—have, at 13,500 and 27,000 diameters, clear-cut definition. At these magnifications the pear-shaped head of the human sperm has a crater-like notch on the vertex and within it a structure less opaque than the rest of the head. The body of the spermatozoon, which when seen by refractive microscope was called the neck, is segmented, having 9–12 segments in the specimens examined. Throughout the length of the body runs a core, uniform in diameter and denser than the surrounding segments, and it is this core which becomes the tail. The tail does not end abruptly but breaks up into a blurred smudge and it is much longer than has previously been described. The belief that the body of the sperm contains a skein formation was not confirmed but the segmentation probably explains the extraordinary motility of the head as it is propelled forwards. With motion pictures Seymour and Benmosche watched the head of a spermatozoon penetrating the ovum in the first stage of fertilisation and they speculate on the possibility of the notch on the vertex containing some sort of suction apparatus which helps penetration.

EXTRA MILK

THE medical certificate required under the Sale of Milk (Restriction) Order, 1941, has come in for some criticism, and the Ministry of Food is discussing possible alternatives with the B.M.A. Extra milk, up to a limit of 2 pints a day, may only be recommended if the patient is suffering from (*a*) active tuberculosis, (*b*) silicosis; (*c*) conditions in which the patient is unable to swallow solids by reason of an affection of the mouth, throat or gullet; (*d*) gastric, duodenal or anastomotic ulcer, (*e*) illnesses characterised by high and prolonged fever; or (*f*) the results of a major operation. This list was drawn up by the special diets committee of the M.R.C. and must cover the majority of indications. It is questionable, however, whether the doctor should not have been left free to consider each case on its merits. On the other hand, it is an unenviable task to refuse milk to any patient, and the doctor may sometimes be glad of such definite grounds for refusal. The certificate when completed is handed by the householder direct to the milkman. This is intended to simplify and hasten procedure, but many patients will object to their disabilities being thus revealed to tradespeople. It would surely be sufficient if the doctor stated that the patient was suffering from one of the conditions on the prescribed list without specifying which. Members of the national milk scheme, children receiving milk in schools, and patients in hospitals and nursing-homes are excluded from the restrictions and other people who are accustomed to drink a lot of milk will automatically have a large ration, since this is calculated as six-sevenths of the previous consumption. The number of cases which cannot be met by a little readjustment within the household is therefore likely to be small.

Colonel (temporary Brigadier) ALEXANDER HOOD succeeds Lieut.-General Sir William MacArthur as director-general of the Army Medical Services on Aug. 1. Brigadier Hood graduated from the University of Edinburgh in 1910 and received a commission in the R.A.M.C. two years later.

SYSTOLIC MURMURS

IN his Honyman-Gillespie lecture in Edinburgh last week Prof. D. M. Lyon said that up to the end of last century any cardiac murmur was usually taken to indicate heart disease. Then began a swing in the opposite direction and the study and significance of murmurs became derided. He believed that a balance was necessary. Murmurs were produced when turbulence was introduced into the blood-flow. This could be caused by changes in the speed of flow, or the viscosity of the fluid, and by constriction of the channel. Mere roughening of the surface of the channel did not produce eddying. *Mitral systolic organic murmurs* varied from soft gentle blowing sounds to loud rasping sounds according to the state of activity of the heart muscle. The murmur of dilatation was softer and not so well propagated. *Tricuspid systolic organic murmurs* were relatively rare; they were of higher pitch than mitral murmurs and poorly propagated. In view of the reputation of the tricuspid valve as an escape valve it was surprising that tricuspid murmurs were heard so seldom. *At the aortic valve* organic narrowing was relatively rare and most systolic murmurs were due to dilatation of the aorta along with thickening of the valve, especially the slight projection of a fibrous or calcified cusp. Pulmonary systolic murmurs were still rarer and most were congenital. *Functional murmurs* were always systolic except for the murmur of pulmonary incompetence sometimes found in conditions of raised pulmonary blood-pressure. They were mostly feeble and poorly conducted. They were probably found in 3% of all recruits and in 80% of athletes after severe exercise. In children various reports put the incidence at between 10 and 60%. The *cardio-respiratory murmur* was heard along the left border of the heart and beyond; less frequently over the right side. It often occurred in healthy persons. In quality it resembled interrupted breath sounds of which it was really an accentuation. An interrupted puffing or whiffing sound was present during the whole of inspiration and might extend into expiration. It was usually heard best with the subject in the upright position and stopped if he held his breath. Exercise increased its intensity which, however, was very variable at different examinations. *Hæmic murmurs* were caused by turbulence due to decreased viscosity of the blood; they were heard at both base and apex but the mechanism must be different—turbulence of the flow at the aortic and pulmonary valves and dilatation of the mitral valve. Hæmic murmurs should not be diagnosed in the absence of severe anæmia. When the heart was over-active or too rapid functional murmurs might be heard at the apex. These were common during excitement and in “ soldier’s heart.” A thrill might be palpable and the first sound appear rough. These features disappeared when the heart-rate fell and must not be taken as indicating mitral stenosis. The murmurs of hyperthyroidism and fever were of the same nature. Pulmonary functional systolic murmurs were mostly faint and poorly conducted and were largely due to slight variations in shape or deformity of the pulmonary vessels, that was apart from cardio-respiratory and hæmic murmurs. They were found largely in children and young people with plastic chest walls and might be produced by pressure of the stethoscope. It was important to remember the subclavian murmur heard beneath the clavicle when the arm was raised.

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[1] Seymour, F. I., and Benmosche, M. *J. Amer. med. Ass.* 1941, 116, 2489.

solution it has a higher osmotic pressure than plasma and its viscosity though less than that of whole blood is greater than that of plasma, enabling a higher blood-pressure to be attained Taylor and Waters have recorded favourable results when using isinglass to replace lost blood in dogs and maintain that in many cases the dogs' lives were saved by it Their solution contains 7% of isinglass, 0 25% of sodium bicarbonate and 0 75% of sodium chloride in distilled water This is said to be isotonic and has a pH of about 7 2 They are careful to point out that the fate of isinglass in the body is not known though they believe that it may be used by the tissues If this is the case a valuable substitute for blood will have been discovered It seems, however, *that rather than new substitutes* what is required is an efficient manufacturing, distributing and clinical organisation, so that those materials which are already available may be used to better advantage

PRESENT POSITION OF VENEREAL DISEASE

THE possibility of an increase of venereal disease in war-time is an inevitable source of anxiety to all who *remember the black record of previous wars No doubt* this was in the mind of those who organised the meeting of the Medical Society for the Study of Venereal Diseases on July 26 when Colonel L W Harrison utilised his presidential address to consider the present trend of incidence of venereal diseases in England and Wales No-one is better fitted to review the situation than Colonel Harrison by reason of his length of experience and his breadth of outlook He struck a reassuring note at the outset by pointing out that since the outbreak of war venereal diseases have not increased to anything like the extent which we feared As regards syphilis, before the war we had good reason for believing that the great *majority of early infections* in civilians coming under medical care in this country were being dealt with in the treatment centres A suspicion that undetected syphilis might be rife in country districts far from treatment facilities had been disproved by the fact that although they had since the war been infiltrated with service personnel, munition workers and evacuees they had not been found hot-beds of venereal disease

In a comprehensive review Colonel Harrison showed that in 1939 the number of cases of early syphilis dealt with for the first time at the civilian centres in England and Wales was 4986, a decrease of some 45% since 1931 and less than a third of the number in 1920 Collateral evidence of this decline was found in the diminishing rôle of syphilis in killing infants, their death-rate from this cause had fallen from 2 03 per 1000 in 1917 to 0 2 in 1939 As regards service infections, the admission-rate for syphilis in the Navy stationed at home fell from 8 1 per 1000 per *annum in 1921 to 1 96 in 1936, the latest year* for which published figures are available In the Army at home the syphilis rate fell from 9 8 per 1000 per annum in 1921 to 0 9 in 1937 In the Air Force during the same period the rate for primary and secondary syphilis fell from 4 1 to 0 5 There are other causes at work in diminishing venereal infection among recruits, but the higher rates in stations abroad suggest that the decline is some index of the improvement in the position at home Returns from civilian clinics indicated, said Colonel Harrison, that from the outbreak of war up to the end of March, 1940, the fall in the syphilis rate slowed down, during the last twelvemonth there has been a definite increase among both males and females As a result of all his calculations Colonel Harrison came to the conclusion that male syphilitic infections had increased in England and Wales in 1940 by about 27% and that the total increase in both sexes was about 23%

Civilian cases of gonorrhœa were fewer but when service cases were added the total males showed an increase of 9–10% It was, he thought, disturbing to find that the centres had dealt with fewer females in
1940 in spite of the clear evidence of increased in
in the males On the other hand, as Colonel H
and subsequent speakers recognised, the moder
treatment of gonorrhœa has made recourse to
practitioners so much more common that clinic st
for this disease are now a very imperfect indica
incidence and comparisons with previous yea
fallacious Where, he asked, was this incre
venereal disease occurring and is the existing sys
treatment centres *sufficient ? The best infor*
available comes from the lists of places where
men stated they contracted the disease The
whelming majority of places where more than 1(
tions had occurred were already provided with trea
centres *Nevertheless the details* showed *that*
deal of sporadic infection was occurring in places
range of the clinics And yet in some places
relatively heavy infections of service men had
place the number of females dealt with had a
declined From October, 1940, the Ministry of
had been in a position to refund local authorities
quarters of the approved cost for new treatment
ties, 16 new *centres are being set up as a result*
offer and 14 county authorities are making arrange
with practitioners to treat cases in their own su
in areas where the amount of disease does not
the establishment of a clinic Colonel Ha
attached considerable importance to this new *depa*
which is to be supervised by the county V D *consult*
it would go far, he hoped, to solve the problems of
areas Later speakers from the services and civ
clinics supported the evidence of slight increase or
venereal diseases except in the ports much frequ
by foreign seamen where a substantial rise had
noted locally In the Army at home the inciden
been *curiously uniform* week *by* week, and the
V D rate has fallen from 11 3 per 1000 in 1938 to
1000 in 1940 and 8 4 per 1000 in the first five mon
1941 The ratio of gonorrhœa to syphilis has ren
remarkably steady at 8 to 1 Everything poss
done to ensure that V D is treated as far as possib
any other disease In the Navy, it was state
present return of syphilis is the lowest on record
R A F can also claim a very low incidence of
diseases, the total ratio being 6 3 per 1000
representatives of the medical services of the
and W R N S said that the amount of V D
uniformed women was negligible, though every p
able effort was made to encourage ascertainmen
promote treatment There was in fact much ca
this survey for thankfulness for the results achie
the past quarter of a century but no excuse for slack
of effort if the ground won is to be maintained
rural areas certainly need more attention, for so
wives are becoming infected and both knowledg
sympathy are required for the organisation of rural c

Admittedly the weak spot in our measures of c
is the failure to bring under treatment sufficient fe
In this Colonel Harrison was strongly supported b
spokesmen of civilian clinics who found that ev
country districts the "vicious amateur" for
dangerous focus of disease and remains impervio
reason and education Is any form of comp
practicable ? Though no vote was taken the me
appeared to be unanimously of the opinion that it
Suggestions for compulsory notification or treatme
venereal disease have been vigorously opposed i
past, partly because they recalled the ill-inspired
tagious Diseases Acts and regulation 40D of the
war, partly because it appeared impossible to dev
scheme equitable as between the sexes and free fro
danger of injustice to individuals If improved me
of diagnosis and administration can enable local autho
ties to eliminate the hard core of recalcitrant offender
without injury to the public a great advance will hav

performance of his duties Such is the wording of rule 9 of the " Rules applicable to Schedule E ' which lie hidden away in a corner of the act The judge would not allow the expenditure upon subscriptions to these bodies to be put so high The point arose again in July when a London County Council divisional engineer sought to deduct the amount of his subscription to the Institution of Civil Engineers He could fairly maintain that he could not have obtained his appointment unless he had been a member of the institution or had held other approved qualifications that his duties involved his maintaining a recognised professional status and that it would be unprecedented and inconvenient for a man who held the post of divisional engineer to relinquish his membership of the institution while so engaged The court, however accepted the Crown's contention that it was not enough to show that the office-holder must necessarily incur the expense of membership of the institution in order to obtain or keep his post or to win promotion It seems a pity that the L C C did not deduct the amount of the subscription before paying him his salary , his tax assessment could then have been reduced *pro tanto* Hitherto it has been supposed that the tax-payer can deduct his subscription to a professional body if the terms of his appointment require him to be a member of the body The law is careful not to allow him to deduct expenditure (for example on books) which he incurs merely for the purpose of fitting himself to take up the appointment

For the medical man who is in private practice and is not an official the case is different Rule 9 of the Rules applicable to Schedule E is no longer the relevant standard It has been usual to allow him to deduct subscriptions to professional journals to the British Medical Association or to a medical defence society Outside these established concessions, the revenue authorities allow the deduction of a subscription to a professional body when satisfied that the body spends the money on objects which would have justified deduction if the tax-payer himself had spent his money on them As usual there is a working arrangement by which particular bodies are accepted as being within this category Much indeed of our income-tax law consists of working arrangements recognised in departmental practice That is why the Income Tax Act with its long tail of amendments by subsequent Finance Acts is no very helpful guide to the tax-payer even if he could comprehend its complicated clauses That is why too, the chartered accountants who specialise in income-tax matters thrive upon the complication of the law They know the kind of deduction which the Inland Revenue officials habitually allow Thus not only must the tax-payer pay tax, but he must also pay experts a fee for helping him to do so

SCOTLAND

ADVICE TO EDINBURGH GRADUATES

Prof D K Henderson gave three golden rules to the new graduates at Edinburgh on July 16 He said do not arrogate to yourselves a knowledge which you do not possess , *do not be afraid to say you do not know* , do not hesitate to ask for a little time to think things over Every scientist and research worker would subscribe to these precepts In issues involving life and death they could not afford to be casual or thoughtless though an emergency might sometimes compel them to act promptly For the young doctor sense—implying exactness and soundness, power and promptitude of mind—must be the master faculty But he must have genius too a real turn for his profession, and presence of mind How man lived, moved and had his being was still an unsolved mystery, but they could be certain that he should not be thought of as a stomach heart lungs or bowels, but as a whole personality His likes and dislikes, his loves and hates his fears and hopes his aspirations and disappointments might supply the key to his more mundane complaints Man himself how he was constituted, how he reacted and responded biologically to the stress and strain of life whether physical or psychological, must be studied as well as the symptoms associated with individual organs Medical work was far from being a rule-of-thumb affair For success it required elasticity of mind and a many-sided approach It had been said that every doctor should be a good sociologist He should also be something of an educationist and if he was he would steer clear of over-specialisation and recognise the social as well as the scientific side of medicine

DIPHTHERIA IMMUNISATION

A new effort is being made to stimulate interest among parents of children who have not yet been immunised against diphtheria and to have the children immunised before the winter. Out of a total child population of 1,124 500 in Scotland 529 679 or about 47% have been immunised The percentages in individual districts vary and in some places the goal of 80% has been reached and exceeded On the whole the proportion of school-children immunised is higher than of pre-school children and the proportion in rural districts is much higher than in the towns Dr Andrew Davidson chief medical officer to the Department of Health for Scotland recently announced a new and much appreciated service In Coatbridge and in Perth medical officers with the aid of mobile vans carrying the necessary equipment had immunised the children in their homes The new publicity campaign is to be carried out by the Department of Health with the coöperation of the Ministry of Information They will use a film called ' Defeat Diphtheria " which shows the complications which may arise from neglect to obtain medical advice

Parliament

Last Touches to the Pharmacy Bill

When Mr Ernest Brown on July 22 brought forward a new clause to the Pharmacy and Medicines Bill that the professional side of the bill should be enforced through the Pharmaceutical Society he was doing so at the request of the House and the clause was quickly approved Clause 2 of the bill gives power to the statutory committee of the society to consider cases of misconduct or of conviction for a criminal offence where the pharmacist concerned was temporarily unregistered by reason of the non-payment of fees Captain G S Elliston moved a new clause extending this principle to corporate bodies carrying on a chemist's business and a second clause requiring the chairman as well as the majority of the committee to be satisfied before a company is penalised Both clauses were quickly accepted Mr Brown then moved important amendments designed to enlarge the scope of the definition of disclosure by including quantities and laying down that so far as possible the constituents should be expressed in everyday language But Mr Brown was sure the House would not wish him to lose accuracy for popularity and he had therefore fallen back on disclosure in terms which would be readily understood by a doctor, chemist, or any other expert Disclosure was required in one of the following ways

(1) Where a medicine or a constituent was a poison in the Poisons List the name to be used was then required in connexion with the labelling of the poison ,

(2) Where it was not a poison, but was described in the British Pharmacopœia or the British Pharmaceutical Codex, the description at the head of the relevant monographs must be used

(3) Where it was neither a poison nor described in the British Pharmaceutical Codex, then the accepted scientific name, or other name descriptive of its true nature, must be used

The second part of the amendments required the quantities of the named constituents to be disclosed either by giving the percentages of the medicine or by stating the actual amounts When a medicine was supplied in the form of pills or tablets the percentage of the constituent in the medicine the quantity in each pill or tablet , or the quantity of the constituent in the whole article must be disclosed

Sir Francis Fremantle in thanking the Minister for the amendments said that we must rely on the press to continue its useful function of interpreting technical phrases to the general public It was to the credit of the proprietary trade that they had accepted the principle of quantitative disclosure The amendment

Special Articles

PUBLIC-HEALTH PROTECTION IN THE U S S R[1]

EVERY citizen in the Soviet Union has the right to free skilled medical care, from outpatient hospital service to special treatment in clinic or sanatorium The state pays the salaries of all medical workers and maintains all the hospitals, polyclinics, dispensaries, institutes and health resorts as well as providing funds for research A single authority thus controls all medical services in town and country, as well as measures for controlling infectious disease, sanitary inspection, housing, industrial medicine, communal feeding centres, maternity and child welfare, health resorts, research and medical education Prophylaxis forms the basis for all the public-health measures, and the attack on first causes—poor working and living conditions and so on—has succeeded in eliminating much of the disease of former times An eight-hour working day has been introduced, and all workpeople get an annual holiday of two or four weeks on full pay Employment of children is prohibited, and that of adolescents is restricted Pregnant women and young people are not employed in dangerous occupations or on night-work Social insurance is widely developed, offering financial security in illness invalidity, pregnancy and old-age Supplementary state grants have been introduced for nursing mothers

First-aid or health-protection centres have been established in all factories, mines and the like, and the doctors and nurses attached to them control the sanitation of workshops, and public dormitories and dining-rooms, keeping a watchful eye on working conditions and safety measures, as well as studying the causes of industrial accidents and occupational diseases, devising means for their prevention, examining all new workers on their arrival and at regular intervals afterwards if they are adolescents or engaged on harmful occupations They also teach the principles of hygiene to the workpeople, arrange for special jobs for those in poor health, and are at hand to give first-aid in cases of accident or sudden illness

Workpeople who require special treatment are sent from the centre to the polyclinic or hospital, or to the night or day sanatoriums where they can spend the rest of the day after working hours in receiving medical attention The centre can also arrange for a workman to get his food in one of the dietetic dining-rooms, the cost of the special diet being partly or fully defrayed by the state

The district or factory polyclinics provide outpatient medical services for all citizens in their area If the patient is not fit to attend he can telephone to the polyclinic for a doctor who will attend him at home A single type of outpatient record-card is used throughout the hospitals of the Union It has space for a complete history and diagnosis, and for the doctor s prescriptions and recommendations, so that when a patient is admitted to hospital his record-card comes with him from the outpatient clinic, and when he is discharged the full details of any inpatient treatment he has received are set down for the information of the doctor outside

CONTROL

Public-health protection is under the control of the People's Commissariat for Public Health of the Union, but this body exercises direct jurisdiction over only certain particularly important (from the state point of view) medical and sanitary institutions, educational and research institutes and health resorts and over the manufacture of surgical instruments, and equipment and drugs Other medical institutions are controlled jointly by the Union commissariat, the local soviets and the commissariats of the autonomous republics concerned The scheme thus includes the all-Union commissariat, the individual commissariats of each republic, the territorial, regional or city departments of public health, hospitals, polyclinics, factory health-protection cer rural medical centres and the visiting doctors A head is the people's commissar for public health, wh member of the government He is also chairman o collegium which meets once a week to implement gov ment decisions and draft the instructions to be sent to the other public-health bodies On technical tions the commissar is advised by a scientific me council, and he has the power to enforce what meas he thinks fit to improve the medical services and en that all hospitals and clinics are using the most effe methods of diagnosis, treatment and prevention commissariat has also set up various boards and dep ments to deal with special problems, such as skin venereal diseases, as well as with the administratio the urban and rural hospitals, &c A special depart controls all the special hospitals and other institut for the treatment of tuberculosis

The entire network of anti-epidemic institutio anti-plague hospitals, centres, trains and laborato anti-brucellosis stations, anti-malaria, anti-insect anti-rat measures, and bacteriological laboratories-under the direct supervision of a special board at commissariat, and this body also supervises the pro tion of vaccines and sera Another department of commissariat undertakes the sanitary inspection of factories, shops, public dining-rooms and so on, and its representatives—qualified doctors—in all the la industrial concerns Its inspectors have power to put immediate stop to any infringement of the regulati they meet with

Much attention is given to the welfare of mother a child, and every district and every large works has nurseries and kindergartens The best sanatoriu throughout the Union have been set aside for childr A good deal of research is being carried out into mot and child protection, particular attention being gi just now to painless childbirth There is a vast netw of maternity homes and special maternity wards hospitals, antenatal and postnatal consultation cen special hospitals and health resorts for children, infa homes, nurseries, kindergartens and milk-kitchens obstetrical departments are responsible for supervi the working of the law prohibiting abortion sanatoria and spas are owned by the state and su vised by a single department, which is also in charg the balneological research institutes at Sochi Pyatigorsk

The whole drug-manufacturing industry is mana by the Commissariat for Public Health, and all phar cies belong to the state No patent medicine can offered for sale until it has been passed by a med body, and new drugs of all kinds must be checked in state institutes and clinics before they are offered to public

The economic and social life of the country is regula by the third five-year plan, which lays down what su are to be spent on training doctors and nurses, on erection of new medical institutions and the like the basis of the general plan the Commissariat for Pu Health works out a plan for each republic, this in t allocates funds to the constituent regions, and so down to towns and districts and to the individ hospitals and clinics

MEDICINE AND THE LAW

Income Tax and Subscriptions

IN Simpson *v* Tate it was decided many years that a medical officer of health could not deduct from income-tax assessment (Schedule E) the money he sp in subscriptions to the Royal Society of Medicine, Society of Medical Officers of Health, the Royal Instit of Public Health and the Association of County Medi Officers of Health In vain he protested that he co not keep himself up to date in sanitary science and pu health unless he enjoyed the facilities given by th bodies in the form of printed journals and periodi discussions The Income Tax Act will allow deduction only of sums which the tax-payer is oblig to expend "wholly exclusively and necessarily in t

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[1] Based on material supplied by the U S S R Society for Cultural Relations with Foreign Countries, Moscow A full account of Medicine in Russia will be found in three articles in the *Lancet* of 1936 (2 329, 393 and 450)

In England Now

unning Commentary by Peripatetic Correspondents

ORE the outbreak of war the duties of a group were to arrange for the staffing of all hospitals in rea, to decide the functions of each hospital and to plans for the evacuation of hospitals and their ble equipment After the outbreak of war he ed movements of patients between the hospitals in roup, and since the scheme embraced municipal tals, he worked in close cooperation with his cal officer of health This city possesses two itals, each having roughly 500 beds I well remem- the hospital officer telling me on my appointment evacuation would be easy instead of 1000 beds I uld have 2000 beds in the reception area This ed optimistic About 1300 beds are the maximum he immediate reception area, and most of them are ipied by civilian sick When severe air-raids have urred, we have had to transfer cases to the outer ption area under direction from the regional hospital er They go in converted-bus ambulance and motor oulance convoys In the autumn of 1940 a " com- nications " exercise was carried out in central control anks to our vigorous imaginations the numbers of posed casualties far exceeded any that have occurred actual raids Not only were motor ambulance con- ys summoned, but an ambulance train was brought to take slightly wounded cases to the farthest towns the region Nothing like this large scale transfer has r been necessary in practice, but we enjoyed it at the e The first twelve months of the war passed without at are officially called " incidents," and it was not til September and October, 1940, that there were raids e more memorable of these occurred on four successive hts The municipal hospital, which is unfortunately ced in a very vulnerable spot, had several bombs pped in the grounds which shook it up considerably. ter this we decided that top floors must not be used for tients, and it was reduced to the rank of a casualty aring station with only 100 beds

The first noteworthy raid occurred in November On ching central control I learned that one of the hospi- s had been hit, so I walked over to find out what had ppened I was met by the R S O who asked reason- y enough if he could possibly go on operating in the ualty theatre The windows were blown in, a bomb the boiler house had put an end to central heating and water mains had been severed Seeing there was no it, no water and no heat, but more than enough sty night air, it was fairly easy to decide that further rating in this theatre was out of the question In the other theatres *operating* continued for a short time ger, but the snowfall of plaster flakes from the ceiling n stopped that The only thing left to do was to ange for the evacuation of everyone in the morning tients and nurses were evacuated during the day, and dusk the last patient—a German navigator—had been t off to a military hospital " If only I could tell m how good you all are," he said to the nurses during raid, " they would'nt drop bombs on the hospitals "

Ve learned some useful lessons from that raid ght we, for example, to send street casualties from the phery into the two main hospitals ? There were ng arguments against it the hospitals lay in the tre of the city and it was a case of moving the injured of the frying pan into the fire , street obstructions m craters, with consequent diversions of traffic, npered the movements of ambulances It is difficult realise how isolated one is and how hard it is to anise Although we thought everything had been vided for, the scale of destruction proved we were ng The outside ambulances duly arrived at the boundary, but they were held up there until guides ld be found to lead them through a Hampton Court ze of strange streets

or future occasions we arranged a rendezvous for bulance convoys, enrolled guides and despatch carriers go on foot or bicycles The medical officer of health I drew up two schemes for evacuation depending on severity of the raid In small raids, we decided, es should be taken as before to the nearest city pital In larger raids all cases except those in the immediate vicinity of the larger hospitals should be taken out to the nearest aid post, and from there transferred to a reception hospital The aid posts, chosen by the medical officer of health, formed an almost complete chain round the circumference If communication with central control should break down, the second plan was to come into force automatically

* * *

This reshuffling of Government posts annoys me Our minds naturally picture the politicians we read about daily as Gilbert and Sullivan figures—we know well enough what a First Lord looks like, or a Lord Chancellor —then suddenly we have to think of them changing their dresses and their characters Take Mr R A Butler's appointment to the Ministry of Education. For years he has been the perfect popper-up with the obvious answer, " The sub-subcommittee of the chairman's subcommittee of the Non-Intervention Committee . ," he was particularly good at that sort of thing Suddenly we have to picture him as a sort of super-schoolmaster Has he had anything to do with education ? My dear fellow, what has that got to do with it ? These politicians have such colossal minds, such terrific experience, that aided by their experts—why, technical knowledge can be an absolute handicap , he'll read up education in a couple of nights One's exasperated mind falls back on fantasy The Lord Privy Seal is in a four-post bed, looking anxious " You've got pimple-itis " I say sternly, laying down my stethoscope, " *and must be operated on at once* I'll 'phone Lord Nibs " " But-but I thought he was a physician," says a wan voice from the bed " Yes, yes, he is, but in a crisis like this we must get the best brains He reads a lot, you know Broad view, and so on, and his wife's a charming woman "

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Cerebral arteriosclerosis, not uncommon among centenarians, appears to be singularly lacking in Mr Punch He has his moods, of course, and his off-weeks, but those who say that he is not what he was are, in fact, condemning themselves Of his infancy and adolescence much has been written , as a child he was often befittingly ingenuous and in the insolence of young manhood he was something of a snob, but he got over it In his maturer years he introduced us to the early Milne which set a new standard in humorous journalism Some of it was thin stuff, but the Rabbits it may be remembered lowered an egg-proof curtain during their amateur theatricals , nice humour that, judged by whatsoever standard you please There are still plenty of us who gratefully recall our weekly doses of R C Lehmann and E V Lucas , and the apparently inexhaustible flow of " Evoe " who coined that immortal description of athletes as " nothing more nor less than martyrs to exercise " There was also a young A P H , more naïve and less propagandist in those days, who assured us that the grasshopper *couldn't* make its peculiar noise by rubbing its knees together since he himself had tried it in the bath and it didn't work In the stern days of O S the *occasional* contributor had to be accurate and not facetious There were more misses than hits, of course, but an MS returned with " suggestions " pencilled in the margin could be regarded as a near-miss, whereas an acceptance was never couched in more positive terms than " I *think* I can use " There was once a young man who devised, collected and hopefully dispatched some 50 paragraphs of would-be charivaria " One retained for possible use " was O S 's devastating reply

* * *

This sex business is getting beyond a joke My elderly Dandie bitch, who ought to know better, has suddenly and without warning become as irresistible as Cleopatra and Helen of Troy combined, with the result that the garden and—if you don't watch out—the house itself are infested with an assortment of ardent curs of every shape and size Among the most neurotic and least successful of her suitors is a small nondescript terrier who, owing to the proximity of bigger and stronger competitors, sees fit to woo from a distance This he does by giving vent to a series of indignant yaps which unless steps are taken continue for days and nights on end until he finally becomes so hoarse that he can't speak at all Air-gun slugs shrewdly aimed at his posterior produce only temporary relief and I am had the unique advantage of satisfying everybody, including Sir Francis

Sir THOMAS MOORE made another effort on behalf of the herbalists After an assurance from Miss F HORSBRUGH that there was nothing in the bill to prevent herbalists from treating people and selling medicines if they disclosed their contents he withdrew his amendments, though hinting that his protégés might make themselves heard in "another place"

Sir FRANCIS FREMANTLE in expressing satisfaction at the passing of the measure paid a tribute to the work of Captain Elliston He pointed out that it was not true that the medical profession had a monopoly of treatment Everyone could get treated, or maltreated, as much as he liked The Medical Acts had been passed, not to give privileges to the medical profession, but to give protection and guidance to the public Mr GRIFFITHS once more pointed out that the best protection was a positive medical service, making all that science knows available to all on equal terms

The bill was given a third reading unanimously and has since been read a second time in the House of Lords without change

QUESTION TIME

Teaching of Mothercraft

Sir FRANCIS FREMANTLE asked the Minister of Health if he had considered the report from the National Association of Maternity and Child Welfare Centres urging the immediate need of the teaching of mothercraft to schoolgirls, and if he would consult with the President of the Board of Education with a view to putting this recommendation into operation —Mr E BROWN replied I have noted the report with much interest Its recommendations fall mainly within the province of the Board of Education, but I shall be glad to consult with the president on the steps that it may be possible to take towards carrying them out

Sir FRANCIS FREMANTLE then asked the President of the Board of Education if he was aware that teachers, probation officers, doctors and social workers were generally anxious for the teaching of mothercraft to be given to schoolgirls as the best means of attacking juvenile delinquency, and whether he would arrange for such teaching to be given throughout the country —Mr R A BUTLER replied A chapter of the Board's handbook of suggestions for teachers on health education is devoted to mothercraft and I shall continue to foster such instruction as is practicable for schoolchildren

Women Medical Officers in the Forces

Sir FRANCIS FREMANTLE asked the First Lord of the Admiralty why women medical officers recruited to the Navy were not given the rank, status and title accorded to male medical officers in the service —Sir VICTOR WARRENDER, deputy secretary to the Admiralty, replied Only one woman medical officer is employed and she holds the relative rank of surgeon lieutenant, R N V R, and receives the pay of an officer of that rank She wears the distinguishing stripes of a surgeon lieutenant on her sleeve

Sir F FREMANTLE Do you not recognise that the distinction is insufficient for the duties of the officers and that the Admiralty are behind-hand in not having women medical officers ?—Sir V WARRENDER If we were to supply women doctors to look after the W R N S personnel it would mean duplicating the medical staff, and that would lead to inefficiency The W R.N S were canvassed on their wishes in the matter and only 2½% expressed a wish to have women doctors —Dr EDITH SUMMERSKILL That shows how reactionary the Navy is

In answer to a similar question, the Secretary of State for Air said that women medical officers commissioned for service with the medical branch of the R.A F have the status of officers, and the relative ranks pertaining to their duties, and they are addressed as medical officers Sir F FREMANTLE I should like to know why the title is not given as for male medical officers, and whether it is decent and congruous that a woman medical officer should have to be addressed as Miss Smith, medical officer, with the relative rank, squadron-leader or whatever it may be ? Sir A SINCLAIR In the women's services, such as the Women's Auxiliary Air Force and the nursing services, special designations apply to the members Sir F FREMANTLE asked if he did not recognise that women medical officers are in a quite different position from other women officers

Radiological Examination of Recruits

Mr GRAHAM WHITE asked the Minister of Labour i were facilities for the radiological examination of for His Majesty's forces, and if he would consider such examinations general —Mr ERNEST BEVIN re Where they consider it desirable the medical boards examine recruits for His Majesty's Forces may radiological examination before determining the grading A suggestion that all recruits should have a logical examination was considered last year by the advisory committee under the chairmanship of Lord and the committee decided that its adoption was impracti —Mr GRAHAM WHITE But not undesirable ? Mr B No, it is a question of equipment and staff

National Loaf in the Army

Sir STANLEY REED asked the Secretary of State for W he would give the extent to which the national loaf national flour were used in the feeding of the Arm Captain H D R MARGESSON replied Arrangements being made for at least a quarter of the bread supplied to Army to be made from the new national flour, and this be gradually increased as stocks of white flour are used

Analgesia in Childbirth

According to the returns made up to Dec 31, 1940, 49 of 188 local authorities had made arrangements approved the Central Midwives Board for instructing midwives in administration of analgesics Apparatus for administer analgesics was supplied by 33 authorities during 1940 compared with 21 during 1939 Under special arrangeme made by the Ministry of Health with the National Birthd Trust, 43 machines have been supplied to emergency mate nity homes in which the staffs are adequately trained in t administration of gas and oxygen

(Mr BROWN replying to Dr SUMMERSKILL)

General Medical Council Appeals

Mr T E GROVES asked the Lord President of the Cou whether, having regard to the right of dentists, pharmac and certain other professional persons, to appeal to courts against disciplinary decisions, appropriate steps wo be taken to amend the law and give doctors a similar right Sir JOHN ANDERSON replied I am not satisfied that th is any general desire in the medical profession for s legislation at the present time

Silicosis Research

Mr JAMES GRIFFITHS asked the Minister what progr had been made by the Medical Research Council in th investigation into the problem of silicosis among coalminers Sir J ANDERSON replied The medical part of the investig tion was completed some time ago and the draft report h now been revised for publication at an early date Th environmental studies have also been completed except f the examination of a small part of the material collecte and these form the subject of a second report which is bei prepared It would be impracticable to summarise the resul of a complicated and highly technical investigation.

Milk for School-children

Mr H BROOKE asked the Parliamentary Secretary to th Ministry of Food whether any arrangements existed for makin sure of an adequate weekly milk supply for children over fiv not attending a school where the state aided school milk scheme was in operation —Major G LLOYD GEORGE replied This is one of the matters which is being considered in the review of milk distribution arrangements which the Minister is now *making*

SYMPOSIUM AT MARX HOUSE —On Aug 16 and 17 the science faculty of Marx House will hold a discussion on Frederick Engels's works, "Dialectics of Nature" and "Origin of the Family, Private Property and the State" On Aug 16 at 3 P M Prof H Levy, D Sc, will open a discussion on philosophical methods and the sciences, and at 7 P.M Prof J B S Haldane, F R S, will speak on modern scientific achievements and their bearing on dialectical materiali On Aug 17 at 10 A M Prof George Thomson will open a discussion on historical materialism applied to primitive communal society and in the afternoon Prof J D Bernal, F R S, will summarise the results of the discussions which take place at Marx House, 37A, Clerkenwell Green, London, E C 1

RADIODERMATITIS

SIR,—There is good reason to believe that the risk involved in setting fractures or removing opaque foreign bodies under the fluorescent screen is not generally appreciated, and as the practice appears to be on the increase the council of the Faculty of Radiologists desire to draw attention to this risk.

That the risk is a real one is shown by reports of cases of X-ray dermatitis of the hands and faces of surgeons in the E.M.S. in this country. There is also a report from Leddy and Rigos (*Amer. J. Roentgenol.* May, 1941, p. 696) of the Mayo Clinic who record 55 cases of X-ray and radium dermatitis in doctors in the period 1919–34 and 80 from 1934–39. Of the latter group only 5 were radiologists, the remainder physicians and surgeons. Of these 80 cases 15 were the result of X-ray therapy, the balance being occupational—i.e., resulting from diagnostic procedures or handling radium; 46 cases (only 3 being radiologists) were directly due to manipulations under the screen, either setting of fractures or removal of foreign bodies; in 30 cases the injuries to the hands had gone the length of ulceration, 21 of the ulcers being malignant.

As no screen apparatus in use at present, not even the recent model using indirect vision, can protect the hands against the rays if the fractured limb is being manipulated or the foreign body being removed while the current is on, these two procedures should be actively discouraged. In both, the operator's hands are inevitably exposed to the direct beam of the rays. The council of the faculty are of opinion that these methods should be used only in exceptionally difficult cases, and that when used the manipulation and viewing with the current on should alternate so that the hands are never in the direct beam. The council also recommend that a radiologist well versed in the factors involved should be in attendance when these methods are used. Further safeguards are the use of an adequate filter, small milliamperage, and low kilovoltage—e.g., 2 mA at 55 kV peak. Experiments show that the output is very greatly reduced if these factors are adopted.

M. H. JUPE,
Hon. Secretary Faculty of Radiologists.
32, Welbeck Street, W.1.

ALOPECIA IN FRIGHTENED CHILDREN

SIR,—In your columns recently much has appeared about war neurosis, with evidence for and against such a disease entity. Two unusual cases of alopecia areata in children under 7 sent by Dr. Twiston Davies, dermatologist to the Children's Hospital, Brighton, have recently been examined by me at the child guidance clinic of the Lady Chichester Hospital. In each case the loss of hair followed bombing or machine-gunning incidents. In two such young children an anxiety syndrome caused by war conditions is of importance, and I do not know of any similar record in recent medical literature.

Girl, 2½.—Elder of two sisters, no known family history of instability. Previous history: Normal development, healthy but always a bad sleeper, dominated by mother. Sept. 1940: Father in the Army; mother during a bad raid on Camberwell sheltered in the cellar, when the house was shaken by a near hit she wakened the child by shouting in her panic. Three days later the child's hair was observed to be falling out and she talked incessantly of bombs, shelters and so forth. The child rapidly lost all her hair; the mother was advised to evacuate to the country, when there the child's hair grew well under *safe conditions*. Jan. 1941: The patient and her mother came to Hove, the child not anxious and hair grown over the whole scalp. April, 1941: Ten days after a raid all previous nervous symptoms returned and the patient again began to lose her hair. While being examined at the clinic the wind rattled the window and the child asked anxiously if it was due to bombs and should not everyone take shelter.

Girl, 6½.—Youngest of five (three dead). Both parents over anxious, worrying temperaments. The father has been unemployed frequently during the last ten years. *No other* family history of instability. Previous history: Normal development; otitis media when teething at 12 months; chickenpox, measles and whooping cough before school age. School report, very good but over anxious. Patient dependent on and dominated by her mother. During the autumn of 1940 the patient had screamed frequently in her sleep when the sirens sounded at night. The parents often rushed the child and her brother downstairs or under beds for safety when bombs dropped near by. *On another occasion at school* she was snatched up hurriedly by a teacher and rushed to a shelter. March, 1941: Alopecia areata noticed about 2 weeks after the road was machine-gunned by an enemy raider when the child was returning home from school. The patient was very frightened and inarticulate on arrival home.

It would be interesting to hear if other cases of alopecia areata had been found when examining children from badly blitzed areas.

Hove, Sussex. C. LAMORNA HINGSTON.

SUCCESS IN SKIN GRAFTING

SIR,—An annotation in your issue of Nov. 9, 1940, in which the method of skin grafting adopted by Szutu and Chen was taken as a text, implied that pressure is an essential factor in secondary skin grafting and that the area treated must be completely covered by a single graft. I challenged the accuracy of these contentions but you rightly refused to publish a bald denial. I now enclose a reprint of an article which I submitted for publication in August, 1940 (*Brit. J. Surg.* 1941, 25, 585) wherein both these questions are discussed.

Unless dead tissue can be removed by some other process than separation brought about by tissue reaction the elimination of sepsis may not be possible or advisable. Rapid control of sepsis, however, in a denuded area will permit the equally rapid application of successful skin grafts with directly proportional effect on contraction and deformity, to say nothing of the time saving with attendant effect on wastage and expense. The use of a single graft will be impossible in large areas. In some sites adherence to this whole-piece policy may be actually detrimental. Taken in conjunction with the ability to dispense with pressure in secondary skin grafting the fractional method of application will permit such a sectional mechanism as for instance the fingers to be dealt with in a sectional manner. No concession can be made to sectional structure if it is considered essential for success in skin grafting (secondary) to deal with the fingers as units, a system which leads to harmful immobilisation.

To my mind, the solution of the problem of secondary skin grafting is the elimination or the rapid control of sepsis, and it is to this end that all available effort should be directed.

London, W.1. PERCIVAL P. COLE.

"SCIATICA"

SIR,—I fully agree with Mr. Kellgren that sciatica is a clinical syndrome which in the majority of cases is caused by a pathological condition localised not in the sciatic nerve proper. In my opinion we have to distinguish between a true sciatica of nervous origin and a pseudo-sciatica or muscular sciatica of muscular origin. I described such cases of muscular sciatica in the *Lancet* (1940, 2, 326) and the *Practitioner* (1941, 146, 167). I differ from Mr. Kellgren in several important points. In my experience patients do not complain of deep pain, but mostly of superficial pain. From my experience as a patient I can say that deep pain, although felt, cannot be localised at all. The superficial pain can be localised approximately only and rarely corresponds to a real dermatome or dermatomes. It is, too, noteworthy that most patients asked to map out the painful areas hesitate for a short time, and only slowly and grudgingly point to the painful skin areas. According to O. Foerster (*Brain*, 1923, 56, 1) the dermatomes overlap to such an extent that section of a single root in man is not followed by loss of sensibility at all, because the corresponding skin area (dermatome) is also supplied with fibres from the neighbouring roots. Numbness, pins-and-needles and so on are not necessarily of nervous origin. These symptoms can be and often are of purely muscular origin. According to C. M. Bazett and B. McGlone (*Brain*, 1928, 51, 18) puncture of fascial planes causes sensations resembling those of some forms of neuralgia. They experimented on themselves without a local anæsthetic, thus differing from Kellgren's technique. I have shown clinically (*loc. cit.* and *Brit. J.*

seriously contemplating the use of shot-gun cartridges loaded with dried peas The soldiers billeted on us lovingly finger their rifles but there are limits Another of her suitors is an undersized and not very successful near-spaniel, but for some reason or other the lady will have none of him Two sheepdogs, built on collie lines, she finds equally attractive, but mutual jealousy permits neither to steal a march on the other It is remarkable how they sneak into the house, and for the matter of that out of it, without sustaining any mortal injury from well-aimed kicks or heavy missiles thrown at them While these two are glowering at each other a small Scottie contrives to make a good deal of hay, and on present form he seems most likely to be the father of the next unwanted litter Of course, it is all very educative, for the children The other day my small daughter ran into the house wringing her hands and crying "Daddy, Daddy, come at once Jenny has been married five times!"

* * *

Our hospital was very heavily bombed three months ago My laboratories got a direct hit and are levelled to the ground with the work of 30 years—records, materials, apparatus and specimens—lying somewhere under the debris The hospital is determined to carry on and repairs are being effected as quickly as possible Meanwhile the various departments, including the path lab, are functioning in a block of empty flats nearby There is in the grounds an old disused patient's shelter left derelict from the early days of open-air treatment It has a good tiled roof and a steel framework, but no walls or (in fact) anything else We have started to put walls round it and turn it into a temporary pathological department, and I think it will not be a bad one, though it will cover only about a third to a quarter of the area of the original It has been passed by the necessary authorities for the duration of the war, and will constitute our second temporary home

* * *

"From ghoulies and ghosties and long-leggity beasties and things that go bump in the night good Lord deliver us"—so runs the old Cornish prayer written at a time when cockchafers were the only things of importance which might go bump in the night Sleeping out in a tent is, in my view, always a hazardous and uncomfortable proceeding but my wife says it is good for us, so of course we sleep out in fine weather The other night I was just getting off to sleep, after destroying a couple of hundred culices in the air or on the ground and reinflating the pneumatic mattress which had died on me, when I heard the stealthy tread of a wild beast which crept up and began to gnaw one of the guy-ropes Seizing a slipper I sprang up prepared to sell my life dearly He was easily picked out in the moonlight crouched ready to spring and lashing his tail, but seeing that I meant business he thought better of it and slunk away among the gooseberry bushes He was a field-mouse, as a matter of fact, but as I explained to my wife it would have made no difference to me had he been a tiger or a parachutist She smiled proudly—or perhaps cynically, I cannot be positive which Enigmatically would be a better word

* * *

The school M O was examining evacuees As two boys were shown into the room he took one glance at them and then his face lit up as he exclaimed "Aha, twins!" One of the boys disdained any reply, merely sniffing and wiping his nose on the back of his hand The other, with a look of contempt for this prattling doctor, said flatly "No, we're *not* twins" The S M O, palpably deflated, motioned to the boys to be seated while he took their names and addresses Having finished this, he stood up with a look of triumph on his face "I told you so!" he exclaimed, "You're as like as two peas, you have the same birthday, and you have the same father and mother You're twins" "No, we're *not* twins," said the more talkative one emphatically "Well, what are you?" demanded the medical officer irritably "We're all that's left of triplets"

CIVIL DEFENCE AWARDS—For brave conduct in civil defence the M B E has been awarded to Dr Isobel MacAlister of Wallasey, and the George medal to Dr Percy Horsburgh of Nuneaton

Letters to the Editor

PENSIONS APPEAL TRIBUNALS

SIR,—In the House of Commons on July 16 Fraser again besought the Minister of Pensions to independent appeal tribunals to deal with claims f pensions The Minister admitted the need fo tribunals and said he would establish them t if he could, the lack of medical men with su experience was his main difficulty He estimate to set up two tribunals in each region he would n doctors and a further 25 to prepare precis of th for the appellants In addition to the doctors risters and a lay staff of some 400 would also be As far as the doctors go I am confident that the could find the men Retired practitioners, whe tacts with clinical work are not so remote as to them useless, are aching for a chance of doing som Even men of seventy or over are not necessarily and work such as this needs, above all, experience judgment Reference to the national register (w seems to be curiously overlooked) would verify th existence and availability The 25 precis writers wo surely be easy to find, it does not require much phy energy to sit in an office and deal with familiar Experto crede I should volunteer at once if I got chance, and my name has been on the register

Henley on Thames — ALFRED COX

MEDICAL SERVICE IN NEW ZEALAND

SIR,—From time to time paragraphs appear in THE LANCET reporting, with greater or less bias, or at least with the colour of strong personal opinion, the alleged course of events in the medical world of New Zealand Most of these reports bear on their face their ow partisan character, and it is needless, therefore, to urg careful readers to treat them with due circumspection It is, for instance, misleading to picture the government' comprehensive Social Security Scheme as being frustrated by the antagonism and criticism of the medical profession The main part of that scheme is working smoothly and to the general satisfaction It has gone far toward giving the people of New Zealand, in a unique degree proper safeguards against such hazards of life as sickne unemployment and poverty through loss of the brea winner or old age

Even in the sphere of medical benefits, while admittedly there are inadequacies, it is well to rememb the very substantial steps forward already taken W now have a free maternity service for all mother Public hospitals provide free medical treatment for i inpatients, and corresponding grants are made toward the expenses incurred by patients receiving treatmen in private hospitals (the high quality of the servi available in the public hospitals of New Zealand is we known) The state mental hospitals give free treatmen to their patients All of these services are now finance by a part of the proceeds from the universal levy f Social Security

It remains true that the intended free general pra titioner medical benefits are only partially operativ because of the unwillingness of the New Zealand branc of the British Medical Association to cooperate But th measure of progress already made towards making New Zealand a reality of Social Security is fairly to borne in mind if we are to keep the whole picture perspective

In his letter of May 17, Dr Douglas Robb suggests unusual line of criticism For him, a large part of t trouble seems to be that the government have be dilatory in introducing a full cooperative system, th have been too respectful to the competitive basis practice among doctors, and Dr Robb's patience, seems, is almost exhausted Now, in the light of clear statements of policy made by the government, i not evident enough that if the medical profession of N Zealand would, in fact, prefer a national cooperati system of medical service, the government for th part would welcome such a proposal? But does t profession desire this, or is Dr Robb's merely the vo of one crying in the professional wilderness?

NEW ZEALANDER IN LONDO

Obituary

FRANCIS BERNARD CHAVASSE

M C, D M OXFD, M R C P, D O M S

Dr F B Chavasse, who was killed in a motor accident ar Warwick on July 5, was the third of the four sons Francis J. Chavasse, formerly bishop of Liverpool is brother Noel was one of the medical V C s of the st war, while Chavasse won his own M C in 1917 for his brave but fruitless efforts to find his youngest brother who was reported wounded and missing His only surviving brother was last year raised to the see of Rochester

Francis Bernard was born at Oxford in 1889, while his father was principal of Wycliffe Hall Like his brothers, he went to school at Liverpool College, and when he went up to Balliol in 1908 he showed the family turn for speed by winning the 100 yards in the freshmen's sports He also proved equal to his brothers' exacting academic standards, and in 1911 he was awarded Theodore Williams scholarships in anatomy and physiology and a Brackenbury exhibition Two years later he obtained a first class in the final honours school of natural science and returned to Liverpool to finish his medical studies at the university there He was an enthusiastic yachtsman and when the last war broke out he was away on a cruise He returned to finish his medical training at top speed, qualifying M R C S in 1915 He joined the R A M C. at once and served till the end of the war, first in the Dardanelles and later in France It was not till 1919 that he had leisure to take his B M and embark on the study of his chosen specialty A period of intensive work as clinical assistant at the Oxford Eye Hospital, at the eye department of the London Hospital and at Moorfields followed Soon after his return to Liverpool he was appointed to the special staff of the Eye and Ear Infirmary and the Royal Liverpool Children's Hospital He became lecturer in ophthalmology at the University in 1923

Chavasse was responsible for the seventh edition of Worth's Squint and he had also written important papers on orthoptic training and binocular vision Indeed one of his colleagues has described squint as the dream child of his brain His was a strong, thoughtful and thoroughly practical nature with an eager, forward-reaching mind crescive in its scientific curiosity and endeavour A fellow member of the Twenty Club recalls two papers of his which illustrated the natural balance in his character "One was a philosophical essay, probing deeply into human experience A few months later he gave us a paper on camping out, erecting a tent in his drawing-room, and showing to the smallest practical detail how to make a success of a camping holiday Both papers were entirely in character To his professional work he brought the same qualities of a sturdy, well-integrated personality "

JOHN SLIGHT GRAY

M B EDIN

Dr Gray was born in Edinburgh, and went to George Heriot's School where he secured a place in the rugby XV At Edinburgh University he played golf for the university team and was awarded his "green" Soon after his graduation in 1939 he went to the Coventry and Warwickshire Hospital as house-physician, later becoming senior resident in charge of the resuscitation wards and an assistant in a department of pathology Under the supervision of the director of the laboratories he also helped to develop the blood-transfusion service Dr Gray had been on duty during all the big raids on Coventry Earlier on the night of April 8–9 he was seriously injured in his left hand, but he refused to leave his wards A delayed action bomb exploded later and caused him further injuries which proved to be fatal

JOHN PATRICK GORE-GRIMES

M B DUBL

Dr Gore-Grimes, who was killed in the same raid as Dr Gray, was a native of Dublin He was educated at St Gerard's School, Bray, co Wicklow, where he became captain of the school in his last year He loved swimming and yachting and at Trinity College swam for the water polo team After his graduation in 1939, Dr Gore-Grimes held resident posts in Dublin and did post-graduate work at the Rotunda He came to England as house-surgeon at the Birmingham Children's Hospital, and last November moved to the Coventry and Warwickshire Hospital as resident for the senior physician He was keen, diligent and sincere and his untiring work on the night of April 8 will never be forgotten

IVOR McNEIL DRYSDALE

M B GLASG, SURGEON LIEUTENANT R N

Surgeon Lieutenant Ivor Drysdale, who has lost his life on active service was the son of Mrs Drysdale of Golfhill Drive, Glasgow He was educated at Glasgow High School, and at the University where he graduated M B in 1935 He was a member of the university O T C and an enthusiastic cricketer After qualifying he was for a time a houseman at Glasgow Royal Infirmary before entering the Royal Navy in 1936 For three years he served in stations in the Far East but since the beginning of the war he had been in home waters He was 29 years of age

JOHN ROSSLYN EARP

M A CAMB, M R C S, DR P H JOHNS HOPKINS

The death of Dr Rosslyn Earp on May 19 at his home in Delmar, New York, severs a transatlantic link Before qualifying from Cambridge and University College, London, during the last war he had served with an Anglo-Belgian ambulance and gained the Mons medal, the next five years he divided between relief work in France (where he had paratyphoid) and a hectic apprenticeship to medical journalism in London and Geneva, until the progress of a tuberculous lesion compelled attention and he elected to do his curing under Lawrason Brown at Saranac as he had been invited to direct the health department at Antioch College, Ohio Meantime he took his doctorate at Johns Hopkins and began a public health career which took him from Ohio to California and New Mexico and finally in 1937 to New York where he became director of the division of public health education and brought out weekly the official *Health News* All this while his lesion was growing on him, but he did not count it as a disability, praising rather the conservation of energy and time when he could summon committees to meet at his bedside Thus for 20 years of intermittent invalidism he retained the sanguine hopes of youth and was often able to bring them to pass And it was thus that the sphere of his influence developed from the discussion of adolescent problems at Antioch to the introduction of novel hygienic methods in a Western state, and finally to his advice being sought on large schemes of national health policy At 50 when he died his mind was still young

Rosslyn Earp was born in 1891 at Riber, near Matlock (his mother was daughter of Dr Decimus Hands), and went to Bridlington Grammar School where he was captain of the football XI Thence to St John's College, Cambridge, where he was a keen runner and had a cheerful singing voice His training for the medical O T C certificate turned him into a pacifist, but although a slave of conscience he loved his fellowmen and *phys Med* 1938, 1, 302) that superficial structures—e g, the tendinous origin of tensor fasciæ latæ and tendinous insertion of semi-membranosus-tendinosus muscles—often give rise to referred pain

In my experience pseudo-sciatica is caused by a muscular disease which can be located objectively in the myalgic spots I have discussed The muscles affected are tensor fasciæ latæ, gluteus medius and maximus, and sometimes quadratus lumborum Muscular sciatica can be cured in a short time by the injection of 1–2 c cm of 1% Procaine into each myalgic spot

Sciatica caused by a displaced intervertebral disc is very rare It must therefore appear surprising that 30% of his cases were referred by Kellgren to this source. I believe that a thorough examination for myalgic spots in the muscles mentioned above would have revealed that a number of these cases were of muscular origin This examination is simple and very worth while, since a positive result enables us to cure the patient without delay

M GOOD,
Lieut R.A M.C

PREMARITAL TESTS

SIR,—There are certain sections of Dr Violet Russell's excellent letter which call for further discussion She says that it is a pity to restrict the functions of a premarital clinic to the performance of Wassermann tests and suggests a short routine physical examination With this, I imagine, there will be general agreement but I feel I must join issue with her when she says that "For most couples no advice would be necessary and the doctor would only need to wish them luck"' One of the important tasks with which the medical profession will have to concern itself after the war is the stabilisation of the family unit, and the encouragement of parenthood Effective marriage preparation is an essential factor in the creation of a happy family life This involves a consideration of the following points

1 Physical health and freedom from venereal disease

2 Eugenic problems Many couples are uncertain as to whether there are elements in their family history which should preclude them from having children

3 Sterility Whilst the investigation of this condition in the woman requires procedures which should not be undertaken at this time, it is often possible during a routine examination to discover conditions which indicate the possibility of there being some degree of infertility—which it may or may not be advisable to deal with at that time, but about which the patient can certainly be warned In particular is it necessary to point out that if conception has not occurred after a year's trial the condition should be investigated and not "left to nature" A man's fertility can of course be assessed much more easily It is often advisable to do this and indeed the request for such an examination is often made spontaneously by the man

4 Every woman should be examined before marriage to make sure that the hymen will not interfere with normal and easy coitus and every man to see that he possesses no physical handicap

5 Much helpful advice may be given regarding technique and the importance of ensuring mutual orgasm This is a matter about which the public is lamentably ignorant

6 Children The need for a couple to prove their fertility early should be stressed and some indication can be given of the sociological implications of marriage and the valuable psychological factors that are involved in the acceptance of the responsibilities of parenthood by both partners

7 Family spacing This involves a correct understanding of the positive use of contraceptives and the danger of their misuse All couples want help on this matter and it is of paramount importance that the medical profession should concern itself with this problem and be in a position to provide young people with constructive principles upon which their married lives should be based In an ideal society contraception would be sought from, and provided by, doctors either privately or in clinics Indeed the rightful place for the carrying out of all this premarital work is in the welfare clinics, whose functions should be extended to cover this field Laboratory help, expert knowledge and time are essential

8 Many psychological problems arise and can receive appropriate attention

These few examples must suffice to show the scope and interest in the whole problem of premarital examination and education In other countries, notably Scandinavia and America, the need for this type of advice is b recognised and more effectively provided

In order to complete the picture, it is necessary t point out that premarital instruction should be the last phase in a carefully thought out educational system provided for the whole population and embracing home school and college Such a policy, based upon biological and psychological principles, should be designed to show that sex is a positive factor in life having widespread personal and social implications which must be properly understood and respected before the individual can hope to reach a fully balanced maturity This should go hand in hand with a more widespread system of practical instruction in the art of family management and the care of children together with the abolition of those economic conditions which are militating against parenthood

Harley Street, W 1 EDWARD F GRIFFITH

"INGROWING TOENAIL"

SIR,—While recognising that space did not give Mr Nuttall room for elaboration, I feel I must protest against the undue simplification of the ætiology of chronic lateral paronychiæ of the great toe The undue proportion of bilateral cases (by this I refer to both feet, and not to both sides of the nail, conveniently called "double") is not entirely due to tight shoes Examination of such cases frequently shows the presence of one of two conditions, either ugly flat toenails often ridged and often present on the opposite uninvolved foot in unilateral cases, or unusually long great toes which have led to undue pressure on the shoe It is surprising how often both these conditions will prove to be a family idiosyncrasy, I have looked after one family in which the father, two sons and a daughter have all lost their nail beds for recurrent paronychiæ As Mr Nuttall mentions the name "ingrowing toenail" should be abolished, for it gives a quite erroneous idea of the pathology The most common primary cause is neglect of foot cleanliness, with a subsequent subacute lateral paronychia This may be started by the wearing of one pair of tight shoes The persistent hyperæmia of the lateral side of the nail bed results in uneven growth of the nail, shown by longitudinal ridging and flattening of the nail, so that the nail fold no longer has a smooth rounded surface to overhang Removal of the nail or improvement of the footwear seldom results in a cure as the nail bed continues its irregular growth, and this is shown by the disappointing results from simple removal of the nail

It will be seen that the operation suggested though useful in some cases is unsuitable for those with an excessively long first toe, when the shortening of the toe by the removal of the nail bed and part of the terminal phalanx is preferable In spite of Mr Nuttall's contempt for sepsis I feel that it is wiser to clean up the paronychia before doing the radical cure In the long run it saves time as neither operation should lead to much invalidism

I should like to thank Mr Nuttall for the dodge of using towel forceps to steady the toes With the smaller toes this should be even more of an advantage

Hammersmith, W 6 J G BONNIN

SACCHARIN SHORTAGE

SIR,—Many of my diabetic patients are unable to obtain saccharin tablets from their local chemists, whereas some of my non-diabetic friends are able to do so Can some remedy be brought into play to overcome this?

Chelford, Cheshire E S EVANS

*** Diabetics should arrange with their regular chemists to reserve supplies for them, where there is difficulty they can be assured of preference if they present a note from their doctor —ED L

FOOD POISONING —The alarming outbreak of gastro enteritis which occurred on Thursday of last week among civil servants at Berkeley Square House has been traced to minced meat, the symptoms being probably due to preformed toxin rather than bacterial infection Some 60 victims taken to St George's and Westminster Hospitals have now returned to work

Medical News

niversity of Oxford

On July 19 the following degrees were conferred —

B M —C A Ridley P W Henderson, David Micklewright, G Graham, D S Lewes, Wilfred Barlow, T E W Goodier, ephen Ormerod, J M Yoshimoto R V Young, J P Childs ella D Morton, Olive C Sandys, P M Peters,* and J D Phibbs *

* *In absence*

Dr Brian Hickey and Dr Harland Rees have satisfied the xaminers for the degree of master of surgery

niversity of Dublin

At recent examinations at the school of physic, Trinity College, the following were successful —

M D

Alphonsus Dolphin, E G Fox, Sheila Kenny, Monty Toohey and J D Whiteside

FINAL MEDICAL EXAMINATION FOR M B, B CH, AND B A D

Medicine —G S Prince Maude F P Bigger, G B Gibson, Gladys M Byers, Elizabeth D L Simpson T A H Black, S T McCollum Helen S Watson and Emmeline P Crowe (*second-class honours*), C R Griffin D J Naughton, J P Walsh N J Anderson Harvey Lesselbaum, A J B McFarland J P Hearne, P C Smyly, C W Lloyd, M J M Solomons T J N Bates N H Stewart, J E Adamson, G F Shaw, A G Lee and A C M Hobson

Surgery —S T McCollum and C R Griffin (*first class honours*), Helen S Watson, G S Prince, G B Gibson, Elizabeth D L Simpson and Dorothy H Webster (*second class honours*), J N Greene, B W Wyllie E D Kerr, J B Dunlop Maude F P Bigger, J R Hassard T L Kelly D J Naughton, Myer Steinberg, Ethna M MacCarthy Catherine E Craig, M J M Solomons M E Weiner Harvey Lesselbaum, Kathleen M J Morphy, P C Smyly, W G D Caldwell H H Robinson T H Downes, A Mc Russell, Margaret F Y Dixon D R McCaully, C E Williams, A. C M Hobson, S D Killen

Midwifery —A J B McFarland and Florella Starritt (*second-class honours*), C F Ford M B Flanagan E S Odbert, J A Pearce, Muriel Eakins D H Draper, F N C Levy, J C Watson M G Jackson-Smyth and J L Handelman

D G O —Poshdi Ismail, L E Morris, M A -L Musa

D P H —*Part II* —William Hayes, F W Crook

Royal College of Obstetricians and Gynæcologists

At a meeting of the council held on July 26 Prof W Fletcher Shaw was re-elected president The following officers were also elected —*vice presidents*, Mr Eardley Holland and Prof C G Lowry, *hon treasurer*, Mr J P Hedley, *hon secretary*, Mr G F Gibberd, *hon librarian*, Wing Commander Frederick Roques, and *hon curator of museum*, Mr Aleck Bourne

The following were admitted by the president —

Fellowship —N L Edwards, Derby, W A. Taylor, Birmingham, and Robert Watson, Northampton

Membership —Jack Joseph, London

The following were elected to the membership —

Gavin Boyd D S Foster Edward Gledhill Constance E Peaker, Kathleen M Robinson, Katharine C Rogers R X Sands, Violet E Augusta Sykes and George Wynn-Williams

Beit Memorial Fellowships for Medical Research

Out of the 30 present Beit fellows 13 have already been seconded at their own request for more direct service during the war, and 6 others have undertaken some research work for Government departments on problems arising out of the war At a meeting of the trustees on July 23 the following elections were made —

SENIOR FELLOWSHIP

T R R Mann M D Lwow, Ph D Camb To continue his work on intracellular metallo protein compounds especially of red blood cells At the Molteno Institute of Biology, University of Cambridge

FOURTH YEAR FELLOWSHIPS

J F Danielli, Ph D Lond To continue his work on the permeability of muscle fibres and of capillaries At the biochemical laboratory, University of Cambridge

Miss C O Hebb Ph D McGill To continue her studies of physiological problems in relation to high altitudes At the department of physiology, University of Edinburgh

H Lehmann M D Basle Ph D Camb To continue his work on the influence of shock and of the suprarenal glands on glycogen synthesis At the biochemical laboratory, University of Cambridge

JUNIOR FELLOWSHIPS

E F Gale Ph D Camb To study bacterial amine production as a cause of non-specific infantile diarrhœa At the biochemical laboratory, University of Cambridge

W Holmes B.A Oxfd To study the regeneration of nerve-fibres after injury At the department of zoology, University of Oxford

Miss M F Lockett M D Lond, M R C P To identify renal pressor substances responsible for experimental high blood pressure At the pharmacological laboratory University of Cambridge

Royal College of Surgeons of Edinburgh

At a meeting of the college held recently, with Dr H M Traquair, the president, in the chair, the following were admitted to the fellowship —

F P Cameron, M D U Manitoba, Lyra M de Souza, M B Punjab, Kenneth Fraser, M B Glasg, J W Frost, M D McGill, W J F Guild M D St And, Ethna W Little, M B L'pool, G E Moloney, M B N Z, D M Morrissey, M B N U I, K D Rao, M B Punjab, E W Somerville, M B Camb, B G Spiers, M B N Z, and W S Tulloch, M B Edin

School Medical Services

The Board of Education has already urged the need for economy of medical man power, and in a further circular (No 1559) it again asks for the coöperation of local authorities in arranging prudent restrictions The board regards it as essential that the routine medical inspection of entrants should be kept up, but they suggest that some of the surveys of children now made by doctors might be undertaken by school nurses, who would refer selected cases to the school medical officer Less highly trained staff might be employed for some of the work, such as inspections for lice, which is usually done by nurses The board will offer no objection to the employment by authorities of foreign medical practitioners who have obtained temporary registration Suggestions for the best use of the restricted dental staff are also made in the circular

Appointments

Bliss Theodore, L R C P R S O *at the Royal South Hants and Southampton Hospital*

Brownlie, M F, M B Glasg temp asst M O H for Southport

Fidler Rachel, M B Lond temp asst school M O for Berkshire

Ford, J C, M B Lond temp deputy M O for Wembley

Galbraith, D H A, M R C S examining factory surgeon for Launceston, Cornwall

Hennebry, Thomas, M B Dubl F R C S I, D M R E, R S O at Alcester Emergency Hospital

Hickinbotham, P F J M B Birm, F R C S R S O at the Royal Infirmary, Bradford

Hoare, E A, M R C P E D P H medical superintendent of Nuneaton Emergency Hospital

Libman Maurice, M B Lpool M O to the North-Western Regional Transfusion Service

Penwill Marjorie, M B Lond temp M O (maternity and Child Welfare) for Birmingham

Ridehalgh, Frank M B Camb deputy clinical T O for Leeds

Smith, L M, M R C S examining factory surgeon for Eastbourne, Sussex

Walker R N, M D Glasg., D P H temp. T O for Surrey

Births, Marriages and Deaths

BIRTHS

Boden —On July 20, the wife of Major Geoffrey Boden, R.A M C —a daughter

Boyle —On July 22, at Leeds, the wife of Mr T McMaster Boyle F R C S —a daughter

Capps —On July 19 at Tingewick, Bucks, the wife of F C W. Capps, F R C S —a son

Cooper —On July 22 at Princes Risborough, the wife of Dr Dudley Cooper—a son

Dowler —On July 24, at Gloucester, the wife of Dr H G Dowler—a daughter

Lawton —On July 24 at Ilfracombe, the wife of Captain H W D Lawton R A.M.C —a son

Petch —On July 15, at Woking, to Margaret, wife of Dr C P Petch—a son

Welland —On July 23 at Wilmslow the wife of Surgeon Lieutenant M B D Welland, R N V R —a daughter

MARRIAGES

Campbell—Black —On May 20 at Halifax, N S Patrick Seymour Grahame Campbell M R C S *surgeon lieutenant*, R.N V R, of Rotherham Yorks to Doris Helena Black

Rob—Beazley —On July 23 in London Charles Granville Rob, F R C S, to Mary Beazley

DEATHS

Anderson —On July 26 at Deal Charles Alexander Anderson, M R.C S of Sandwich, aged 64

Campbell Ferguson —On July 28 at Wimbledon, Hugh Campbell Ferguson, M D Glasg

Dalgliesh —On July 27, 1941 at the Red House Moor Court Close, Sidmouth John William Dalgliesh M D

Forbes —On July 25, in London Duncan Forbes M B E M D Edin, D P H formerly medical officer of health for Brighton

Morgan —On July 23, at Clevedon Hugh Brooming Taylor Morgan M D Edin, of Cosham Portsmouth, aged 74

Robinson —On July 26 in London, Harry Robinson, O B E, F R C S

Webber —On July 25 Leonard Mortis Webber, M R C.S D P.M medical superintendent of Netherne Hospital, Surrey aged 55 this love was returned with interest in whatever grouping he met them His help in this office at a very lean period was welcome and was followed by a few months of intensive work on *Tubercle* in its first year of publication His writing was a development of the epistolary style, easy and natural, and he found no occasion to develop mannerisms Some unsigned letters in our columns have set out vividly one side of the chief medico-political problem in U S A of the last decade He married Kathleen M Goodliffe of Nottingham and leaves her with four children

WILLIAM HANNA

M D BELF , D P H

Dr Hanna, who died on July 13, was for more than 30 years attached to the Liverpool health service After taking his M A degree at the R U I in 1893 and qualifying in medicine two years later, his professional bent towards the prevention of disease led him to a junior post on the staff of Dr A K Chalmers, then M O H of Glasgow, and then to the government laboratory service in Bombay where he took full advantage of his opportunities to study plague and other tropical diseases and the methods for their suppression When the rapidly developing sanitary service of the Port of Liverpool called for additional staff his knowledge and experience marked him for appointment In Liverpool he found full scope, making many suggestions for administrative improvement and the betterment of the conditions, appliances, and sanitation on board ship which were adopted by owners and port authorities and set a standard for the Board of Trade Seamen everywhere owe to him a large measure of their health, comfort and safety When in 1923 he succeeded Dr A A Musson as deputy M O of the port he became largely responsible for the purity of the city's food-supply His authority on smallpox was unchallenged and his textbook on the subject had a world-wide circulation He also collaborated with Hope and Stallybrass in a monograph of industrial hygiene Moreover as university lecturer in public health administration he helped students to a broad view of state medicine But his disposition was not of a kind which readily acquires a large area of acquaintances , he was reserved and showed a diffidence almost amounting to shyness He was a faithful and devoted public servant and his firmest friends were amongst those who knew him best

Public Health

From the Annual Reports

MIDDLESEX

BECAUSE of the death of Dr John Tate in April, 1940, the 1938 report for Middlesex was not published until April, 1941 As Dr Macaulay, the present M O says, it is now of value more as a record than for information The race of industry to the North which started roughly a century ago was reversed after the last war That the shift was not accompanied by the disasters of the industrial revolution is the best certificate of merit which our public hygiene has received It shows not only that we have learned how to make industry comparatively healthy but that we had gained from the powers controlling it help in applying our knowledge At the 1921 census the population of Middlesex was 1,253,002 , in 1938 it was estimated at 2,058,300 , during that year the population increased by 43,800, of which 12,937 came by natural means and 30,863 by immigration The immigration figures are lower by 50% than those of the previous year and suggest " a check in the flow of population into Middlesex " A population which has been doubled in 20 years, in spite of a birth-rate which had been rapidly falling until near the end of the period, must of necessity be more a collection of persons than a true community, so the vital statistics of Middlesex are not comparable with those of settled counties Since 1934 the birth-rate has risen steadily from 14 6 to 15 4, but in view of the nature of the population the slightness of this rise denotes a fall in fertility There are no county boroughs in Middlesex, so the administrative corresponds with the geographical—or rather historical—county In 1938 there were 31,617 births and 18,680 deaths The bu rate varied in the urban districts from 25 in Felth to 11 4 in Southgate and the recorded death-rates fr 11 3 in Sunbury and Hornsey to 6 6 in Potters B The comparability factor varies from 1 36 for Hayes a Harlington to 0 91 for Hornsey, and shifts the high comparable death-rate to 11 9 in Tottenham but lea Potters Bar with the laurels at 6 9 Infant mortal varied from 59 in Hayes and Harlington to 31 Southgate, the average for the county being 4 Of the 18,680 deaths only 9184 were of persons over More than half as many (4813) were in persons a 45–65 and 2873 in persons aged 15–45 In a populat of standard composition this would be a bad record spite of the crude death-rate being 9 1, which co parability raises only to 9 7 against the England a Wales rate of 11 6 The area of Middlesex is 148, acres and its density therefore 13 8 , it has really cea to be a county and like London is a vast urban ar Much of Middlesex has been part of the metropolis many years and the population of these districts h not increased to any extent , that of Tottenham h actually fallen since 1921 The change is in those par which used to be rural , thus, the population of Wembl increased from 18,239 in 1921 to 118,800 in 1938

WARWICKSHIRE

Dealing with the increased prevalence of scabie Dr Hamilton Wood says that this has been the princip cause requiring admission of evacuees to sick bay He says it is often contracted from parents or relativ coming from evacuable areas on visits The increas in detected scabies started nearly two years before th war and was fairly generalised Its increase has bee more rapid since evacuation and has spread to distric from which it had been absent for many years Th incidence of scabies in the general population is unknow but judging from the records of school medical inspecti it appears to have been slight before 1937, even in crowded parts of great cities It is difficult to see w the acarus should have extended its range before war, but easy enough to explain why it has done so si Among 21,612 children examined in Warwickshire cases of scabies were discovered in 1939, more t twice as many as in 1938 Dr Wood says that inst tional treatment of scabies is successful, but domicil treatment protracted and not always satisfact There were no cleansing stations in the county last y

Infectious Disease in England and Wales

WEEK ENDED JULY 19

Notifications —The following cases of infectious dis were notified during the week smallpox, 0 , sca fever, 718 , whooping-cough, 4662 , diphtheria, 8 paratyphoid, 329 , typhoid, 44 , measles (exclu rubella), 4610 , pneumonia (primary or influenzal), 5 puerperal pyrexia, 132 , cerebrospinal fever, 1 poliomyelitis, 10 , polio-encephalitis, 4 , encepha lethargica, 2 , dysentery, 85 , ophthalmia neonator 88 No case of cholera, plague or typhus fever notified during the week

Of the 329 cases of paratyphoid 44 were reported from county of Chester (Birkenhead 10, Bebington 13) , 179 Lancaster (Bootle 17, Liverpool 78, Manchester 16, St Helens Of the 44 cases of typhoid 12 scattered cases were also reported Lancaster Smaller aggregations of paratyphoid were rep from Northants (Brixworth 14) and Staffs (Stoke 5)

The number of civilian and service sick in the Infectious Hos of the London County Council on July 16 was 1377 , inclu scarlet fever, 121 , diphtheria 234 measles 144 , whooping co 535 , enteritis 18 chicken pox 45 , erysipelas, 40 , mump poliomyelitis, 1 , dysentery 1 cerebrospinal fever, 30 puer sepsis, 10 , enteric fevers, 19 german measles, 5 , other dis (non infectious), 74 , not yet diagnosed, 83

Deaths —In 126 great towns there were no deaths f scarlet fever, 6 (0) from enteric fever, 24 (2) f whooping-cough, 3 (1) from measles, 19 (0) from d theria, 35 (1) from diarrhœa and enteritis under 2 ye and 4 (0) from influenza The figures in parentheses those for London itself

Edmonton Chester, Crosby, Liverpool, Manchester, and Sw each reported 1 fatal case of enteric fever Manchester and She each reported 3 deaths from whooping cough

The number of stillbirths notified during the week 187 (corresponding to a rate of 39 per thousand t births), including 9 in London

Medical News

University of Oxford

On July 19 the following degrees were conferred —

B M—C A Ridley, P W Henderson, David Micklewright, G Graham, D S Lewes, Wilfred Barlow, T E W Goodier, tephen Ormerod J M Yoshimoto, R V Young, J P Childs tella D Morton, Olive C Sandys, P M Peters,* and J D Phibbs *

* In absence

Dr Brian Hickey and Dr Harland Rees have satisfied the examiners for the degree of master of surgery

University of Dublin

At recent examinations at the school of physic, Trinity College, the following were successful —

M D

Alphonsus Dolphin, E G Fox, Sheila Kenny, Monty Toohey and J D Whiteside

FINAL MEDICAL EXAMINATION FOR M B , B CH , AND B A D

Medicine—G S Prince, Maude F P Bigger, G B Gibson, Gladys M Byers, Elizabeth D L Simpson T A H Black, S T McCollum, Helen S Watson and Emmeline P Crowe (*second-class honours*) C R Griffin D J Naughton J P Walsh, N J Anderson Harvey Lesselbaum, A J B McFarland, J P Hearne, P C Smyly, C W Lloyd, M J M Solomons T J N Bates N H Stewart, J E Adamson, G F Shaw, A G Lee and A C M Hobson

Surgery—S T McCollum and C R Griffin (*first class honours*), Helen S Watson, G S Prince G B Gibson, Elizabeth D L Simpson and Dorothy H Webster (*second class honours*), J N Greene, B W Wyllie, E D Kerr, J B Dunlop Maude F P Bigger, J R Hassard, T L Kelly, D J Naughton, Myer Steinberg, Ethna M MacCarthy, Catherine E Craig, M J M Solomons M E Weiner Harvey Lesselbaum Kathleen M J Morphy, P C Smyly, W G D Caldwell, H H Robinson T H Downes, A Mc Russell, Margaret F Y Dixon D R McCaully, C E Williams, A C M Hobson, S D Killen

Midwifery—A J B McFarland and Florella Starritt (*second-class honours*), C F Ford, M B Flanagan E S Odbert, J A Pearce, Muriel, Eakins D H Draper, F N C Levy, J C Watson, M G Jackson Smyth and J L Handelman

D G O—Roshdi Ismail, L E Morris M A -L Musa

D P H—*Part II*—William Hayes, F W Crook

Royal College of Obstetricians and Gynæcologists

At a meeting of the council held on July 26 Prof W Fletcher Shaw was re elected president The following officers were also elected —*vice presidents,* Mr Eardley Holland and Prof C G Lowry *hon treasurer,* Mr J P Hedley, *hon secretary,* Mr G F Gibberd, *hon librarian,* Wing Commander Frederick Roques, and *hon curator of museum,* Mr Aleck Bourne

The following were admitted by the president —

Fellowship—N L Edwards, Derby, W A Taylor, Birmingham, and Robert Watson, Northampton

Membership—Jack Joseph, London

The following were elected to the membership —

Gavin Boyd D S Foster, Edward Gledhill Constance E Peaker, Kathleen M Robinson, Katharine C Rogers, R X Sands, Violet E Augusta Sykes and George Wynn Williams

Beit Memorial Fellowships for Medical Research

Out of the 30 present Beit fellows 13 have already been seconded at their own request for more direct service during the war, and 6 others have undertaken some research work for Government departments on problems arising out of the war At a meeting of the trustees on July 23 the following elections were made —

SENIOR FELLOWSHIP

T R R Mann, M D Lwow Ph D Camb To continue his work on intracellular metallo protein compounds, especially of red blood cells At the Molteno Institute of Biology, University of Cambridge

FOURTH YEAR FELLOWSHIPS

J F Danielli Ph D Lond To continue his work on the permeability of muscle fibres and of capillaries At the biochemical laboratory, University of Cambridge

Miss C O Hebb, Ph D McGill To continue her studies of physiological problems in relation to high altitudes At the department of physiology, University of Edinburgh

H Lehmann, M D Basle Ph D Camb To continue his work on the influence of shock and of the suprarenal glands on glycogen synthesis At the biochemical laboratory, University of Cambridge

JUNIOR FELLOWSHIPS

E F Gale Ph D Camb To study bacterial amine production as a cause of non specific infantile diarrhœa At the biochemical laboratory, University of Cambridge

W Holmes B A Oxfd To study the regeneration of nerve-fibres after injury At the department of zoology, University of Oxford

Miss M F Lockett, M D Lond M R.C P To identify renal pressor substances responsible for experimental high blood pressure At the pharmacological laboratory, University of Cambridge

Royal College of Surgeons of Edinburgh

At a meeting of the college held recently, with Dr H M Traquair, the president, in the chair, the following were admitted to the fellowship —

F P Cameron, M D U Manitoba, Lyra M de Souza M.B Punjab, Kenneth Fraser M B Glasg, J W Frost, M D McGill, W J F Guild, M D St And, Ethna W Little, M B L pool, G E Moloney, M B N Z, D M Morrissey, M B N U I, K D Rao, M B Punjab, E W Somerville, M B Camb, B G Spiers, M B N Z, and W S Tulloch, M B Edin

School Medical Services

The *Board of Education* has already urged the need for economy of medical man power, and in a further circular (No 1559) it again asks for the cooperation of local authorities in arranging prudent restrictions The board regards it as essential that the routine medical inspection of entrants should be kept up, but they suggest that some of the surveys of children now made by doctors might be undertaken by school nurses, who would refer selected cases to the school medical officer Less highly trained staff might be employed for some of the work, such as inspections for lice, which is usually done by nurses The board will offer no objection to the employment by authorities of foreign medical practitioners who have obtained temporary registration Suggestions for the best use of the restricted dental staff are also made in the circular

Appointments

BLISS, THEODORE L R C P R S O at the Royal South Hants and Southampton Hospital

BROWNLIE, M F, M B Glasg temp asst M O H for Southport

FIDLER RACHEL, M B Lond temp asst school M O for Berkshire

FORD J C, M B Lond temp deputy M O for Wembley

GALBRAITH, D H A, M R C S examining factory surgeon for Launceston, Cornwall

HENNEBRY, THOMAS, M B Dubl, F R C S I, D M R E, R S O at Alcester Emergency Hospital

HICKINBOTHAM, P F J M B Birm, F R C S R S O at the Royal Infirmary, Bradford

HOARE, E A, M R C P E, D P H medical superintendent of Nuneaton Emergency Hospital

LIBMAN, MAURICE, M B Lpool M O to the North-Western Regional Transfusion Service

PENWILL, MARJORIE, M B Lond temp M O (maternity and Child Welfare) for Birmingham

RIDEHALGH, FRANK, M B Camb deputy clinical T O for Leeds

SMITH, L M, M R C S examining factory surgeon for Eastbourne, Sussex

WALKER, R N, M D Glasg., D P H temp T O for Surrey

Births, Marriages and Deaths

BIRTHS

BODEN—On July 20, the wife of Major Geoffrey Boden, R.A M C—a daughter

BOYLE—On July 22, at Leeds, the wife of Mr T McMaster Boyle F R C S—a daughter

CAPPS—On July 19, at Tingewick, Bucks, the wife of F C W. Capps, F R C S—a son

COOPER—On July 22, at Princes Risborough, the wife of Dr Dudley Cooper—a son

DOWLER—On July 24, at Gloucester, the wife of Dr H G Dowler—a daughter

LAWTON—On July 24 at Ilfracombe, the wife of Captain H W D Lawton, R A M C—a son

PETCH—On July 15, at Woking, to Margaret, wife of Dr C P Petch—a son

WELLAND—On July 23 at Wilmslow the wife of Surgeon Lieutenant M B D Welland, R N V R—a daughter

MARRIAGES

CAMPBELL—BLACK—On May 20, at Halifax, N S, Patrick Seymour Grahame Campbell, M R C S surgeon lieutenant, R N V R, of Rotherham, Yorks, to Doris Helena Black

ROB—BEAZLEY—On July 23, in London, Charles Granville Rob, F R C S, to Mary Beazley

DEATHS

ANDERSON—On July 26 at Deal Charles Alexander Anderson, M R C S, of Sandwich aged 64

CAMPBELL FERGUSON—On July 28, at Wimbledon, Hugh Campbell Ferguson, M D Glasg

DALGLIESH—On July 27, 1941 at the Red House, Moor Court Close, Sidmouth John William Dalgliesh M D

FORBES—On July 25, in London, Duncan Forbes M B E M D Edin, D P H formerly medical officer of health for Brighton

MORGAN—On July 23, at Clevedon Hugh Brooming Taylor Morgan, M D Edin, of Cosham Portsmouth aged 74

ROBINSON—On July 26, in London, Harry Robinson, O B E, F R C S

WEBBER—On July 25 Leonard Mortis Webber M R C S D P M medical superintendent of Netherne Hospital, Surrey aged 55

Notes, Comments and Abstracts

MATERNITY IN WAR-TIME

In his postscript to the nine-o'clock news on July 15 Mr Ernest Brown said that over 25,000 babies had now been born in our ninety war maternity homes The reception of these young citizens is an important piece of civil defence and it is interesting to learn from Dr A Leslie Banks and Dr L G Norman, medical officers of the Ministry of Health, how the scheme works in their region [1] Under the threat of bombing at the beginning of the war 1900 mothers in the last month of pregnancy were evacuated into the area and a hundred maternity units with 1385 beds were hastily established to receive them But no bombs came, and during the early months of 1910 only six homes with 227 beds were in use When the real thing began the evacuation of expectant mothers increased, and other homes which had been retained on a care-and-maintenance order were reopened, until by last November the region had twenty-three homes with 673 beds and by the end of the year 5439 mothers had been confined in them

This war-time organisation has been skilfully and economically grafted on to the peace-time services of the region Each county and county borough M O H was put in charge of the administration of the homes in his area the antenatal care of the mothers was put under the welfare authorities, and arrangements with obstetric consultants extended To avoid overcrowding the regional office retains control of the distribution of the mothers who register with their local M O H or through the L C C Only cases which are expected to be normal are sent to the homes—complicated cases go to a hospital in the area or to a central home where a consultation is available—and the confinements are conducted by midwives, who give gas-and-air if they are qualified to do so Homes with over 40 beds have a resident medical officer A matron or sister is in charge of the smaller homes A local doctor may be summoned if need be and either a member of the county medical staff or a local practitioner has general supervision of the home Medical students are taught at some of the homes which are staffed by London teaching hospitals and there is a similar arrangement for pupil midwives It has been difficult to find enough midwives to run the homes and only cooperation of the Central Midwives Board has made it possible to maintain adequate staffs

Many of the homes are housed in large private houses, which were requisitioned Extra bathrooms, water-closets sinks and sluices had often to be installed, but as few alterations as possible were carried out Though all the homes were in reception areas it was found necessary to provide air-raid protection The sizes of the homes vary from 15 to 100 beds arranged in 4–6 bed wards, and a floor-space of at least 96 sq ft is allowed for each patient There is one labour bed to 10 lying-in beds, one midwife to 4 patients, one assistant nurse to every 22 patients; and one domestic servant to every 3 patients Each home has an isolation room where cases of puerperal pyrexia are placed for observation Septic cases are transferred to an isolation hospital In each home there is also a day room for up-cases, a nursery for the babies, while a bathroom is often used as a reception-room where patients are examined Ingenuity and goodwill have reduced costly equipment to a minimum. But though instruments can be sterilised in a fish kettle, dressings are more difficult and where possible they are supplied in drums from a neighbouring hospital In isolated homes in the early days they were sometimes baked in biscuit tins, but gas or electric autoclaves were installed as soon as possible Other semi-domestic problems which were solved by individual resource were alternative emergency lighting in labour rooms, adequate exits for stretcher patients in case of need, and disinfection of the inevitable bedpans

To begin with, the mothers were billeted near the homes before and after their confinements But as accommodation grew scarcer the need for hostels became clear to the billeting authorities, who indeed sometimes set them up themselves The welfare authorities have now taken over both antenatal and postnatal hostels (Mr Brown said there were sixty of these in the country), and they have proved them worth The hostels are run on communal lines and the mothers do the light work themselves A midwife is in charge of the antenatal hostels and in the postnatal hostels the staff is experienced in infant care

A SCIENTIST'S NEW ORDER

If a book is a great book when it says today what a multitude will be saying tomorrow, when it clearly verbalises thoughts that with most people are only whispering guesses, then the little Pelican book, "The Scientific Attitude," by C H Waddington, Sc D, a Cambridge zoologist of 36, is a great book indeed Not that it couldn't be better, the chapters on art, for instance seem to take inordinate space Not that it couldn't have been written by somebody else, for almost any young scientist could write a similar book and let's hope many will But it does far more than describe an attitude, it holds up an ideal, it gives a creed which in these days of shifting values looks solid and unsmirched This is a book not about Science the hired assassin or protector of the state, the mechanic of industry, the servant of big business the sanitary technician who kills or keeps the fungoid foes of man at bay, but Science with an ideal that is all the better for being minutely dissected, with a conscience which is the more vigorous for being analysed, with a mission and a questing way of life that seeks control Here is a creed that exalts the last formed and most highly developed faculty of man, a tested creed in lesser fields, an exciting, gripping creed to which youth can turn and not in vain, to which millions in fact are starting to turn, to which millions more will turn when unbridled by Sam Browne belts and instant duty It does not make the mistake of wanting to form a party, a collection of men and women who always seem to revert to the jealous and egotistical interplay of tribal life with the lowest common denominator output, but to put into universal currency a set of ideas, like fresh air breaking through poison gas, a spirit

If you are satisfied with things as they are, if you think that business men and lawyers and politicians have done well with this last quarter century, don't buy this book, it might upset you, but if you believe that humanity can rise above the entertainment of world wars, above the mass stupidity of world slumps, above the squirrel hoarding of personal possessions, the protective groupings and hounding of monopolies, the unanalysed bondage of loyalties, then plank your sixpence down like a man and take comfort A revolution? Certainly, of thought, but the decrees of which would be of such mildness as to ask that anyone who aspires to govern shall have a scientific training, that anyone who would be priest or teacher shall have a summary of what is known of the forming and working of man's body and mind The writer has little good to say of nazi-ism or communism, but praises other activities of the Soviet which, starting from an incredible scratch, have spent more money on science than any nation at any time, in whose towns "well-stocked scientific technical bookshops are as common as tobacconists in London"

SCRUPULOUS SATELLITES

The Board of Registration of Medical Auxiliaries have lately published the third edition of their register of chiropodists and the second edition of their register of orthoptists The register of chiropodists contains the names of members of four qualifying bodies whose standards of curriculum and examination have been approved by the board the Incorporated Society of Chiropodists the British Association of Chiropodists, the Chelsea Chiropodists Association, and the Northern Chiropodists Association The qualifying body for orthoptists is the British Orthoptic Society The board also maintains registers of physiotherapists (including masseurs, radiographers, and biophysical assistants) and of dispensing opticians Medical practitioners, hospital and local authorities may obtain copies of these registers free on application to the secretary of the board, B M A House, Tavistock Square, London, W C 1

Surgeon Rear-Admiral G F Syms, F R C S, R N, has been appointed an honorary surgeon to the King

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[1] *Publ Hlth*, July, 1941 p 179

ORIGINAL ARTICLES

A STUDY OF THE PATHOGENESIS OF THYROTOXICOSIS*

F F Rundle, M B Sydney, F R C S
RGICAL CHIEF ASSISTANT WESTMINSTER HOSPITAL, CLINICAL RESEARCH WORKER L C C THYROID CLINIC, SURGEON, E M S

Aristotle said " let us understand the facts then we may seek the cause " In thyrotoxicosis we are still in process of collecting and trying to understand the facts Thus any study of its pathogenesis is as much an inquiry into the nature of the disease as into its causation In fact one of the greatest difficulties is to form an adequate concept of the syndrome

COMPONENTS OF THYROTOXICOSIS

The central disorder in thyrotoxicosis is some degree of thyroid hyperactivity Other more or less independent components are the ocular changes and a group of nervous manifestations, termed by Rasmussen (1937) " the psychoneurotic syndrome " While of course some degree of thyroid intoxication is essential for the diagnosis, the ocular and nervous components are inconstant and unessential It is even doubtful whether the nervous phenomena form an integral or characteristic part of the disease

The thyroid intoxication—Harington and his co-workers (1935) have established the fundamental fact that the glandular secretion in thyrotoxicosis, though excessive in amount, is not qualitatively different from normal This has greatly clarified the pathology of the disease, the elaborate dysthyroidism theory of Plummer being rendered invalid Incidentally proof was provided of the wisdom of Aristotle's injunction But the precise nature of the definitive secretion of the thyroid is unknown, nor can the amount of hormone passing into the circulation be measured directly either in health or disease Moreover, indirect methods of measuring the degree of thyroid intoxication, such as the basal metabolic rate, are not wholly reliable Hence the expression " thyroid intoxication " cannot have an exact meaning

The ocular component—It is significant that the ocular component and the thyroid intoxication, though usually associated, may occur as independent phenomena Thus in 332 consecutive cases of thyrotoxicosis there was lid-retraction or proptosis or both in about 3 patients out of 4 But cases in which the ocular signs are present without goitre or hypermetabolism are not very rare

Case 1—A married woman aged 48 Her father and a paternal cousin had both had thyrotoxicosis She complained of " a bad eye ", the left eye had been staring and watered when out of doors or in a wind for the past 3 months There was no pain or diplopia and no symptoms of general disease She was well nourished There were no abnormal physical signs save in the left eye which showed retraction of the upper lid identical with that in Graves's disease There was no clear exophthalmos (exophthalmometer reading 15 mm for both eyes) or ophthalmoplegia The basal metabolic rate and the galactose index were normal

Here typical lid-retraction occurred in the absence of goitre and hypermetabolism The family history is significant Such cases may retrogress, remain stationary for months or years, or, more usually, progress to typical exophthalmic goitre Where, as in this example, thyroid intoxication does not develop, the case is perhaps best regarded as an abortive form of Graves's disease in which the thyroid epithelium has not responded to the causal stimulus Clearly cases in which only the ocular component is present provide very strong evidence to support an extrathyroid theory of origin There is, indeed, powerful evidence that the thyroid intoxication is not the cause of the eye changes On the one hand, typical lid-retraction and proptosis may develop in patients without goitre or hypermetabolism, or exophthalmos may appear for the first time or increase after thyroidectomy (it is significant that postoperative hypothyroidism is often present in these cases) On the other hand eye signs may be absent when the thyroid toxæmia is very severe, and Smelser (1938) states that thyroxine therapy in guineapigs reduces the weight of the retrobulbar contents and causes enophthalmos

The clinical evidence that the ocular changes have an extrathyroid origin supports the pituitary theory of Graves's disease But experimental data provide the most suggestive evidence Extracts of anterior lobe not only activate the thyroid gland and cause secondarily all the manifestations of thyrotoxicity but also result in exophthalmos Some of the clinical factors associated with the onset of thyrotoxicosis appear to act by disturbing the higher controlling mechanism of the gland But there is evidence also that the responsiveness of the thyroid epithelium is variable Certain thyroid conditions, notably simple goitre, may predispose to the thyroid intoxication of Graves's disease It is therefore convenient to speak of pituitary and thyroid factors in the pathogenesis

SIGNIFICANCE OF EXOPHTHALMIC OPHTHALMOPLEGIA

It is instructive to consider a group of patients to which Brain (1938) has given the name " exophthalmic ophthalmoplegia " Severe proptosis and ophthalmoplegia usually dominate the clinical picture The cases fall into three main groups, of which the following are examples

Case 2—Postoperative type A woman aged 49 (fig 1) Subtotal thyroidectomy for severe thyrotoxicosis with exophthalmos in September, 1937 Diplopia and epiphora first noticed 12 months afterwards She then had about 7 mm of proptosis on both sides and marked weakness of both external recti Postoperative hypothyroidism was present

Case 3—Coexistent with active thyrotoxicosis A man aged 59 (fig 2) Severe thyrotoxicosis of some 8 months' duration Loss of weight (2½ st) in spite of excessive appetite Basal metabolic rate + 46% Both eyes proptosed (exophthalmometer readings, R 24 mm , L 23 mm) Severe chemosis Gross limitation of upwards, downwards and outwards movement of both eyes Thyroidectomy relieved the thyroid intoxication but left the eyes unchanged

Case 4—Without goitre or hypermetabolism A man aged 61 (fig 3) Complained of prominence of L eye and double vision The R eye was normal but L eye was proptosed (exophthalmometer reading R 15 mm , L 19 5 mm), much retraction of L upper lid , elevation, abduction and adduction of the globe were grossly limited. No goitre or signs of thyrotoxicity Basal metabolic rate + 12%

Relevant data from 15 cases of exophthalmic ophthalmoplegia are given below

Exophthalmic ophthalmoplegia occurred—

(*a*)	postoperatively in	7	cases *
	with thyrotoxicosis in	5	,,
	without goitre or hypermetabolism in	3	,,
(*b*)	with lid retraction in	10	
	with proptosis in	15	,,

Mean exophthalmometer readings in—

20 ophthalmoplegic eyes	23 ± 2 8 mm
146 exophthalmic eyes without ophthalmoplegia	18 ± 1 72 mm
276 normal eyes	14 5 ± 2 5 mm.

* 4 had hypothyroidism

Lid-retraction and proptosis in exophthalmic ophthalmoplegia seem to differ from these signs in Graves's disease in degree but not in kind This is suggested strongly by cases of progressive postoperative exophthalmos which develop ophthalmoplegia It is significant that lid-retraction identical with that in Graves's disease occurred in two-thirds of the cases Despite some overlapping of the values in individual cases there is a clear general relationship between the severer degrees of proptosis and the incidence of ophthalmoplegia

Turning to the metabolism, exophthalmic ophthalmoplegia developed after thyroidectomy or with active thyrotoxicity in 12 of the 15 cases Either combination emphasises the intimate connexion between exophthalmic ophthalmoplegia and the syndrome of thyrotoxicosis Moreover in all 3 cases without goitre or hypermetabolism this relationship was revealed by the presence of characteristic lid-retraction In one of this group the family history provided suggestive evidence ;

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* A Hunterian lecture delivered before the Royal College of Surgeons of England on Feb 10 1941

her only sister and her mother were goitrous and on the maternal side 2 aunts and an uncle had goitres

An attractive hypothesis is that these cases represent abortive forms of Graves's disease in which the thyroid epithelium has failed to respond to the stimulus commonly causing both exophthalmos and thyroid intoxication There is comparable evidence that in certain people the thyroid epithelium shows an extraordinary resistance to anterior-pituitary extracts Sharpey-Schafer and Schrire (1939) found that small doses of thyrotropic extract regularly cause thyroid enlargement, tachycardia elevation of the basal metabolic rate and creatinuria in normal human subjects In most cases of hypothyroidism the injections restored the metabolism to normal, but in some cases of hypothyroidism even massive doses failed to evoke a response, and biopsy of the thyroid isthmus in one such case showed appearances within normal limits We may conclude that the responsiveness of the thyroid epithelium is variable Hence it is possible that a pathological lack of responsiveness may account for the occurrence of exophthalmic ophthalmoplegia without goitre or raised metabolic rate

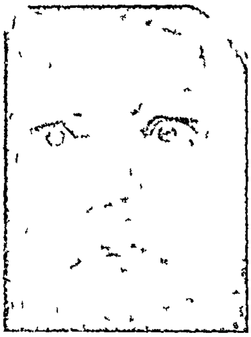

FIG 1—Postoperative exophthalmic ophthalmoplegia Both external recti are affected

The term exophthalmic ophthalmoplegia is a useful one since it indicates the usual association of considerable exophthalmos with the muscular palsy Brain (1938) claims that exophthalmic ophthalmoplegia is a syndrome clearly distinguishable from exophthalmic goitre But the evidence here presented suggests that even when exophthalmic ophthalmoplegia is present without thyrotoxicity the condition is best regarded as an extension of the thyrotoxic syndrome and not as sharply distinct from it It seems desirable to use the term simply to denote a particular combination of eye signs occurring alone, in conjunction with active thyrotoxicosis or as a complication after thyroidectomy Incidentally, since the behaviour of the ocular and thyroid components of thyrotoxicosis is more or less independent, the state of both must be specified if the diagnosis is to be clear and adequate

It will be seen also that exophthalmic ophthalmoplegia was associated with a normal or subnormal metabolic rate in two-thirds of the cases, and there is a suggestive comparison between this clinical group and certain experimental data Smelser (1937) found that gross proptosis followed the injection of anterior pituitary extracts in thyroidectomised but not in intact guineapigs He claimed that an increased bulk of the retrobulbar contents of the orbit caused the proptosis and was due to œdema of the tissues But the difficulty of arguing from results in the experimental animal to disease states in man is shown by the fact that the only case of exophthalmic ophthalmoplegia in the present series which came to autopsy showed no œdema of the orbital fat when examined histologically

ANTECEDENT GOITRE

The importance of the thyroid factor in pathogenesis is suggested by the frequent development of thyrotoxicosis in patients already suffering from simple goitre It is suggestive that this secondary toxic goitre is fairly common even among city-dwellers Thus after excluding a small group of patients from an endemic area, 62 cases, or about 1 in 5 of the present series, gave a history of antecedent goitre Usually the previous goitre had appeared at puberty or during adolescence Sometimes it had subsided in adult life but the subsequent development of thyrotoxicosis indicated that the gland remained a locus minoris resistentiæ

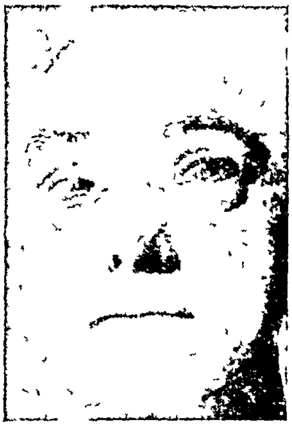

FIG 2—Exophthalmic ophthalmoplegia associated with severe thyroid intoxication Note chemosis and limited abduction of the left eye (photograph taken soon after thyroidectomy)

There is also powerful evidence from goitre maps endemic goitre predisposes to thyrotoxicosis M don (1936) in the United States, McEwan (1938) in country and Wyndham (1940) in New South Wales made geographical surveys of the incidence of simple toxic goitre Each author found that the areas of h est incidence of thyrotoxicosis coincided with those highest endemicity And, as is well known, exopht mos is not common in secondary toxic goitre, the intoxication being usually the sole manifestation observation may mean that the presence of simple goit predisposes more particularly to this component of t thyrotoxic syndrome

In this connexion, an interesting experiment w described by Anderson and Collip (1934) A group rats suffering from spontaneous goitre was injected wi the same dose of thyrotropic pituitary extract as a gro of control rats The goitrous rats we much more susceptible, and responded b developing a hyperacute form of experimental thyrotoxicosis In one, the basal metabolism reached 262% of normal compared with an average of 120–130% for the controls Such a result is highly suggestive, but it should be noted that Remington (1937), working with rats in which goitre had been induced experimentally, was unable to obt confirmatory results In his experime the goitrous rats showed no increased susceptibility

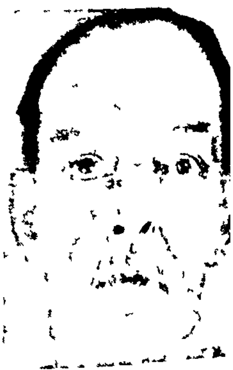

FIG 3—Exophthalmic o thalmoplegia of the eye without goitre or hy metabolism Note c siderable lid retraction

HEREDITY

The evidence that goitre arises as an heredit characteristic in certain families is strong In this ser of 332 patients, 72 (22%) gave a family history of thr disease Different forms of thyroid disease occurr simple goitre predominating (see table) Hence it is thyrotoxicosis specifically but rather the defect thyroid stock that is inherited

The main facts concerning the hereditary aspect thyrotoxicosis can be shown by representative cases

Family A—This family tree shows the goitrous diath in 3 successive generations (fig 4) Thyroid weakness sh itself irregularly as simple or toxic goit Here it is transmitted through femal but transmission through males does occ Moreover, demonstrated this family, goi is neither tra mitted as simple Mendel dominant nor a simple rec sive, if it wer Mendelian do mant, all the c dren in t second and th generations would be affected Moreover, it cannot b Mendelian recessive since goitre is present in both the mot and her children, even though the latter are heterozygous is suggested that some other unit character which predisp to goitre is transmitted with the genes and in suitable circ stances goitre or thyrotoxicosis develops

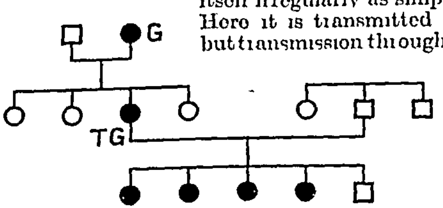

FIG 4—Family A Squares represent males, circles females, those with thyroid disease shown in black G = goitre, TG = toxic goitre, H = hypothyroidism, M = myxœdema

Family B—This tree shows a particularly heavy incide of different types of thyroid disease in the same family (fig There were 2 members with toxic goitre, a third with m ma and a fourth with hypothyroidism One of those with ves's disease had 2 daughters, the younger of whom eloped a simple goitre in adolescence There was a strong sical re- mblance tween the other and r goitrous ughter on e one hand, d the father and the non goitrous daughter on the other ere the constitutional factor stood out clearly

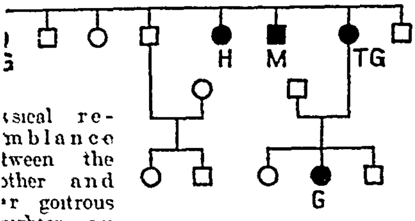

FIG 5—Family B

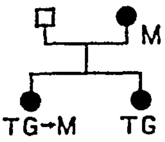

FIG 6—Family C

Family C—In this tree (fig 6) there is a myxœdematous other and twin daughters, one of whom had exophthalmic oitre which remitted under iodine therapy Typical myx-edema then gradually supervened A few years later the cond twin developed exophthalmic goitre She has now een observed for 3 years and without any treatment has ndergone a complete remission Because of their similar ehaviour the possibility arises that the two are uniovular twins

AMILY HISTORY OF THYROID DISEASE IN 322 THYROTOXIC PATIENTS AND 218 NORMAL CONTROLS

Thyroid disease in family	No of families affected	Incidence (%)
hyrotoxic patients—		
imple goitre and/or thyrotoxicosis and/or myxœdema	72	22
Simple goitre	50	15 5
Thyrotoxicosis	32	10
Myxœdema	5	1 6
ontrols—		
Simple and/or toxic goitre	12	5 5

All 3 subjects—the mother and her 2 daughters—belong to the same blood group, group B Incidentally these cases illustrate the type of Graves's disease which remits spontaneously or, without operation, gives place to myxœdema

PSYCHIC TRAUMA

It is an intriguing fact that psychic trauma is associated with the onset of symptoms in a comparatively high percentage of cases Marañon (1921) emphasises that they often volunteer the information that some major shock worry or stress seemed to bring on the illness In the present series, 42% of patients associated psychic trauma with the onset, and this figure agrees with that from other studies (Eason 1927, Gardiner-Hill 1929)

CASE 5—A man aged 53 with severe thyrotoxicosis There was a goitrous family history I questioned him closely about the possibility of worry, stress, infection or other factor contributing to the onset of his illness, but he denied all knowledge of any such cause Later he came into hospital when I again questioned him with the same result He responded well to rest and iodine Thyroidectomy was done He made a good recovery but considerable restlessness, tremor and flushing persisted A mild anxiety state was present Again I questioned him about possible worries with his work or amily I asked him whether there might not be some lifficulty in his relations with his wife It then came out that ome 3½ years before his wife had had a hysterectomy done for ancer and that he had not had intercourse with her since He had remained continent for 3 years but then began having egular intercourse with a married woman living nearby. Her husband was on night shift and the patient paid his visits fter he had left for work The constant fear that they would e discovered and that his family and the neighbours would earn of the affair gradually "got him down" He became so haky and nervous that eventually he had to give up his work

His case points two lessons first that such a cause of major emotional stress may remain concealed unless erreted out, secondly that a mild anxiety state may persist after thyroidectomy unless the mental difficulties are adjusted concurrently with other treatment In this patient the anxiety state was mild, but psychoneurosis may assume major proportions as in the following case

CASE 6—A young Dutch girl who had come to London to marry an Englishman she had met in Amsterdam He wrote one day to say that he was already married and had a family She was very depressed and said that for weeks she cried every night and could not sleep She did not want to return to Amsterdam and took a post in London, but she became more and more depressed She noticed a lump in her neck The symptoms of both hysteria and thyrotoxicosis developed She began to feel that she was all alone in the world and that everyone was against her The notes from a psychiatric clinic state that "she is depressed, tearful and sleepless, feels that life is not worth living and has suicidal thoughts" She presented the signs of severe Graves's disease but her case was overlaid with hysterical symptoms and depression After suitable preparation thyroidectomy was done and her physical condition improved rapidly, but the mental depression and hysteria persisted for many months Gradually, however, she became more cheerful as she realised that she had really had a lucky escape

When neurotic disorder coexists with thyrotoxicosis it is nearly always found that psychic trauma is a prominent factor in the onset of symptoms It thus seems possible that thyrotoxicosis and psychoneurosis have the factor of mental stress in common at their origins But whatever rôle psychic trauma has in the pathogenesis of Graves's disease, there can be no doubt that a sudden shock may greatly aggravate the disease when already present Thus a sudden shock has often been followed within a few hours or days by the full-blown picture of thyrotoxicosis, and, though it has generally been agreed that the disease must have already been present in latent form, it seems clear that psychic processes can modify thyroid activity But their modus operandi in doing so is unknown Here then is a problem in psychosomatic relations involving the question of the central representation of the thyroid and possibly also of the anterior lobe of the pituitary

ONSET AT SEXUAL EPOCHS

The frequent development of thyrotoxicosis in relation to one or other of the sexual epochs strongly emphasises the relationship between the thyroid and female sexual function The menopause was the epoch most commonly inculpated, for a fifth of all the cases developed within 2 years of it This is shown by the preponderance of patients of this age-group in the distribution curve (fig 7) The anterior lobe of the pituitary is, of course, closely concerned with the regulation of female sexual function There is evidence that after castration the urinary excretion of gonadotropic factor rises (Rowlands and Sharpey-Schafer 1940) It is possible that the close linkage between the gonadotropic and thyrotropic functions of the anterior lobe results, in certain cases, in a concomitant increase in these secretions after the menopause or at other epochs in the female

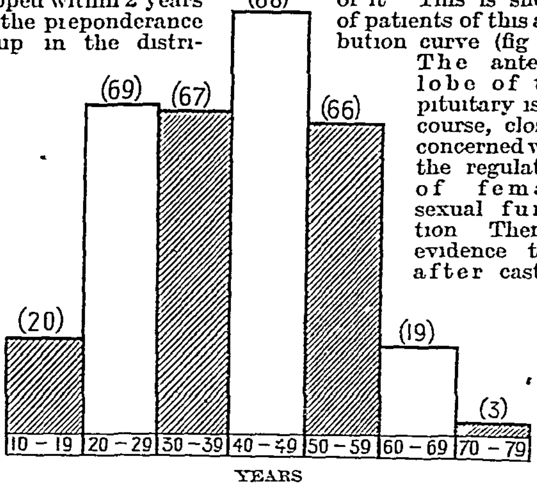

FIG 7—Age distribution in 332 patients with thyrotoxicosis (number in each age group is shown in parentheses)

If in patients with thyrotoxicosis we could demonstrate an abnormally high thyrotropic hormone content of the blood, it would be powerful direct evidence to support the pituitary theory of origin of the disease But studies of the blood have mostly given negative results (Fellinger 1936, Hertz and Oastler 1936, Cope 1938) and doubt has her only sister and her mother were goitrous and on the maternal side 2 aunts and an uncle had goitres

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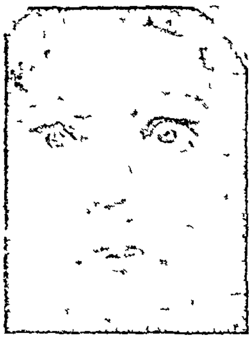
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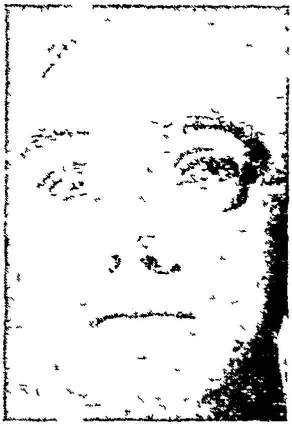
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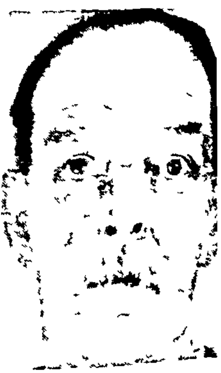
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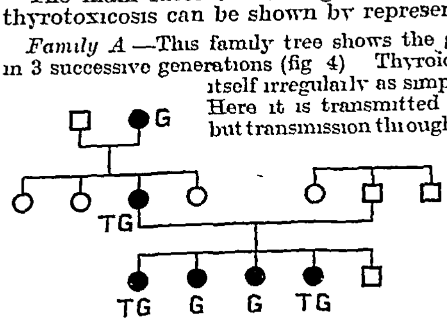

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THE EFFECT OF AIR-RAIDS

Later we had an opportunity of observing the effect f heavy and continued aerial attack in the cases admitted etween September, 1940, and February, 1941 Total dmissions amounted to 435 compared with 352 admitted between September, 1938 and February, 1939, and 57 between September 1939, and February, 1940 It ould be misleading, however, to draw conclusions bout the incidence of acute mental disorder from these igures, because the admission-rate was affected by variety of administrative factors The diagnoses ere: senile dementia, 150, other organic disorders, 2 depression, 82, mania 21, schizophrenia, 85, sychopathic personality, 10, psychoneurosis, 5 The ndromes encountered did not differ materially from hose met with in peace-time by Pentreath and Dax 1937), except that there was an increase in the proporion of senile cases The stress of the war situation was onsiderable in our cases, and was occasionally the chief actor, an experience of bombing precipitating the mental llness In other cases, however, bombing merely etermined the onset of a breakdown to which constituional and environmental factors had conduced

ACUTE TRAUMA

In a group of 13 cases 6 male and 7 female, the illness ad been preceded by exposure to a frightening or grief-roducing situation as a result of air-raids, and this as the chief precipitating factor The symptoms roduced were depression and anxiety, although in one atient a diagnosis of schizophrenia was considered ertain and in another probable At one end of the cale symptoms shaded off into normal emotional eactions The diagnoses were depression, 9, schizohrenia, 2, anxiety state, 1, state of panic, 1

Case 3—A woman, aged 31, was awakened by a bomb xplosion which shook the house For the rest of that night nd the next morning she trembled and shivered violently nd in the afternoon was seen running up a hill with her three-ear old son in her arms in a panic When asked what was he matter she said that the sirens had gone, which was untrue uring the night she became worse and talked incoherently, elieving that Hitler had turned the house into a dope den nd was doping her On admission to hospital next day she as in a state of acute anxiety, sweating, tremulous, with ilated pupils, exophthalmos and mild hyperthyroid signs er speech was mostly unintelligible For the succeeding 0 days she ran a high intermittent temperature and appeared larmingly ill at times, although no evidence of infection was ver found She was kept in the observation ward for a urther three weeks, during which time she had an uneventful onvalescence from a physical point of view, but comlained much of depression and of anxiety symptoms She ent home with her husband but experienced a return of ncontrollable panic and had to be readmitted within a few ours She was then transferred to a mental hospital as a oluntary patient where she made good progress and was scharged recovered after 3 months She was described by er husband as a jolly, sociable, industrious person, but had d one previous attack of anxiety and depression after the irth of a stillborn child Her mother had been treated for enopausal depression in a mental hospital

Case 4—A woman, aged 47, had her windows blown out d broken glass and other debris strewn over the bed in hich she was sleeping During the following night she ecame agi [illegible] auditorily hallucinated, believing that her dead husband was knocking on the roof On admission she was depressed, complained of severe headache, and expressed a delusion that her husband was still alive and in need of help She was at the menopause She improved rapidly and was discharged at the end of a fortnight in a slightly elated mood Her previous personality showed violent mood swings and she had made a suicidal attempt on one occasion, although mental hospital treatment had never proved necessary

Case 5—A woman aged 63, was sheltering under the stairs of her house when a bomb fell in the next garden, blowing out the windows and bringing down the ceilings, she became very frightened and depressed On admission she was depressed and somewhat retarded, complained of many anxiety symptoms and was full of gloomy forebodings as to the future course of the war It appeared that she had listened to Lord Haw Haw's broadcasts on several occasions and had incorporated his propaganda neatly into her psychosis dwelling on the folly of our politicians in involving us in war, on the overwhelming might of Germany and on our inevitable defeat She was transferred to a mental hospital as a voluntary patient There she became worse and died 3 weeks later from the exhaustion of melancholia

Case 6—A widowed charwoman, aged 50, was in a trench shelter when it was hit by a bomb, the woman next to her being killed Immediately afterwards she became depressed, would sit crying for hours, and was unable to go back to her work A few days later she attempted suicide by throwing herself in front of a train, and was admitted to hospital She was a typical agitated melancholic except for a paranoid formation which she developed against her brother with whom she had always been on good terms She insisted that he was responsible for keeping her son in the Army and that he came to the hospital to slander her and to poison our minds against her Her prepsychotic personality was stolid and unimaginative, with no outstanding traits Her previous mental and physical health had been good She made no improvement in the observation ward, refused treatment as a voluntary patient and finally had to be certified The mental hospital reports, 5 months later, that she is still extremely depressed and shows no sign of improvement

Case 7—A stretcher bearer, aged 52, was working on a damaged hospital when a bomb fell about 50 yards away Nothing was seen of him at his post for five days, but on the sixth day he returned in a state of agitation and depression, bitterly self-reproachful and declaring that his workmates all despised him Within the next day or two he became worse and had to be sent into hospital, where he was depressed, hypochondriacal and hopeless He was transferred to a psychiatric clinic, from whence he was discharged improved after a fortnight and returned to his work There was a history of shellshock in the last war and he seemed to have been a rather oversensitive, anxious, solitary person.

Case 8—A salesman, aged 23, had his wife killed and his home demolished by a high explosive bomb He was admitted, after an attempt to poison himself, in a depressed and actively suicidal state, but improved rapidly and was discharged recovered at the end of a fortnight

Case 9—A woman packer, aged 20, was with her family in an air raid shelter which received a direct hit Her father was killed and her mother and brother seriously injured She was admitted in a depressed and tearful state with little emotional control and exaggerated affective responses She made an excellent recovery and was discharged after a fortnight

Case 10—A labourer aged 65, who had always been healthy, was blown to the ground by a bomb explosion, sustaining slight concussion and a lacerated scalp Afterwards he became increasingly depressed and tearful and attempts to resume work ended in failure He was admitted to hospital two months after his injury and was then depressed with delusions of guilt and impending disaster He made little progress and was transferred to a mental hospital as a voluntary patient, after three months there he is reported to be showing little change

Case 11—A male clerk, aged 46, had had an illness labelled neurasthenia, in the last war but had served in the Army until 1919 without being invalided He returned from work one day last year to find his house demolished Fears were expressed that his wife was buried in the wreckage and it was not until several hours later that he learned that she was safe Immediately after this he became extremely depressed would sit for hours with his face in his hands and had to give up his work A fortnight later he was admitted to hospital therefore been cast on the importance of the anterior lobe In a recent paper Collard Mills, Rundle and Sharpey-Schafer (1940) have shown that too much credence has been placed on the negative results of previous assays They found that, while it is possible in man to produce experimental thyrotoxicosis by injecting thyrotropic extract, this cannot be recovered from the blood by the most sensitive of current methods Consequently inability to detect thyrotropic substance in clinical thyrotoxicosis would not necessarily mean that the anterior pituitary is unimportant in pathogenesis

Trikojus (1939) suggested that the negative results of blood assays in thyrotoxicosis are due to the fact that thyrotropic substance is fixed or in some way altered by the thyroid gland that it is stimulating But, when doses of extract sufficient to cause stimulation in normal subjects were given to patients with myxœdema who had no thyroid tissue to fix it, it was still impossible to recover evidence of its presence in the blood From their experimental data Collard and her colleagues (1940) deduce that no far-reaching conclusions can yet be drawn regarding the importance of the anterior pituitary in pathogenesis

THE NERVOUS COMPONENT

In considering the nervous component of the thyrotoxic syndrome we are on still more uncertain ground It is remarkable that in a certain proportion of cases palpitations, tachycardia nervousness, flushing and tremor outlast the stage of active thyrotoxicosis or persist almost unchanged after thyroidectomy It seems that the nervous pathways regulating the attacks of palpitations and tremor become so canalised during the active stage of the disease that these responses are facilitated afterwards and occur under even minor stresses Rasmussen (1937) claims that the symptoms of nervousness, tremor, palpitations, flushing and sweating under stress constitute a psychoneurosis which is a regular component of thyrotoxicosis, present during the acute stage but becoming relatively more prominent after thyroidectomy when the symptoms of hypermetabolism are relieved But it seems hardly justifiable to ascribe these symptoms to psychoneurosis Hyperexcitability of the nervous system is a well-known effect of the thyroid toxæmia, and when it persists after thyroidectomy it can as a rule be distinguished from a true psychoneurosis The distinction is of importance in prognosis and treatment for when a true psychoneurosis is associated with thyrotoxicosis there is usually a factor of psychic trauma or a psychopathic trait in the personality

Follow-up studies show that there is a comparatively heavy incidence of nervous disorder in patients after thyroidectomy, and this seems to favour the concept of thyrotoxicosis as a general neuro-endocrine disorder in which thyroidectomy removes only the most important of the glandular components, leaving untouched the fundamental disorder More particularly it has been claimed (Crile 1935) that persistent hyperexcitability signifies that a constitutional sympatheticotonia forms the background on which thyroid hyperplasia tends to develop But though it is possible that a labile autonomic nervous system predisposes to thyrotoxicosis, it is more than doubtful whether one or other division of that system is especially affected

SUMMARY

The eye changes of Graves's disease may develop apart from goitre or hypermetabolism Such cases favour an extrathyroid theory of origin

Exophthalmic ophthalmoplegia is found before or after thyroidectomy and occasionally in patients without goitre or hypermetabolism It is not a syndrome clearly distinguishable from thyrotoxicosis Cases in which goitre and hypermetabolism are lacking may be abortive forms of Graves's disease

There was a family history of thyroid disease in 22% of 322 patients with thyrotoxicosis Antecedent simple goitre had been present in 18%, 42% associated psychic trauma with the onset of symptoms, and in 20% the disease developed within 2 years of the menopause

Where there is a psychopathic personality or where psychic trauma is associated with the onset, psychoneurosis may coexist with thyrotoxicosis, but it is not an integral part of the syndrome

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PSYCHIATRIC REACTIONS OF CIVILIANS IN WAR-TIME

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L C C

EXPERIENCE in this observation unit sheds some ligh on the reactions, from a psychiatric point of view, of civilian population exposed to total war The patient admitted represent all urgent cases of mental disorde within a district whose population is 700,000, althoug patients from other parts of the London County Counc area are admitted at times Those who do not recov sufficiently to be discharged within a fortnight transferred to other hospitals The working of the u has been described by Pentreath and Dax (1937) a Butler (1940)

REFUGEES FROM INVADED COUNTRIES

The hospital is situated near a large refugee recepti centre and any cases of acute mental disorder there a transferred to the hospital Of the large number refugees who reached London at the time of the inva of Holland and Belgium many had been exposed terrifying experiences of actual warfare and hurr flight, 5 of these were admitted to hospital, but in the disturbance was trivial and cleared up after a night rest, and 1 was a chronic schizophrenic who had had t courses of insulin-shock therapy in Brussels In t remaining 2 a psychosis had been precipitated, as th case-histories show

CASE 1 —A single woman, aged 39, a clerk in the employ a Belgian municipal council, had to spend several days in t cellar with her family during a heavy bombardment Dur this time she appeared dazed and paralysed with frigh later, when the whole family were on a boat to England began to express delusions that they were surrounded spies, and pleaded with her family to take her home Wh admitted to hospital she misinterpreted events in a parano way, believing that a gang of spies were plotting to secu her passport for the use of one of their number, who was h double She was resentful and hostile and finally had to certified The mental hospital to which she was sent rep that she was there for 3½ months until she was killed in air raid During this time the clinical picture became creasingly dominated by depressive features and she to express delusions of guilt and impending According to her brother, she had been a shy solitary who had had few friends or interests and avoided the oppo sex She had a hasty temper and was liable to outbursts from which she soon recovered

CASE 2 —A commercial traveller aged 57, a British subj had had to leave his home in Holland in great haste Af suicidal attempt he was admitted to hospital in a state profound agitation, suffering from visual and haptic halluc tions and continually trying to blow off from his person "stupefying stuff" which he believed the Germans to

R P post when it was hit by a high explosive bomb incidents were separated by an interval of three days eceived no physical injuries but appeared shaken and had been neglecting his personal appearance and laughing crying for no particular reason His memory was aired, his mood was one of rather inappropriate euphoria he seemed to have little appreciation of his disabilities osition His pupils reacted sluggishly and were not quite ilar, and examination of his cerebrospinal fluid revealed t he was suffering from G P I

ASE 21 —A van driver, aged 50, was in bed when his house s hit by a bomb Afterwards he appeared muddled and ifused, his memory became bad, he tended to fabricate l his family had to wash and dress him His mental state admission was one of gross confusion and disorientation d there were signs of organic disease of his brain Six ys later he became comatose and two days after that he ed At autopsy a large cystic mass was found in his left mporal lobe which proved to be a rapidly growing highly alignant glioma

BORDERLINE INSTITUTIONAL CASES

Patients who have been precariously avoiding mental ospital treatment, thanks to the care of their relatives t home, have presented problems under air-raid conditions which had often necessitated their admission to he observation ward Senile dements were by far the ommonest type encountered under this heading, but ongenital defectives and chronic schizophrenics and psychopaths, whom their families had hitherto been able to look after satisfactorily, were also seen Old people living by themselves were unable to cope with the black-out regulations and other increased difficulties of their environment and became confused and frequently ostile and aggressive Old people living with their latives would refuse to go to shelters with the rest of e family and caused them much worry by insisting n staying in the house alone In this way they incurred e attention of the relieving officer sooner than would therwise have been the case

Case 22 —A woman, aged 81, had to be removed on account f bomb damage from the hostel where she had been living r some years to another belonging to the same organisation he failed to settle down in her new surroundings and became rogressively more restless and confused, her removal to ospital finally becoming necessary

Case 23 —The family of a mentally defective man, aged 4, had to leave their home on account of bomb damage He efused to stay at their new home in another district and eturned to the damaged house, but had to be removed from here by the police because he became acutely excited one vening, shouted, screamed and threw the furniture out of he window

Case 24 —A chronic schizophrenic, aged 35, who had been charged from a mental hospital into the care of his mother hree years before, became acutely excited because he was stled in an air raid shelter and had a violent outburst in hich he injured a small child

Cases of this type should be borne in mind in the terpretation of any increase in the mental-hospital opulation which may occur in war time, although our xperience does not suggest that the numbers involved re likely to be large

MISCELLANEOUS WAR-TIME STRESSES

The possible adverse war influences on civilians are t exhausted by the direct or indirect effect of air-raids other military operations

Case 25 —A German Jewish refugee who had been a man wealth and position before the Nazi persecution found himf penniless, refused permission to work and dependent charity His reaction to these unfavourable circumnces, from which he could see no escape, was one of increasg depression and hypochondriasis

Case 26 —A young man of psychopathic personality and mily history broke down with symptoms of a neurasthenic aracter when he had to attend his Army medical examinan. After this he gave up his work and when he received calling up notice made an ineffectual, hysterical suicidal tempt by scratching his wrist with a knife

GENERAL CONSIDERATIONS

The absence of cases of conversion hysteria or other sterical conditions is remarkable, and so is the rarity of organic confusion only one case of which was seen No instances of confusional states following exposure to blast, such as those described by Hemphill (1941), or of carbon-monoxide poisoning, such as might be anticipated in people trapped in damaged buildings, were seen

Causes in psychiatric disorders are always multiple With the help of a detailed and adequate history such as that obtained by a skilled psychiatric social worker from relatives and other informants, it is often possible to decide whether the preponderant cause of the illness is recent trauma, intrinsic conflict or psychopathic predisposition The question is of prognostic and therapeutic importance, and it has a considerable bearing on treatment and the measures to be taken

It has been said that since no general increase in psychosis occurs in war-time the stresses of warfare cannot be ætiologically important in that group of diseases (Bonhœffer 1919 Hemphill 1941) This argument is fallacious because it assumes that all other stresses remain constant whereas in fact many peacetime ones are considerably mitigated Difficulties connected with the finding of employment are a striking example and some unstable personalities seem to be well adapted to life in the Services, but tend to break down when confronted with the problems of civilian life Several authors have observed an improvement in war-time in chronic depressives and hypochondriacs which they ascribe to the increased opportunities for work and companionship (Mira 1939 Hemphill 1941) It seems more correct to suppose that in many cases war conditions are an added burden which may overwhelm those predisposed to mental illness, but that it is seldom possible to appraise the true part played by them without detailed study of the patient and his history

SUMMARY

Experiences in an observation ward near a refugee-reception centre and in a heavily bombed district are reported

War conditions may appear to have some ætiological significance in a wide variety of reactions, although depression and anxiety are the commonest disturbances produced by frightening and distressing events

Air-raids, during a period when they were heavy, appear to have been among the chief causes of breakdown in only 23 out of a total of 435 admissions Of these, 13 followed acute psychic trauma, 9 more prolonged stress and 1 cerebral contusion

There is a tendency for the socially unfit to gravitate towards institutions in war-time

I am indebted to Dr Allen Daley, chief medical officer of the L C C, and to Dr O W Roberts, medical superintendent of St Francis Hospital, for permission to publish this paper, to Dr Aubrey Lewis, psychiatric consultant to St Francis Observation Unit, for his opinion of the cases and help in the preparation of the paper, to Dr Alfred Meyer for histological investigations, and to Mr George S Burden for the social work involved

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Rotenone Lotion (B D H) —Derris, familiar to the gardener and farmer as an insecticide contains 2–10% of its active principle rotenone, $C_{23}H_{22}O_6$, a crystalline substance insoluble in water but soluble in organic solvents Last year C C Thomas and E E Miller (*Amer J med Sci* 1940, 199, 670) reported rapid cure of 29 cases of scabies with a lotion containing 1–2% rotenone, and Leslie Saunders (*Brit med J* 1941, 1, 624) has since found a suspension of derris-root powder in soapy water as effective and cheaper, but perhaps more irritating Rotenone Lotion (B D H.) is a non-oily mucilaginous preparation containing 2% of rotenone. In mild cases of scabies application morning and evening for two days is said to be effective The lotion is free from smell and does not stain clothing and then complained of many symptoms of an anxiety type, appearing very miserable and stating that there was no hope for him and that he wished to die He improved very little and was transferred to a mental hospital as a voluntary patient Six months later his mental condition is not regarded as satisfactory, although he has been transferred to a general hospital for surgical treatment

CASE 12—A male shop assistant, aged 30, was badly shaken by a bomb explosion and his helmet dented while on his way to work He was a cheerful, sociable, even tempered person and a non smoker, but after this incident he became moody and difficult and began to smoke heavily A week or two later he began to suffer from auditory hallucinations and expressed a delusion that the Government were going to give him a high salaried job On admission, six weeks after the bomb explosion, he was auditorily hallucinated and said that he and his wife were under the control of a certain doctor who could force them to do things against their will He was transferred to a psychiatric clinic, where he made little progress and was considered to be schizophrenic on discharge

CASE 13—A waitress, aged 25, was sheltering in a crypt when a bomb explosion burnt her hand and killed her mother who was sitting next to her Next day she became very depressed and agitated, declaring that her inside was ruined, that she was going blind and that her death was imminent, and her removal to hospital was necessary On admission she presented a straightforward picture of agitated depression with delusions of disease and impending disaster, but later developed impulsive behaviour in response to hallucinatory commands and her hypochondriacal delusions assumed a bizarre, fantastic form She was transferred to a mental hospital as a voluntary patient They report 5 months later that her acute symptoms have subsided, but that she is dull, apathetic and dependent and needs nursing supervision She was of low intelligence and had always done rough and poorly paid work Her marriage was a failure and she had had to return to her parents, on whom she had always been very dependent

CASE 14—A clerk, aged 46, was buried with his wife and small daughter in their shelter when their house was wrecked by a bomb A fortnight later they were spending the night in a shelter when a bomb explosion put out the lights and burst some pipes with resultant flooding After this he became anxious and jumpy He was discharged after one day in hospital as he was unwilling to stay, and arrangements were made for him to go to the country with his family for a rest He writes 6 months later that he is still receiving psychiatric outpatient treatment and feels quite unfit for work

CASE 15—A woman, aged 89, living in an almshouse, had to move hurriedly to a rest centre on account of a delayed action bomb The same evening she became acutely agitated and hallucinated, declaring that Germans were pouring in through the windows and that they were all going to be killed She was removed to hospital and by next morning had regained her normal mental state with a high degree of insight into her illness, no further symptoms appearing subsequently She was discharged back to the almshouse when the time bomb had been removed

Cases 8, 9 and 14 approach normal emotional reaction, although an interval of about a fortnight separated the causal event and their admission to hospital The favourable outcome in the first two, in spite of the severe symptoms is noteworthy, and there seems to be a tendency for the outlook to be better when the trauma has been greatest, in other words, the more stable personalities can only be injured by blows of extreme violence, and possess good powers of recuperation A strong constitutional element is evident in cases 3, 4 and 11, they have shown a lifelong tendency to react in the same pathological way to a variety of adverse circumstances In case 10, age and possibly the aftereffects of concussion must be considered as factors Case 15 illustrates the effect of upset and disturbance on an aged person of fixed habits and routine The rapidity and completeness of the recovery is striking There was also a man of 63 who became confused and demented after a severe head injury sustained when his flat was bombed but he is obviously in a different category from these 13 cases, whose illness was psychogenic

PROLONGED AIR-RAID STRESSES

In some cases no single calamity had precipitated the illness, but a series of exhausting and alarming experiences acting for weeks or months Constitutional factors were also present, of course There cases in this category, but the war appeared to minor rôle in many more The diagnoses were sion, 5, schizophrenia, 2, mania, 1, exhaustion confusion 1 It became almost a polite con the relatives to attribute the illness to war stress, any bald statement of the kind should be sceptically

CASE 16—A man, aged 48, was admitted in a state fusion, exhaustion and mild delirium When the a started, he had refused to live at home with his wife family because the house had no shelter, he spent evenings and nights in tube stations, getting rather meals at cheap restaurants He had a one man which he had built up into a prosperous one by dint siderable exertions, but it had been adversely affected war and there was a possibility that he would have to down His personality showed strong obsessional and a pathological degree of anxiety, with a tendency to violent and excessive emotional outbursts over comparatively unimportant matters, and he had several times appeared to be on the verge of a breakdown He improved rapidly and was discharged recovered in a fortnight

CASE 17—An auxiliary fireman, aged 34, was admitted with a history of having become increasingly moody and sullen for a fortnight until his behaviour was obviously psychotic At the onset he had been subject to increased strain and considerable danger, since he had been out night after night fighting large fires in the middle of air raid He was auditorily hallucinated and expressed delusions that he had been kidnapped by a gang of white slave traffickers who were using him as a decoy in an effort to get hold of his mother and sister He did not improve and finally had to be certified The mental hospital to which he was sent report that he made rapid progress and was discharged recovered in just under 2 months, although shortly after his admission depressive features became prominent His parents emphasised the normality and goodness of his previous personality

CASE 18—A man, aged 55, a gas collector, was admitted a depressed, agitated and tremulous state He had been attending a psychiatric outpatient department for the year but had been carrying on with his work quite well For a few days before his admission the raids had been particularly heavy, he became frightened and finally broke down completely He improved considerably in hospital but was still far from well and was finally transferred to a mental hospital as a voluntary patient They report, five later, that he is still given to bouts of depression and hypochondriasis and is unfit for discharge

CASE 19—A man, aged 61, also a gas collector, was subject to considerably increased strain on account of air raids, he was caught in several daylight raids and had, in the course of his work, to clamber about the wreckage of bombed houses to search for the gas meter He was admitted becau wandered about restlessly, talking incoherently, and furiously with his wife and daughter with whom he previously been on the best of terms He was elated, rulous and over active, producing a constant stream incoherent talk, showing marked flight of ideas and heartily at the merest suspicion of a joke He voluntary patient treatment and had to be certified months later he is still at the mental hospital but has considerably and been given the status of a voluntary patient, his early discharge being anticipated

Cases 1, 12 and 17 constitute an interesting consisting of paranoid reactions arising as a result acute stress, cases 12 and 17 were normally people good personality and case 1 had not previously abnormal though she had always been solitary (1941) has described similar cases in serving The usual prognosis for schizophrenic states seem hold good, the later development of depressive fea reported from the mental hospitals is noteworthy Such cases illustrate the impossibility of saying exposure to any single experience, however shatt is the sole cause of a breakdown

MISLEADING CASES

The difficulties of making a prompt diagnosis and possible pitfalls are illustrated by the following cases

CASE 20—A stretcher bearer, aged 29, showed consid personality deterioration after two of

BLE II—PREOPERATIVE AND POSTOPERATIVE FINDINGS IN 7 CASES OF TETANY, COMPARED WITH FINDINGS IN CASES OF THYROTOXICOSIS AFTER SUBTOTAL THYROIDECTOMY UNCOMPLICATED BY TETANY THE CALCIUM AND PHOSPHORUS FIGURES ARE IN MG PER KG BODY-WEIGHT PER 3-DAY PERIOD

Case	Calcium metabolism						Phosphorus metabolism						Basal metabolism †		
	Output			Balance			Output			Balance					
	Before treatment	After		Before treatment	After		Before treatment	After		Before treatment	After		Before treatment	After	
		iodine	operation		iodine	operation		iodine	operation		iodine	operation		iodine	operation
ES	31 32	32 58	11 51	−26	−26 85	−5 77	50 34	28 84	36 8	−20 31	−12 86	−4 21	+ 55	− 7	− 7
ET	14 01	14 84	6 75	− 8 93	−10 7	−2 44	41 48	35 18	22 8	−15 22	− 9 59	+1 69	+ 54	+ 7	− 6
EU	22 43	13 28	8 93	−15 86	− 7 67	−4 26	45 14	40 14	28 4	−15 86	− 8 71	−2 84	+ 49	+ 16	+ 1
EV	33 19	29 68	9 22	−29 5	−25 55	−4 95	51 54	49 16	28 3	−25	−23 92	−0 33	+ 46	+ 5	− 18
EW	20 69	24 69	7 87	−15 68	−20 15	−2 93	46 6	36 78	24 8	−21 65	−18 14	+2 93	+ 50	+ 2	− 17
EX	23 47	13 58	10 03	−20 19	−10 38	−6 53	35 09	32 3	26 1	−15 18	−12 22	−7 14	+ 26	− 8	− 11
EY	15 14	15 43	6 90	− 8 58	− 8 95	−1 97	34 27	30 31	23 1	+ 3 48	− 4 36	+2 76	+ 1	− 9	− 17
Mean	22 89	20 58	8 74	−19 11	−15 75	−4 12	43 49	36 1	27 2	−15 69	−12 83	−1 02	+ 37	+ 1	− 11
After subtotal thyroidectomy*	26 41	21 22	13 34	−20 88	−15 26	−8 44	44 77	40 62	31 4	−14 68	−10 76	−2 41	+ 29	+ 2	− 10

* Mean of 30 cases of thyrotoxicosis after subtotal thyroidectomy uncomplicated by tetany Calculated from Beaumont, G E, Dodds, E C and Robertson J D *J Endocrinol* 1940, 2, 237

† Standards of Aub DuBois

per 100 c cm in parathyroid tetany, when the urinary loss has had little time to be a factor

Phosphorus metabolism—Phosphorus excretion is diminished in parathyroid tetany after subtotal thyroidectomy for thyrotoxicosis and this is clearly demonstrated by studying the phosphorus balance Of the 7 patients, 3 had a positive phosphorus balance on an average intake of almost 0 39 g phosphorus daily The phosphorus loss is, however, also diminished in cases of thyrotoxicosis after uncomplicated subtotal thyroidectomy A comparison of the phosphorus balances in cases of subtotal thyroidectomy with and without tetany shows no significant difference, so it follows that the diminished phosphorus output detected in parathyroid tetany may partly or wholly be explained by the thyroidectomy

Sherman, Gillett and Pope (1918), and Sherman, Wheeler and Yates (1918) found that in normal subjects an average of 30% of the excreted phosphorus appeared in the fæces

TABLE III—CALCIUM AND PHOSPHORUS BALANCES IN A SEVERE CASE OF TETANY (CASE EV) FIGURES ARE FOR A THREE DAY PERIOD

—	Calcium				Phosphorus			
	Output (g)			Intake (g)	Output (g)			Intake (g)
	Urine	Fæces	Total		Urine	Fæces	Total	
Period 1	0 13	0 43	0 56	0 26	0 69	0 78	1 47	1 62
Period 2	0 13	0 43	0 56	0 27	0 83	1 14	1 97	1 7
Mean	0 13	0 43	0 56	0 26	0 76	0 96	1 72	1 7

In the case of parathyroid tetany where the differential phosphorus excretion was measured (table III) it will be seen that as much as 56% of the phosphorus appeared in the stool This diminution of the urinary phosphorus excretion was also present in Aub's case In a study of phosphorus metabolism after subtotal thyroidectomy, Aub and others (1929) have reported on 6 cases of thyrotoxicosis In only 1 case did the percentage fæcal excretion of phosphorus fail to rise after operation The mean preoperative fæcal excretion of phosphorus was 27% of the total output, and after subtotal thyroidectomy this rose to 50% The low partition of phosphorus in the urine as compared with the fæces, which has been considered a feature of parathyroid tetany, is also found after subtotal thyroidectomy

In parathyroid tetany and after subtotal thyroidectomy there is a disturbance of phosphorus metabolism associated with a diminution in the phosphorus excretion in the urine In the above two groups thyrotoxicosis was present before operation and in both thyroidectomy was carried out It appears therefore that the diminished urinary excretion of phosphorus depends on one or other or both of these two factors and not on the parathyroid glands Albright and Ellsworth (1929) found a normal urinary excretion of phosphorus in idiopathic hypoparathyroidism

Serum calcium and inorganic phosphorus—Greenwald (1913) noted a rise in the phosphorus content of the blood after parathyroidectomy The relation of the serum calcium to the serum phosphorus at different levels of parathyroid activity has been studied by Albright and his colleagues (1931), who described a variation in the serum calcium and inorganic phosphorus ratio such that their product remained roughly constant They pointed out that this implied a considerable increase of phosphorus at low levels of calcium, and this is borne out by the observations in table IV

TABLE IV—SERUM CALCIUM AND INORGANIC PHOSPHORUS IN 10 CASES OF POSTOPERATIVE PARATHYROID TETANY

Case	Serum calcium	Serum phosphorus	Case	Serum calcium	Serum phosphorus
	(mg /100 c cm)			(mg /100 c cm)	
ES	8 2	4 7	FF (1)	3 4	8 4
ET	8 1	4 6	(2)	4 4	7
EZ	7 6	5 6	(3)	4 8	6 8
FV	7 7	4 4	(4)	6 5	6 2
FA	5 9	4 6	(5)	8	4 9
FB	8 7	5 9	Mean	6 83	5 64
FC	6 6	5 7			
FD	7 8	4 6	Range	3 4–8 7	4 4–8 4
FE	7 9	5 5			

SUMMARY

The calcium and phosphorus metabolisms have been studied in 7 cases where tetany developed soon after subtotal thyroidectomy for the relief of thyrotoxicosis.

There is a diminished calcium excretion in tetany, and this seems to occur equally in the urine and fæces

It has been stated that a serum calcium of 8 5 mg per 100 c cm is the threshold value for urinary calcium excretion, and that below this level the calcinuria is negligible This is not supported, for observations on a patient with a serum calcium of 5 5 mg per 100 c cm showed that 23% of the calcium excreted was in the urine, which is a normal proportion

The urinary excretion of phosphorus falls in cases of tetany, following subtotal thyroidectomy, and is diminished to the same extent after uncomplicated subtotal thyroidectomy It seems that thyrotoxicosis followed by subtotal thyroidectomy, or subtotal thyroidectomy alone, brings about this fall, and that it does not depend on the parathyroids

This work confirms that a considerable increase in the serum inorganic phosphorus takes place at low levels of serum calcium

CALCIUM AND PHOSPHORUS STUDIES IN PARATHYROID TETANY*

J DOUGLAS ROBERTSON, M D D Sc St And D P H

THE syndrome of postoperative parathyroid insufficiency is characterised clinically by various types of paræsthesiæ, muscular pains and cramps, carpopedal spasm, laryngismus, and sometimes convulsions, all of which are aggravated by exercise There is a low serum calcium and high serum phosphorus The condition is due to resection or trauma of the parathyroid glands which brings about a cessation of their function in controlling the calcium metabolism of the body Postoperative hypoparathyroidism is not very common today because of improved surgical technique in thyroid surgery, but it may be unavoidable The metabolic characteristics of postoperative parathyroid tetany have been studied by Albright and others (1932) in a case that required two radical thyroidectomies for very mild Graves's disease

In the present paper 7 subjects have been investigated In all cases tetany developed a few days after subtotal thyroidectomy had been performed for the relief of thyrotoxicosis Except in one (case EV) no treatment was given for the tetany until after the metabolic studies had been completed In EV treatment for tetany was suspended during the actual periods when her calcium and phosphorus metabolisms were being studied

Results —Table I gives the results of the calcium and phosphorus balance in 7 cases of tetany, below, for comparison, are the corresponding findings in normal subjects and in cases of thyrotoxicosis successfully treated by subtotal thyroidectomy without complications It will be seen that the mean calcium output in tetany is lower than in normal subjects and in thyrotoxic patients after subtotal thyroidectomy In view of variations in the respective calcium intakes, the figure for the calcium loss (i e balance) is probably a more accurate index for comparison There is a diminished calcium loss in tetany compared with normal subjects and with treated thyrotoxicosis Calculated according to Fisher's P test (1938) the difference between the calcium loss in tetany and in normal people is significant ($P = 0 02$), as also is that between the loss in tetany and after thyroidectomy ($P < 0 02$)

Variations in the phosphorus intake by as much as 0 43 g per three-day period made it advisable to study the phosphorus metabolism by comparing the balances instead of the outputs It will be seen that the mean phosphorus loss in tetany is only 1 02 g per period, compared with the normal loss of 10 54 g and the loss after uncomplicated subtotal thyroidectomy of 2 41 g By Fisher's P test the difference between the phosphorus loss in tetany and normal people is significant ($P > 0 01$), but so is the difference between the phosphorus loss after uncomplicated thyroidectomy and in normal people ($P > 0 01$) It should follow therefore, that there is no significant difference in the phosphorus loss in tetany and in thyrotoxic patients after subtotal thyroidectomy without tetany, and such is the case ($P > 0 6$)

Table II gives the full preoperative and postoperative details of the calcium, phosphorus and basal metabolism in the 7 cases of tetany, with the corresponding figures in 30 cases of thyrotoxicosis uncomplicated by tetany after subtotal thyroidectomy Except for the difference in the calcium metabolism during tetany the findings in each group are alike, and it seems the occurrence of tetany does not depend on a particular type of patient but on a surgical technique The basal metabolism is normal in tetany

In table III are set out the calcium and phosphorus balances over three-day periods in a severe case of tetany where the output in the urine and fæces was determined separately It will be seen that there is a diminution in the excretion of calcium both in the urine and fæces compared with the normal figures of Bauer, Aub and Albright (1929)

In table IV are given the serum calcium and inorganic phosphorus in 10 cases of postoperative parathyroid tetany In case FF serial observations were made as she was progressing to recovery It will be seen that as the serum calcium fell so the serum inorganic phosphorus rose

DISCUSSION

Calcium metabolism —In a study of 7 cases of tetany there was found to be a diminished *calcium loss* which is in agreement with the case reported by Aub and his colleagues (1932) These authors found that the diminution in calcium excretion was in the urine and that the fæcal excretion of calcium was normal On these findings they postulated that the excretion of calcium in the urine was a threshold phenomenon while the fæcal excretion was not Albright, and Ellsworth (1929) had previously pointed out that a serum calcium of 8 5 mg per 100 c cm was the threshold for urinary calcium excretion Below a serum calcium of 8 5 mg per 100 c cm the calcium in the urine remained negligible The findings of Aub and his co-workers are not entirely supported by the case reported in table III With a serum calcium of only 5 5 mg per 100 c cm 23% of the total calcium excretion was passed in the urine, which agrees well with the 24% obtained by Bauer Aub and Albright (1929) for the calcium output of normal people If there is a threshold value for urinary calcium excretion in the region of 8 5 mg per 100 c cm, then it is an unusual phenomenon that the normal serum calcium level of 10 4 mg per 100 c cm should exceed it, and that the calcinuria does not soon lower the serum calcium to the threshold level Aub and his colleagues (1932) have sought to overcome this difficulty by postulating another mechanism which keeps the serum calcium above the threshold—the parathyroid hormone This, however, does not adequately explain the rapid fall in the serum calcium to well below 8 5 mg

TABLE I—CALCIUM AND PHOSPHORUS BALANCES IN 7 CASES OF PARATHYROID TETANY OVER THREE DAYS

Cases of tetany	Age	Weight	Calcium metabolism					Phosphorus metabolism					Serum calcium
			Intake	Output	Balance	Output	Balance	Intake	Output	Balance	Output	Balance	
	(yr)	(kg)	(g)	(g)	(g)	(mg /kg)		(g)	(g)	(g)	(mg /kg)		(mg 100 c cm)
ES	22	45 1	0 26	0 52	− 0 26	11 51	− 5 77	1 47	1 66	− 0 19	36 8	− 4 21	7 8
ET	27	53 3	0 23	0 36	− 0 13	6 75	− 2 44	1 31	1 22	+ 0 09	22 8	+ 1 69	8 4
EU	45	49 3	0 23	0 44	− 0 21	8 93	− 4 26	1 26	1 4	− 0 14	28 4	− 2 84	[illegible]
EV	29	60 7	0 26	0 56	− 0 3	9 22	− 4 95	1 7	1 72	− 0 02	28 3	− 0 33	[illegible]
EW	34	54 6	0 27	0 43	− 0 16	4 87	− 2 95	1 51	1 35	+ 0 16	24 8	+ 2 93	[illegible]
EX	31	65 8	0 23	0 66	− 0 43	10 03	− 6 53	1 25	1 72	− 0 47	26 1	− 7 14	8
FY	22	50 7	0 25	0 35	− 0 1	6 9	− 1 97	1 31	1 17	+ 0 14	23 1	+ 2 76	[illegible]
Mean			0 25	0 48	− 0 23	8 74	− 4 12	1 4	1 46	− 0 06	27 2	− 1 02	7 6
Normals *			0 34	0 75	− 0 41	13 3	− 7 58	1 12	1 71	− 0 59	31 3	−10 54	
After subtotal thyroidectomy †			0 28	0 71	− 0 43	13 34	− 8 44	1 55	1 7	− 0 15	31 4	− 2 41	

* Mean of 9 normals See first paper of this series

† Mean of 30 cases of thyrotoxicosis after subtotal thyroidectomy See Beaumont, G E, Dodds, E C, and Robertson J D J Endocrin 1940 2 237

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* This is the third paper of a series of four For references and methods of estimation see the first paper, *Lancet* July 26 1941 p 97

BLE II—PREOPERATIVE AND POSTOPERATIVE FINDINGS IN 7 CASES OF TETANY, COMPARED WITH FINDINGS IN CASES OF THYROTOXICOSIS AFTER SUBTOTAL THYROIDECTOMY UNCOMPLICATED BY TETANY. THE CALCIUM AND PHOSPHORUS FIGURES ARE IN MG PER KG BODY-WEIGHT PER 3-DAY PERIOD

Case	Calcium metabolism						Phosphorus metabolism						Basal metabolism †		
	Output			Balance			Output			Balance					
	Before treatment	After iodine	After operation	Before treatment	After iodine	After operation	Before treatment	After iodine	After operation	Before treatment	After iodine	After operation	Before treatment	After iodine	After operation
ES	31 32	32 58	11 51	−26	−26 85	−5 77	50 34	28 84	36 8	−20 31	−12 86	−4 21	+ 55	− 7	− 7
ET	14 01	14 84	6 75	− 8 93	−10 7	−2 44	41 48	35 18	22 8	−15 22	− 9 59	+1 69	+ 54	+ 7	− 6
EU	22 43	13 28	8 93	−15 86	− 7 67	−4 26	45 14	40 14	28 4	−15 86	− 8 71	−2 84	+ 49	+ 16	+ 1
EV	33 19	29 68	9 22	−29 5	−25 55	−4 95	51 54	49 16	28 3	−25	−23 92	−0 33	+ 46	+ 5	− 18
FW	20 69	24 69	7 87	−15 68	−20 15	−2 93	46 6	36 78	24 8	−21 65	−18 14	+2 93	+ 30	+ 2	− 17
EX	23 47	13 58	10 03	−20 19	−10 38	−6 53	35 09	32 3	26 1	−15 18	−12 22	−7 14	+ 26	− 8	− 11
EY	15 14	15 43	6 90	− 8 58	− 8 95	−1 97	34 27	30 31	23 1	+ 3 48	− 4 36	+2 76	+ 1	− 9	− 17
Mean	22 89	20 58	8 74	−19 11	−15 75	−4 12	43 49	36 1	27 2	−15 69	−12 83	−1 02	+ 37	+ 1	− 11
After subtotal thyroidectomy*	26 41	21 22	13 34	−20 88	−15 26	−8 44	44 77	40 62	31 4	−14 68	−10 76	−2 41	+ 29	+ 2	− 10

* Mean of 30 cases of thyrotoxicosis after subtotal thyroidectomy uncomplicated by tetany Calculated from Beaumont, G E, Dodds E C and Robertson J D *J Endocrinol* 1940, 2, 237

† Standards of Aub-DuBois

per 100 c cm in parathyroid tetany, when the urinary loss has had little time to be a factor

Phosphorus metabolism—Phosphorus excretion is diminished in parathyroid tetany after subtotal thyroidectomy for thyrotoxicosis and this is clearly demonstrated by studying the phosphorus balance Of the 7 patients, 3 had a positive phosphorus balance on an average intake of almost 0 39 g phosphorus daily The phosphorus loss is, however, also diminished in cases of thyrotoxicosis after uncomplicated subtotal thyroidectomy A comparison of the phosphorus balances in cases of subtotal thyroidectomy with and without tetany shows no significant difference, so it follows that the diminished phosphorus output detected in parathyroid tetany may partly or wholly be explained by the thyroidectomy

Sherman, Gillett and Pope (1918), and Sherman, Wheeler and Yates (1918) found that in normal subjects an average of 30% of the excreted phosphorus appeared in the fæces

TABLE III—CALCIUM AND PHOSPHORUS BALANCES IN A SEVERE CASE OF TETANY (CASE EV) FIGURES ARE FOR A THREE DAY PERIOD

—	Calcium				Phosphorus			
	Output (g)			Intake (g)	Output (g)			Intake (g)
	Urine	Fæces	Total		Urine	Fæces	Total	
Period 1	0 13	0 43	0 56	0 26	0 69	0 78	1 47	1 62
Period 2	0 13	0 43	0 56	0 27	0 83	1 14	1 97	1 7
Mean	0 13	0 43	0 56	0 26	0 76	0 96	1 72	1 7

In the case of parathyroid tetany where the differential phosphorus excretion was measured (table III) it will be seen that as much as 56% of the phosphorus appeared in the stool This diminution of the urinary phosphorus excretion was also present in Aub's case In a study of phosphorus metabolism after subtotal thyroidectomy Aub and others (1929) have reported on 6 cases of thyrotoxicosis In only 1 case did the percentage fæcal excretion of phosphorus fail to rise after operation The mean preoperative fæcal excretion of phosphorus was 27% of the total output, and after subtotal thyroidectomy this rose to 50% The low partition of phosphorus in the urine as compared with the fæces, which has been considered a feature of parathyroid tetany, is also found after subtotal thyroidectomy

In parathyroid tetany and after subtotal thyroidectomy there is a disturbance of phosphorus metabolism associated with a diminution in the phosphorus excretion in the urine In the above two groups thyrotoxicosis was present before operation and in both thyroidectomy was carried out It appears therefore that the diminished urinary excretion of phosphorus depends on one or other or both of these two factors and not on the parathyroid glands Albright and Ellsworth (1929) found a normal urinary excretion of phosphorus in idiopathic hypoparathyroidism

Serum calcium and inorganic phosphorus—Greenwald (1913) noted a rise in the phosphorus content of the blood after parathyroidectomy The relation of the serum calcium to the serum phosphorus at different levels of parathyroid activity has been studied by Albright and his colleagues (1931), who described a variation in the serum calcium and inorganic phosphorus ratio such that their product remained roughly constant They pointed out that this implied a considerable increase of phosphorus at low levels of calcium and this is borne out by the observations in table IV

TABLE IV—SERUM CALCIUM AND INORGANIC PHOSPHORUS IN 10 CASES OF POSTOPERATIVE PARATHYROID TETANY

Case	Serum calcium (mg /100 c cm)	Serum phosphorus (mg /100 c cm)
ES	8 2	4 7
ET	8 1	4 6
EZ	7 6	5 6
FV	7 7	4 4
FA	5 9	4 6
FB	8 7	5 9
FC	6 6	5 7
FD	7 8	4 6
FE	7 9	5 5
FF (1)	3 4	8 4
(2)	4 4	7
(3)	4 8	6 8
(4)	6 5	6 2
(5)	8	4 9
Mean	6 83	5 64
Range	3 4–8 7	4 4–8 4

SUMMARY

The calcium and phosphorus metabolisms have been studied in 7 cases where tetany developed soon after subtotal thyroidectomy for the relief of thyrotoxicosis

There is a diminished calcium excretion in tetany, and this seems to occur equally in the urine and fæces

It has been stated that a serum calcium of 8 5 mg per 100 c cm is the threshold value for urinary calcium excretion, and that below this level the calciuria is negligible This is not supported for observations on a patient with a serum calcium of 5 5 mg per 100 c cm showed that 23% of the calcium excreted was in the urine, which is a normal proportion

The urinary excretion of phosphorus falls in cases of tetany, following subtotal thyroidectomy and is diminished to the same extent after uncomplicated subtotal thyroidectomy It seems that thyrotoxicosis followed by subtotal thyroidectomy, or subtotal thyroidectomy alone, brings about this fall, and that it does not depend on the parathyroids

This work confirms that a considerable increase in the serum inorganic phosphorus takes place at low levels of serum calcium

A CASE OF RECOVERY FROM CRUSH SYNDROME

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IN the following case oliguria, hæmaturia, uræmia and jaundice followed burial under explosion debris and ended in recovery after treatment in which whole-blood transfusion played no part The treatment combined high fluid intake and alkalinisation on the lines suggested by Baker and Dodds for mismatched transfusion

A man of 51 was buried under bomb debris for four hours, making it impossible for him to move and indeed even difficult to breathe He was rescued in a dazed condition and at once taken to hospital On admission he was cold and shocked, B P 110/70, pulse rate 124 , he rapidly became comatose and his blood pressure fell in three hours to 60/35 He then received three pints of filtered plasma and three pints of filtered serum, having a severe rigor with one bottle As a result of transfusion, his B P rose in four hours to 88/65 and in a further six hours to 100/60 (see figure)

He was evacuated from London to this hospital in the afternoon of the next day, and his injuries were then found to be a fractured pelvis without visceral involvement and extensive bruising of the right side of his body and thigh On the second day he was mildly jaundiced, a little confused and retarded mentally, and passed a small amount of urine loaded with albumin and containing blood The blood urea was 197 mg per 100 c cm , B P 120/60 and the pulse rate 104 During the next five days the blood urea mounted steadily to 375 mg , though the urinary output had risen progressively from 8 to 32 oz per day and the B P had reached 180/105 His muscles, apart from the large subcutaneous bruises, showed no evidence of gross damage and there was no swelling or peripheral circulatory impairment The hæmoglobin was 50% His general condition altered very little , he suffered from abdominal distension at first and towards the end of the first week developed hiccoughs and slight muscular twitching He never vomited Treatment consisted of the administration of 2 pints of normal saline intravenously on the third day and 16 oz of 3 3% sodium sulphate on the fifth day to supplement a fluid intake by mouth of about 3 pints daily Potassium citrate was given from the third day, but the urine did not become alkaline till the sixth day with a dosage of gr 360 of potassium citrate daily On that day large numbers of pigment casts appeared in the urine , red cells only were occasionally seen subsequently As the blood urea continued to rise decapsulation was considered, but when on the eighth day the urea level showed a slight fall this proposal was abandoned The urea level continued to fall and was followed in a few days by an impro his clinical condition This was maintained, and four from the injury his blood-urea had returned to 42 mg , his to 156/100, and his urine contained less than 0 01% pro

DISCUSSION

It seems probable that the train of symptoms descri resulted from a sudden hæmolysis and that tissue destruction by crushing may liberate a hæmolysin and thus produce a hæmolytic jaundice and blockage of the kidney tubules Severe compression of tissue for a long period causes the accumulation of metabolites and especially of lactic acid, producing an acidosis This with a diminished urinary secretion due to the low blood pressure of secondary shock produces the optimal conditions for the deposition of acid hæmatin in the tubules of the kidney [1]

In the present case there is evidence of the loss from the circulating blood of at least a third of its hæmoglobin content Furthermore, in man during secondary shock according to Keith,[2] a blood-pressure of less than 70 mm Hg represents a loss of over 30% of the blood-volume We therefore calculate from the blood-pressure (60 mm Hg) and hæmoglobin readings (50% Haldane) on admission that at least 2000 c cm of whole blood were lost to the circulation without external bleeding The hæmoglobin loss represents more than 200 grammes Some bleeding occurred into the tissues, and it would only require a portion of the lost hæmoglobin to reach the kidneys to produce the observed syndrome , for it has been shown that the liberation of 87 g of hæmoglobin into the circulation from a pint of mismatched blood is certainly lethal, if conditions in the kidney are such that precipitation of acid hæmatin takes place—i e , a urine with a pH of 6 and a high salt content

We suggest that a major factor in the production of the crush syndrome in this case was hæmolysis in the presence of acidosis brought about by tissue injury and compression It may be argued that the pigment casts may have contained myoglobin,[3] but the clinical picture did not suggest much muscle damage, and there is no doubt that a large quantity of hæmoglobin was suddenly lost In addition in a sensitive patient the large trans fusion of serum and plasma might provide the hæmolysin, but this is rendered very unlikely by the known low level of agglutinins in the pooled blood derivatives in use The hæmoglobin estimations were controlled by complete blood-counts which showed no red-cell abnormality It would be interesting to see if such cases could be prevented by the intravenous injection of say 8 gramme

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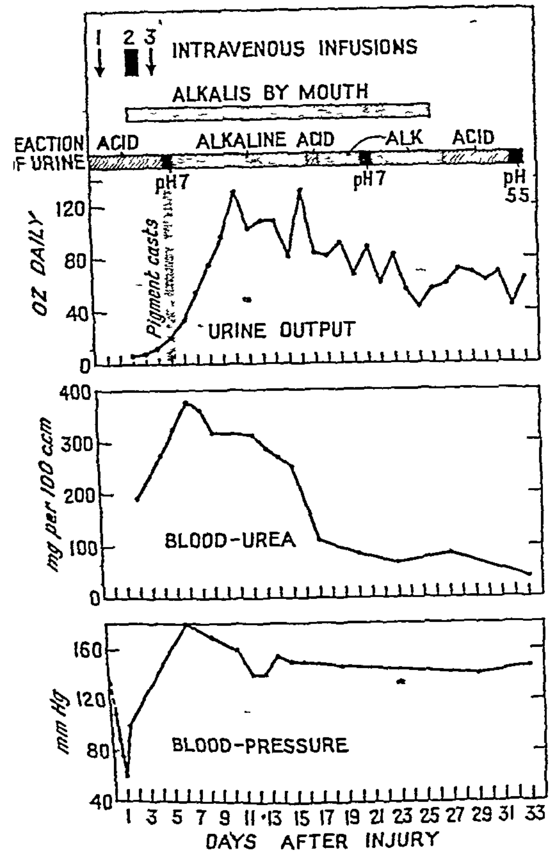
1 Baker, S L and Dodds, E C *Brit J exp Path* 1925, 6 247
2 Keith N M *Spec Rep Ser med Res Coun , Lond* No. 27, 1919
3 Gilmour, J R *Lancet*, April 19, 1941

BIOCHEMICAL FINDINGS

Days	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
URINE																
Volume	2	8	9	13	20	32½	55	76	96	130	101	107½	107	79½	132	81
Reaction		Acid			pH 7					Alkaline						Acid
Sp gr					1011	1010	1010	1011	1010	1010	1010	1011	1012	1012	1012	101
Casts					++++											
Red cells	+	++	++	++	++++	+	+	–	–	–	–	–	–	–	–	–
Leucocytes	–	–	–	+	–	+	–	–	–	–	–	–	+	–	–	–
Epithelial cells	–	–	–	++++	+	+	–	–	–	–	–	–	–	–	–	–
Bilirubin		–		Faint	+		–					–				
Bile salts		–		–	–		–					–				
Urobilin		–		–	+		–					–				
Urobilinogen		–		–	+		–					–				
Protein	++	0 24			0 1	0 04	0 02	0 02			0 02	0 02	0 01	0 01	0 01	0 01
BLOOD																
Hb				50		55	65	62			55	55	60	60		65
Urea		197		273	323	375	364	319			315	288	268	250		105
N P nitrogen		120		176	200	231	220	200			196	176	162	155		69
Potassium					23 5	22 1		21 6			21 9					
Chlorides				527	491			462			515					
Alkali reserve						61										
Icterus index				32 units								13 units				

Days (*contd*)	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
URINE																
Volume	80	90	66	85	60½	80½	56	43	55	59	69	67	61	66	41	62
Reaction		Alkaline		pH 7			Alkaline					Acid				pH 5
Leucocytes			–			–				++						–
BLOOD																
Hb			65			65				65						95
Urea			82			67				72						42
N P nitrogen			58			45				45						35



Findings in case reported Intravenous infusions (1) 3 pints filtered plasma and 3 pints filtered serum, (2) 2 pints normal saline (3) 16 oz of 3 3 % sodium sulphate

of sodium citrate before moving the injured from their cramped position

SUMMARY

A case is described in which uræmia following crushing and shock requiring large volumes of serum and plasma was successfully treated by alkalis and a high fluid intake

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ISOLATION OF HÆMOLYTIC STREPTOCOCCI FROM WOUNDS

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MAJOR R A M C

During the past six months approximately 2000 swabs from burns and superficial wounds have been examined bacteriologically with special reference to the presence of hæmolytic streptococci A number of methods have been found useful

Gentian violet blood-agar —It was shown by Garrod (1933) that all species of streptococci are more resistant to the bacteriostatic action of gentian violet than any staphylococci A medium containing the dye in a concentration of about 1 in 500,000 will yield a pure growth of streptococci from a mixture with staphylococci in any proportions Gentian violet blood-agar plates have been in routine use in his laboratory for some years for the cultivation of material containing numerous staphylococci, if the presence of streptococci is also suspected Garrod (1936) also pointed out that bacilli (aerobic spore-bearers) and yeasts are even more easily inhibited than staphylococci Diphtheroid bacilli which are often very numerous in superficial wounds, have also been found to be completely inhibited

The method I have used is to prepare a stock solution of 0 5% gentian violet in distilled water, and to make a 1 in 50 dilution of this in small quantities (since the 1 in 10,000 solution tends to precipitate after 4–6 weeks with some samples of the dye , 2 ml of this dilution are added to each 100 ml of melted agar, which is then prepared as blood agar and poured into plates in the usual way A single plate may be prepared by adding 0 3 ml to a 15 ml melted agar " stab The resulting plates do not differ in appearance from the usual blood-agar plates, and must be marked in some way

A series of 300 swabs have been inoculated in parallel on plain blood-agar and on gentian violet blood-agar plates Of a total of 102 (34%) positive by either method or by both, 68 (22 7%) were positive on plain blood-agar, but 98 (32 7%) were positive on gentian violet The growth of hæmolytic streptococci was often profuse on gentian violet, even when there were no colonies to be seen on blood-agar , 34 (11 3%) of the cultures were positive on gentian violet only , 4 (1 3%) were positive on plain blood-agar but negative on gentian violet None of these 4 supported the possibility that gentian violet had had any inhibitory action on the streptococci 1 faultily prepared plate was found to be completely hæmolysed, which made the recognition of hæmolytic streptococci difficult though they had, in fact grown ; in another the gentian violet was almost covered by colonies of *Pseudomonas pyocyanea* which like other gram-negative bacteria, is not inhibited , the 2 others gave only one colony and three colonies on blood-agar The use of gentian violet blood-agar plates therefore produced an increase of 50% (from 68 on plain blood-agar to a total of 102) in the number of cultures shown to contain hæmolytic streptococci

Anaerobic blood-agar plates —Incubation of blood-agar plates under anaerobic condition sometimes reveals the presence of hæmolytic streptococci when these are not seen on plates incubated aerobically (Fry 1933) Owing to the limited facilities available for anaerobic culture, no figures for comparison with gentian violet can be presented This requires further investigation

STREPTOCOCCI IN THE PRESENCE OF OTHER ORGANISMS

Proteus was present in many wounds and it was found that a very few colonies would suffice to produce a film covering the whole plate *Ps pyocyanea* was likewise troublesome, since a small number of the large colonies of this organism occupied a considerable part of the area of a plate To overcome this difficulty the following methods were used

1 *Modified method of Fry* (1932) —A blood-agar plate is inoculated in the usual way, and is then covered with a layer of melted agar which has been cooled to 46° C When this has set firmly the surface is flooded with absolute alcohol, and after one minute this is poured away The plate is then dried in the inverted position in the incubator for 15–20 minutes before the lid is replaced

A series of 60 swabs were examined by this method when previous cultures had yielded a growth of proteus or *Ps pyocyanea* , in 18, hæmolytic streptococci were recovered though the blood-agar plate had *apparently* been negative in the presence of proteus or *Ps pyocyanea* The streptococci may be subcultured for further examination by picking through the layer of agar with a straight wire This method has the disadvantage that only colonies of hæmolytic streptococci can be recognised by naked-eye inspection

2 *Phenol blood-agar* —Where it is desired to study the flora of a wound in the presence of proteus or many *Ps pyocyanea* the incorporation of phenol, 1 in 1000, has been found useful (Braun and Schäfer 1919) Phenol is somewhat inhibitory to all bacteria in the concentration used, so it is essential to inoculate a plain blood agar plate in addition to the phenol plate If proteus is absent, hæmolytic streptococci may sometimes be recovered from blood-agar when the phenol has inhibited their growth Agar is melted and cooled to 46° C , then 2 ml of aqueous solution of phenol (5%) is added to each 100 ml of agar, and thoroughly mixed before the blood is added The cooling and thorough mixing are essential points in the preparation of these plates, which will otherwise not give satisfactory results

A series of 120 swabs have been cultured on this medium , 11 yielded colonies of hæmolytic streptococci when the plain blood-agar plate was rendered useless by the presence of proteus or many colonies of *Ps pyocyanea* In 6 cases, however, hæmolytic streptococci were recovered from plain blood-agar when the phenol had inhibited their growth Both plates were positive in 10 cases Thus means that a total of 16 swabs shown to contain hæmolytic streptococci on plain blood-agar was raised to 27 by the addition of a phenol blood-agar plate In addition, other bacteria may be clearly recognised proteus grows in grey, translucent, hemispherical colonies with thin, radial projections, giving a spider-like colony, *Ps pyocyanea* produces tiny, colourless, transparent colonies, as do most other coliform bacilli A few strains of proteus have been encountered which produce a spreading growth on this, as on other media

3 *Sodium azide*—Snyder and Lichstein (1940) recommended that sodium azide should be incorporated in blood-agar plates for the isolation of hæmolytic streptococci in the presence of proteus In my experience it turns horse blood agar plates brown, and causes the blood to lake This makes colonies of hæmolytic streptococci difficult to recognise It has also failed to inhibit the spread of proteus when inoculated either with diluted cultures or with swabs from wounds containing this organism The use of sodium azide has therefore been discontinued

SUMMARY

Hæmolytic streptococci may be recovered, often in profuse culture, from blood-agar plates containing 1 in 500 000 gentian violet, when cultures on plain blood-agar are negative Of 300 swabs, 68 were positive on blood-agar, while 98 were positive on gentian violet

If proteus or many *Ps pyocyanea* are present in material for culture hæmolytic streptococci may be recovered by covering the inoculated plate with melted agar and sterilising the surface of this with absolute alcohol, or by inoculating a blood-agar plate containing phenol, 1 in 1000 Sodium azide has not been found useful

I am indebted to Sir Harold Gillies for access to cases under his care, to Colonel L Colebrook for criticisms and suggestions, and to Dr V Lindley Connolly, medical superintendent of Park Prewett Hospital, for permission to publish this paper

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CEREBRAL HÆMORRHAGE
IN AN INFANT BORN BY CÆSAREAN SECTION

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The following case shows how an extensive cerebral hæmorrhage can occur without a prolonged labour The mother was under the care of my colleague, Dr Robert Newton Dr Katherine Leibert, acting resident obstetric surgeon, reported as follows

Primigravida, aged 36, in good health Urine normal B P 155/85 Shortly after the onset of labour a lower segment cæsarean section was performed for malpresentation The child was lying obliquely in the uterus, and did not alter its position with the onset of labour The presentation was a breech L S A The child weighed 8 lb 12 oz and was very asphyxiated at birth, she was given a hot bath, and CO_2 and oxygen and made a good recovery She made good progress until the third day, when the temperature rose to 103 8° F and the child became irritable On the fourth day the temperature was 99° F, and the hands were tightly clenched with the thumb adducted across the palm under flexed fingers The chest showed no abnormality Hypertonic salines and vitamin K were given On the fifth day the temperature rose again to 105° F and a right facial paralysis developed The limbs were spastic, the eyes staring On the seventh day some improvement took place, the child being less irritable and the limbs slightly less spastic, the temperature was 105 4° F On the ninth day she had a series of severe convulsions and was very cyanosed Oxygen was given Temperature 101° F. She died on the tenth day

Autopsy (Dr William Susman)—Myocardium on left side much thickened, ductus arteriosus completely patent Hypostatic congestion of lower lobes of both lungs Œsophagus shows intense passive congestion Stomach contains altered blood Cut surface of liver contains comparatively large areas in which normal liver structure is not prominent, throughout whole surface there are numerous small areas of congestion or hæmorrhage, probably hæmorrhage, microscopic examination showed a great deal of fatt including degeneration, also a pronounced degree of congestion Spleen intense passive congestion bilateral hæmorrhages involving chiefly medullary el Kidneys intense passive venous congestion through large collections of myelin in medullary pyramids, scopic examination shows a moderate degree of degeneration, considerable areas show severe atroph tubules and scattered tubules containing hæmatox reacting homogeneous material of a pseudocalcified app ance and with some foreign body reaction, section a whole shows much congestion with scattered hæmorrhag few arachnoid spaces at the base show profuse hæmorrh Brain almost whole of white matter of left hemispl replaced by blood clot with involvement of ventric lesion in right hemisphere similar but not extensive anterio and posteriorly, microscopic examination shows numer small hæmorrhages associated with generalised congestion well as thrombosis of some of the smaller vessels

Dr Susman's report shows the extensive nature of cerebral hæmorrhage He believes it was due to the pas congestion and tendency to thrombosis This asso tion of thrombosis and hæmorrhage was also evid in the adrenals, and was probably recent There no duodenal ulcer Such an extensive cerebral hæm rhage with no observable relation to mechanical force any kind indicates that factors other than mechanic such as deficiency of vitamin K, may be potent causing cerebral hæmorrhage in the newborn This been pointed out before, but is in need of further emphas

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Reviews of Books

The Emperor's Itch

By Reuben Friedman, M D, assistant professor of derm tology and syphilology, Temple University School of Me cine, Philadelphia New York Froben Press Pp 82 $1

Scabies—Civil and Military

Same author and publishers Pp 288 $3

Dr Friedman knows his scabies, and in his ra written monograph seeks to prove that Napoleon ne suffered from this disease This is in direct contradict to the opinion of the majority of medical historians wh evidence he carefully sifts Dr Friedman suggests t the chronic skin disease from which Napoleon is kno to have suffered for the greater part of his life dermatitis herpetiformis His arguments are certai convincing The second of these books represents astonishing piece of research which will appeal stron to the lover of statistics Dr Friedman tells of scal among the early settlers in the New World and of treatment during the American Civil War He prov tables showing the loss of man-power due to scal in the American Army and the relative incidence of t infection among white and coloured troops, and discusses every known form of treatment Derm logists in this country will all agree with Dr Friedm basic statement that "an increase in the incidence scabies is the inevitable accompaniment and conseque of war"

A Complete Outline of Fractures

By J Grant Bonnin, M B Melb, F R C S, first assi to the injury clinic, West London Hospital Londo William Heinemann Pp 507 25*s*

Mr Bonnin's book is written primarily for the stude He gives a simple straightforward account of fractu and their treatment, and the illustrations are clear adequate There are separate chapters on appar t most of which is standardised and can be easily obtain and on that important subject, plaster technique, wh is well described The inclusion of fractures of the f and skull is unusual in such a book, for the former usually the concern of the plastic surgeon and the lat that of the neuro-surgeon but they are not really out place in a book to be used by those working in a casua department The section on compound fractures somewhat lacking in detail and the use of the sulphon amides is not sufficiently stressed, but apart from these minor deficiencies this is a well-written and produced book which will be helpful to all students and house officers and to many of their seniors as well

THE LANCET

LONDON SATURDAY AUGUST 9, 1941

HALF MEASURES IN DIPHTHERIA

DIPHTHERIA has taken one of its turns Less loquially it is in course of one of its periodical ases of prevalence and enhanced severity More- er, in the months ahead it is likely to be a bigger ave than it would have been in peace-time conditions nless that is mass immunisation is speeded up onsider Birmingham a pioneer in preventive fore- ght and possibly still, despite misguided propa- andists one of our better immunised cities During he first six months of this year 600 genuine cases of iphtheria were reported and of these 56 were fatal an appalling fatality-rate of 9 3 per cent), compared with 336 cases and 16 deaths in the corresponding period of 1940 (a fatality-rate of 4 7 per cent , more normal but still appalling) Consider Scotland, where the tide seems to have set in earlier , during 1940, it has recently been stated 676 children died from the disease as compared with an average of 410 during the previous four years—an increase in fatalities of 65 per cent What then are our sanitary authorities doing about it ? Both the Ministry of Health and the Scottish Health Department have been lavish with advice and free prophylactic, and in some localities the public has responded well this spring and he campaign has made good progress The time may have come for standardising a model campaign A preliminary inquiry, not yet published, by the Committee for the Study of Social Medicine, seems to ndicate that direct personal propaganda brings in more onverts than posters, cinemas or wireless talks In Scotland where recent figures are available, nearly 30,000 out of a total child population of $1\frac{1}{8}$ millions being 47 per cent) have been immunised up to mid-July In Edinburgh over 65,000 children have been protected, most of them within the last six months in the corporation schools the inoculation-rate stands at 78 per cent But Edinburgh s medical officer is dissatisfied with these figures for his city , he aims to immunise 80 per cent of all the children And in all but a few districts outside Edinburgh the percentage of protected children remains dangerously low efforts having been concentrated mainly on school-children, whereas the age of greatest risk to life is from one to four years To immunise school-children and neglect those of pre-school age is a half measure—easier no doubt to put through, but misleading to the public If resources are limited it would be far more profitable to the community to concentrate upon the pre school child Nearly ten years ago GODFREY[1] showed that immunisation of half the school-children has no effect upon the incidence of diphtheria in a community unless a third of the children of pre-school age have also been immunised This achieved, an immediate and definite decline in current prevalence " ensues

Effective immunisation means at least two properly spaced doses of an efficient prophylactic The one-shot method is a shot in the dark , those who employ it are inviting a crop of lapsed immunes and the discrediting of the local scheme It is better to secure solid immunity for fifty children than semi-immunity for a hundred The Scottish department has advocated a simple scheme[2] based upon sound experience and advice It is as follows for children from nine months to eight years of age, two doses of A P T (0 2 and 0 5 c cm) at an interval of not less than four weeks , for children over eight, three doses of T A F (1 c cm) at intervals of not less than two weeks The Ministry of Health advocates[3] the same doses of A P T at the same intervals Unfortunately for the uniformity of practice which is so desirable in this work of national importance the Emergency Public Health Laboratory Service recently recommended that A P T issued free to local authorities should be injected in doses of 0 1 and 0 3 c cm This may have been a temporary measure to tide over a passing difficulty in supply, but it had the result of encouraging experiment in dosage not founded upon knowledge of the average state of basal immunity of the local population This local knowledge can only be gained by such extensive Schick testing as was practised years ago by W H PARK and A ZINGHER in America Properly carried out and accurately read the Schick test remains, what it has been these twenty-five years and more a trustworthy if not infallible indicator of susceptibility to diphtheria toxin We sympathise with BOUSFIELD[4] in his lack of patience ' with people who argue that the test is not worth while because occasionally Schick-negative children develop mild or moderate diphtheria " After long experience he ' is certain that the Schick-negative state is an almost water-tight insurance against death and, after all, that is what most people want to know ' The Schick test is not a back number It is in constant use in large fever hospitals not only to detect non-immunes and potential sensitives among the nursing staff but also, combined with swabbing and cultural (tellurite) tests, as an aid in the differentiation of the dubious case It is the only ready means of ascertaining whether in fact ' immunisation ' has produced a satisfactory level of immunity

The clinic worker who justifiably omits routine Schick tests in young children is unwise if he also omits to test at least samples of his handiwork after a reasonable interval , and none would be so reckless as to issue a certificate of immunity, as distinct from immunisation, unless he had satisfied himself that the Schick test was negative This testing of presumed immunes is all the more necessary because it seems there is A P T of high antigenic value and a p t (a poor thing) possessing little or none Most unfortunately some of the latter has formed part of the free issue to local authorities The prophylactics made in this country must conform with the Therapeutic Substances Regulations (1931) but it is probable that to meet a sudden demand, which depleted existing stocks, prophylactic of unaccustomed origin was issued as an emergency measure The incident should be capable of ready adjustment and is unlikely to recur It will have served a useful purpose if it establishes once and for all that immunisation against diphtheria, as a procedure of national importance, should be carried out upon national, not parochial, lines The Government should provide a standard antigen, lay down a standard dosage and insist upon children of pre-school age being given precedence The taxpayer who is providing the tools has a right to the assurance that they are being properly used And by the winter a preventable disease will have been prevented

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[1] Godfrey, E S jun *Amer J publ Hlth* 1932 22 237

[2] *Lancet* 1940 2 817

[3] Ministry of Health 1940 Mem 170 Med

[4] Bousfield, Guy, *Med Offr* July 19 1941, p 23

DANGERS OF BREECH DELIVERY

ONE of the changes in obstetric practice in the last ten years or so has been the almost universal adoption of external cephalic version as a means of avoiding the difficulties and dangers of breech delivery On the wisdom of this there is little dispute, though the procedure itself is not devoid of risk But there are still differences of opinion about policy and technique when version is impossible and the fœtus must be delivered by the breech, as was lately demonstrated in our correspondence columns Some years ago **GIBBERD**'s[1] analysis of the results obtained in four London and four provincial teaching hospitals focused attention on the danger to the fœtus of breech delivery His views perhaps erred on the side of pessimism, but there is no doubt about his main contention—that the fœtal mortality of breech delivery, especially in primigravid women, was much higher than was generally supposed The figure of 25–30% reported by **GAIRDNER** and the **JACKSONS**,[2] from their analysis of hospital and private cases in which version failed and a full-sized infant was delivered vaginally, is by no means exceptional As **CHASSAR MOIR**[3] puts it, a patient about to have almost any standard major operation—for example, the removal of a pituitary tumour—faces a better chance of survival than does a full-sized fœtus of a primigravid woman which is about to be extracted breech first by a doctor of average experience But this picture is not always true, individual workers have been able to reduce the mortality of their breech deliveries to a very low level Thus **BURNS** and **MAYEUR**[4] can report a combined fœtal and neonatal death-rate at the Liverpool Maternity Hospital of only 6 2% (3 7% when strictly analysed) Still better results are reported by **E M HANSEN**[5] of Nebraska—omitting deaths due to prematurity, malformation and placenta prævia, a fœtal mortality of 0 8% in 126 private cases This figure would be good for normal delivery, and indeed **I W POTTER**[6] of Buffalo, famous for his method of conducting podalic version, and with experience of many thousands of breech extractions, claims that his fœtal mortality is little greater than that of normal birth These examples show that experience counts for more in breech delivery than in almost any other obstetric operation But while the rough ways can be made smooth, experience is dearly bought, and to the average practitioner breech delivery remains an anxious and uncertain event

Breech presentation is often the visible sign of other abnormality—contracted pelvis, malformed fœtus, placenta prævia and so on—and much of the of individual workers lies in skilful antenatal of underlying abnormalities Long experience taught **POTTER** to recognise the case in which delivery is safe and sure, and he makes no of the fact that a fair proportion of his patients delivered by abdominal section Paradoxically, proportion rises sharply in primigravid women whom the fœtus already presents by the breech **GAIRDNER** and his colleagues also advocate the freer use of cæsarean section, and in Liverpool the operation was performed in 8% of the cases That abdominal delivery is justifiable for the primigravida in the last few years of reproductive life, or for the woman of known low fertility, has long been agreed. but that the operation should be extended to include other types of case may seem a dangerous proposition Cæsarean section carries a small but stubborn mortality, yet if there is a considerable chance that a fœtal life will otherwise be lost is not this risk justifiable ? It must also be remembered that a difficult breech extraction often leaves the mother a damaged woman

The answer resolves itself into a skilful selection of cases Those women in whom a mechanical difficulty is likely to arise constitute less than *20% of the* whole, if it were possible to eliminate *these* "suspects" breech delivery would at once become far less anxious and formidable In vertex presentations the doctor is able by direct means to estimate the fit of the fœtal head in the pelvic brim, but in breech cases no such easy means is available to test the relative sizes of passenger and passage, progno can then be extremely difficult Here **MOIR**,[7] in his paper on the detection of pelvic contraction, lays stress on the help to be obtained from X-ray pelvimetry, especially from examination of the lateral view of the pelvis X-ray cephalometry can also be readily applied to the head which lies in the upper pole of the uterus **MOIR** urges that such examination should be a routine in every breech case, by their use the likelihood or otherwise of mechanical difficulty would be foreseen By this and other improved methods of antenatal examination much could be done to lessen the danger of breech delivery Cases likely to cause difficulty can be referred to special hospitals with facilities for operative treatment The "easy" remainder—and they constitute the bulk of cases—can then with far less anxiety be delivered in the patient's own home

NERVOUS COMPLICATIONS OF SULPHONAMIDE THERAPY

SINCE the introduction of the sulphonamides the nerve lesions which may complicate the acute infections seem to have been less rare, presumably because more patients with severe infections now survive long enough to develop them, but these have to be distinguished from the peripheral neuritis which may be produced by the drugs themselves Clinically the course of the two is different In the septic type the lesion is either a radiculitis, especially in streptococcal infections, or is confined to the ulnar or peroneal nerve, which becomes acutely painful and tender, with paresis of the muscles it supplies The phonamides, on the other hand, produce progres- e paræsthesiæ of the extremities with muscular akness beginning in the small muscles of the hands d feet and gradually spreading centrally, accom- nied by sensory and reflex loss; in one or two treme instances there has been complete loss of wer in all four limbs. The sulphonamide neuritis as originally described as a rare toxic effect of sulph- nilamide, usually after considerable overdosage, e amount given ranging from 50 to as much as 30 g. With the development of the sulphanilamide erivatives, particularly *p*-aminobenzenesulphon- limethylamide, case-reports have been fairly fre- quent, and total amounts of only 12–30 g. of this ompound have caused the trouble. The ætiology of the neuritis is not fully understood, but experiments in pigeons have shown that vitamin B_1 will prevent paralysis, and in patients undergoing sulphonamide therapy there is a decreased excretion of vitamin B_1. Unfortunately treatment of the neuritis with vitamin B_1 is only partly successful. All that can be done is to stop the drug and rest the affected parts by splinting until the acute phase has subsided. When there are signs of returning activity steadily increasing faradism with remedial exercises should be given. In severe cases recovery is slow but the ultimate prognosis is still good.

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[1] Gibberd G F *Brit med J* 1931 1 369
[2] Gairdner, A , Jackson M H and Jackson, L N *Lancet* 1941, 1 273
[3] *Ibid* 1936 2 1226
[4] Burns, J W *Ibid* 1941, 1 432 , Mayeur, M *Ibid*, p 585
[5] *Amer J Obstet Gynec* 1941 41 575
[6] Place of Version in Obstetrics, St Louis, 1922
[7] *Edinb med J* 1941 48, 36

The pathology of the lesions has not been adequately studied in the human subject—facilities are happily rare—but much has been learnt from animal experiment. Chickens are peculiarly liable to develop lesions of the C.N.S. under sulphonamide therapy, and in them **Bieter** and his colleagues [1] of Minneapolis have lately demonstrated myelin condensation with axon swelling from this cause. Sulphanilamide was found to be the least harmful to the C.N.S. of the drugs studied, the order of increasing toxicity being then sulphapyridine, sulphathiazole and sulphamethylthiazole. It has been generally supposed that the sulphonamides permeate evenly throughout the body tissues and fluids, with the exception of the cerebrospinal fluid,[2] but in the chickens it was possible to demonstrate selective variations in the concentration of different compounds in different parts of the C.N.S. after treatment, and similar variations are probable in man. The human sciatic nerve may certainly show concentrations appreciably higher than those found at the same time in the blood, and if this is representative of other peripheral nerves the mechanism of the neuritis becomes understandable. The importance of the selective distribution of sulphonamides between blood-cells and plasma has lately been pointed out,[3] and a study of the distribution in other organs seems worth attempting.

Two groups of patients deserve special mention. One is the small group, becoming smaller with improved technique, in whom an acute meningitis follows ntrathecal medication. Thus, disastrous results have ollowed the intrathecal use of the highly alkaline odium salt of sulphapyridine, and paralysis of the auda equina with slow recovery, has been reported after other soluble compounds used in this way. The other group includes the injuries to the gluteal or sciatic nerve, particularly its external popliteal division, after careless intramuscular injections of sodium sulphapyridine, which may produce local necrosis; for this reason it is unwise to give more than 1 g. in 33⅓% solution into the buttock at any one time. If more must be given, it should be given intravenously.

Mental disturbance more pronounced than that commonly arising during acute fevers may be observed during sulphonamide therapy [4] and may be a sign of overdosage. An extreme example of this was in the patient who through an oversight received 4 g. of sulphapyridine four-hourly for three days and developed acute mania. He recovered both mentally and physically on withdrawal of the drug. Less severe examples of confusion are sometimes seen after such moderate dosage that it seems that these patients are peculiarly sensitive. The chances of this complication, like others, is increased if the drugs are taken when up and about, a practice which cannot be too often condemned. Apart from such indiscretions, however, there is a peculiar form of delayed cerebral depression which may follow any of the compounds now in common use,[5] though it was originally described in connexion with sulphanilamide. The depression is characterised by inability to concentrate or add up simple sums, with loss of the fine coordinating power necessary for performing acts like typing. The final prognosis of this is good but it can be very trying while it lasts. There is no special treatment, but the amide of nicotinic acid might be worth a trial.

THE ALLERGIC DONOR

Loveless [6] of Cornell has lately described three cases in which hypersensitiveness, lasting several weeks, was transferred to patients transfused from pollen-sensitive donors. If a transfusion of blood or plasma saves the patient's life it may seem of small moment if the penalty is a brief inability to tolerate pollen clouds, egg diet or some other common antigen, but such transference may have other implications. It is not such a rare experience to meet severe transfusion reaction inexplicable on any grounds other than the anaphylactic, and standard works on blood-transfusion warn us against the allergic donor, although they give us no very definite information as to what happens if we neglect their advice.

That the hypersensitive state can be transferred by serum injection has been known for many years. **Longcope** and **Rackemann** found, for example, that a guineapig receiving serum from a patient with serum sickness itself became slowly hypersensitive to horse serum. **Ramirez** described a first attack of asthma in a man when he entered a horse-drawn vehicle two weeks after being transfused from a horse-sensitive donor. **Mills** and **Schiff**, using a horse-sensitive donor, noticed that an area of the recipient's skin, injected with horse serum some time before the transfusion, did not at once react but gradually developed urticaria two hours later. **Frugoni** described the injection of serum from a woman suffering from rabbit-hair asthma into a normal child who subsequently developed acute conjunctivitis and rhinitis whenever brought into contact with rabbits.

Bieter, R. N., Baker, A. B., Beaton, J. A., Shaffer, J. M., Seery, T. M. and Burton, A. O. *J. Amer. med. Ass.* 1941, 116, 2231.

See Thrower, W. R. and Whitelaw, W. *Proc. R. Soc. Med.* 1940, 33, 585.

See *Lancet*, July 26, 1941, p. 107.

[4] Johnstone, D. F. and Forgacs, P. *Brit. med. J.* 1941, 1, 772.

[5] See Thrower. *Ibid.* 1938, 2, 591.

[6] Loveless, M. H. *J. Immunol.* May, 1941, p. 15.

Moreover, there is the evidence of the now classical Prausnitz-Kustner reaction Here if serum from someone hypersensitive to a particular protein is injected locally into the skin of a normal person, the injected area reacts to the same protein **Loveless**, by observing and testing the reactions of her patients over several weeks, now gives the phenomenon practical application She finds that specific hypersensitiveness is definitely transferable by a single full transfusion and that if the patient receives a second transfusion from a donor affected by the same antigen there may be a severe generalised reaction The same thing can happen, of course if the same hypersensitive donor is used twice She confirmed the nature of the changes in the recipients not only by the usual cutaneous and ophthalmic tests but also by actual titration of the antibody content of their sera at the various stages Sensitisation took place only gradually, its appearance coinciding with the disappearance of the injected antibodies from the circulation This sequence is in accord with the current explanation of the mechanism of anaphylactic and allergic phenomena in general It may at first sight seem strange that a sensitivity, seen in man usually as relatively local reactions, can reside in or at least be transferred by the circulating blood, but long ago **Schultz** proved more or less conclusively that anaphylactic reactions all take place in or on tissue cells Later **Dale** showed that living cells slowly take up antibodies whenever these appear in the serum surrounding them, they then become hypersensitive to the corresponding antigen unless the serum still contains so much antibody that it can, by combining with any newly arriving antigen, screen the cells and so prevent the actual antigen-antibody neutralisation from ever taking place in them Subsequently **Lewis** and **Grant** demonstrated that when antigen-antibody neutralisation does take place a histamine-like substance is produced, and, if the site is cellular, gross local stimulation is produced—the local allergic reaction Antibodies conveyed to transfused patients in an allergic donor's blood may be slowly taken up by their cells, and as the process becomes complete the protecting screen of freely circulating antibody grows weaker and the cellular hypersensitive state may supervene

In accepting donors, the inquiry as to allergy should therefore be reasonably serious How often it is so under present conditions is open to doubt, and admittedly when bloods are pooled and antibodies diluted the risks may be negligible But there is reason for especial care when repeated transfusions from a donor are likely to be needed This phenomenon explains the urticarial reactions often seen among repeatedly transfused patients in the days before the blood-banks, when donors from a small series of relatives or those of the less common groups in a small panel often had to be used more than once for the same patient In view of the frequency of the condition, a certain number of donors are sure to be mild unsuspected allergics and although the enormous size of modern panels must reduce to a minimum the chance that blood from any particular donor will be used twice for the same patient, yet the same cannot be said of two donors happening to be hypersensitive to the same antigen The risk may be small but we have no right to ignore it

Annotations

MEDICAL ASSIZES

It is reported in the lay press that the Shake Committee is on tour during August in four groups order to ascertain by local inquiry whether the imm medical man power of this country is being used to best possible advantage The tour is probably a f although none of the fourteen distinguished member the committee is likely to give away any secrets that for one very good reason If their work were j to make a census of an existing situation it would quite simple and there would be no harm in keeping log But the committee men are no mere enumerators they are assessors with judicial minds and sympathetic outlook The equation which they have to solve is not a quadratic to determine *x* but a simultaneous equation with several unknowns and a host of solutions Excessive demands, if such there be, may well fade away before their impact, or even in anticipation of it It may be relevant to note a parallel assize in Australia which led to the cablegram from Major-General F A Maguire to Dr Anderson that no Australian medical men can be spared for service in Great Britain or India There is a pool of 6000–7000 qualified men and women in the Commonwealth it is curious that the number cannot be stated within a thousand or so[1] Of these, 757 are already serving with Army, Navy or Air Force and 286 more have been asked for before the end of the year, the choice is small because the pool is reduced by certain categories which are not eligible—500 women, a like number in essential services, 250 unfit, 1170 males over sixty An eventual field mobilisation of seven divisions would absorb a medical personnel of 1260, leaving no more than 2280 to care for a civil *population* of seven millions—a *median of 1 to 3 100*, and it must be remembered that a large *part* of general practice is in "one man towns" of three thousand or less Th makes it easier *to* understand how it is that of recent graduates with one year's hospital experience only 11 have offered their services, along with 300 older men and 346 specialists The Shakespeare Committee may well feel their task is easier than that of the Australian Coördina tion Committee, and take encouragement therefrom

A SNAG ABOUT BROAD BEANS

The broad bean (*Vicia faba*), being a valuable source of protein, deserves its place in every allotment scheme although we must forgo its traditional complement of pre-Woolton days—boiled ham In Italy it is called "fava" bean and in that country a curious disease affecting the red blood-cells has been known for many years to be connected with eating the beans or inhaling the pollen of the flowers The disease is called favism, and Luisada[2] has lately recalled what is known of it It is seen most often in Sardinia, where thousands of cases occur every year, but it also arises in other districts of Italy and in Greece and North Africa It seems to be limited to people with a Mediterranean ancestry, and this is also true of the cases reported in the United States Where large fields of fava beans are in flower susceptible people may be affected by the pollen, but favism is most commonly caused by eating raw or incompletely cooked beans, or, more rarely, cooked dried beans The symptoms come on 5–24 hours after ingestion, at first they are not striking—chill, backache, pallor and vomiting—but after about 30 hours the two specific symptoms of hæmoglobinuria and jaundice appear The urine varies in colour from red to black, it contains oxy- and met-hæmoglobin and later much urobilin The jaundice deepens rapidly and is often very intense Liver and spleen are enlarged, there i rregular fever reaching 101–103° F The skin is not y yellow but pale, and according to Luisada elops a typical pale-green colour, itching is absent rrhœa is frequent and there may be blood in the ols The red blood-cells fall to between 1 and 2 llion per c mm, in young patients the white cells ay rise to 40,000 per c mm, monocytes and eosino-ils are often increased Hæmoglobin and increased lirubin have been reported in the blood-plasma The tack reaches its peak on the 2nd day and may especi-lly in children, be fatal, if this crisis is safely passed e hæmoglobinuria and fever disappear by the 5th or th day the jaundice subsides more slowly and the red lood cells may take as long as a month to recover their ormal level This is the typical attack, but there are ariations ranging from mild attacks showing only eadache, dizziness and diarrhœa, or jaundice without hæmoglobinuria to very severe attacks described as comatose, hæmorrhagic lightning-like or anuric An urticarial form has also been noted Treatment of the hæmolytic attacks is important since life may be in danger Blood-transfusions have been given successfully, adrenaline intramuscularly and calcium gluconate intravenously are useful After the attack iron should be given in adequate doses for some time, liver treatment is not needed Prevention can at least partly be attained by thoroughly cooking the beans The history and course of the disease strongly suggests that an allergic hypersensitivity to broad-bean proteins is the cause Skin tests with extracts of various parts of the plant gave positive results a few weeks after the attack in all patients tried, but never during an attack Extract of cooked seeds usually gave a negative reaction in patients reacting positively to raw seeds, extracts of dried seeds were generally positive Sensitisation can appear at any age Desensitisation occurs during, and for a short time after, an attack After several attacks some patients develop complete immunity, and in most they become less severe as the patient grows older These findings all confirm the allergic nature of the disease Allergic hæmolysis is unusual and has interesting implications—Widal and the French school for instance, thought that some cases of paroxysmal hæmoglobinuria were allergic—but here we are chiefly concerned to remind doctors in England of the existence of the disease, especially since we are told that people of Mediterannean ancestry will soon be labouring among us, and broad beans are still plentiful

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[1] *Med J Aust* May 3 1941, *p* 553

[2] Luisada A *Medicine* May 1941, p 229

PREVENTION OF NEONATAL HÆMORRHAGE

THE relationship between a low level of prothrombin in the blood of newborn babies and the tendency to hæmorrhage is now accepted and the fact that the administration of vitamin K or its chemical analogue either to the mother or baby will prevent the development of the hypoprothrombinæmia is also established The practical application of these facts in the prevention of neonatal hæmorrhage has now been made by Beck Taylor and Colburn[1] of Brooklyn They gave 2 mg of 2 methyl-1 4 naphthoquinone to alternate mothers in a series of 2059 cases Of these 1037 were used as controls and 1022 received vitamin K Because some of the patients were too far advanced in labour at the time of admission to be of value in the vitamin-K study, the control group contained 15 more cases than the vitamin-K group The drug was given during labour, at least an hour before delivery The results showed that in the control group 21 cases or 2%, showed evidence of hæmorrhage, whereas in the vitamin K group only 5, or 0 5%, showed any signs of bleeding In this series prophylactic vitamin K thus seemed to reduce the incidence of hæmorrhage in the newborn by about 75% The Brooklyn workers suggest that the results might be improved still further by adopting their present programme which is to give 2 mg of vitamin-K analogue at the time of admission and repeat the dose every 6 hours during labour In cases of premature labour they propose to repeat the drug every 4 hours Detailed analysis of the results obtain in this study however, reveals several difficulties For example, the crude "bleeding rate" for the Brooklyn control babies put at 2%, compares unfavourably with a series reported in this country by Capon,[2] where the incidence in 19 421 live births in the Liverpool Maternity Hospital was 1 in 405 This point was, in fact, made in a discussion of the Brooklyn paper and Dr Beck's reply suggested that the high incidence might be explained on the grounds that a large proportion of the hospital patients came from a low economic group where dietary deficiency was likely to be present He thought also that this dietary defect might account for a different incidence in private and hospital practice, although he gave no figures to support this view. Another possible explanation for the disparity is suggested by the fact that out of the 21 control babies who bled, 14 are listed as suffering from intracranial hæmorrhage and 7 from blood in the stools In the treated series of 5 babies showing evidence of bleeding 4 are recorded as having intracranial hæmorrhage and only 1 with blood in the stools Thus prophylactic vitamin K reduced the incidence of melæna neonatorum from approximately 0 7% to 0 1%, whereas for intracranial hæmorrhage where the additional factor of trauma must play an important part, the reduction was only from 1 4% to 0,4% It is not made clear whether or not the diagnosis of intracranial hæmorrhage was confirmed at autopsy in every instance, and every case of intracranial hæmorrhage cannot of course be attributed to hypoprothrombinæmia alone Indeed since every infant is now known to pass through a stage of hypoprothrombinæmia after birth some other factor must also be concerned with the production of hæmorrhage in a relatively small proportion of cases Prophylactic vitamin K seems well worth giving as a routine but it will not excuse the obstetricians from seeking to prevent trauma and premature delivery The forces of nature cannot always be blamed for trauma and the fact that intracranial hæmorrhage may occur after delivery by cæsarean section is shown by the case recorded by Dr Lapage in this issue The factor of asphyxia as a contributory cause of bleeding in the newborn may require more emphasis and asphyxia is unfortunately not uncommon among infants born by the cæsarean route Oxygen, gentle handling and prophylactic vitamin K form an important trinity in preventing neonatal hæmorrhage but growing enthusiasm for the last must not lead to the other measures being overlooked

LONDON INQUESTS IN 1940

THE agenda of the London County Council included last week a report from its public control committee covering the work of London coroners in 1940 More deaths were reported than in the previous year (10 129 against 9158), but fewer inquests were held (2979 against 3172) The exercise of the trusted discretionary powers of coroners is further shown by the statistics of post-mortem examinations These were directed to be made in nearly 90 per cent of the inquest cases and in 77 per cent of the cases where it was held that no public inquiry was necessary The report makes no specific mention of war time conditions The coroner's jurisdiction has, of course been partially excluded by Defence Regulation 30 This temporary law enables local authorities to inter the bodies of persons who die in consequence of war operations "notwithstanding anything in any Act," and in relation to such interments suspends the section of the Births and Deaths Registration Act of 1926 which prescribes that dead bodies are not to be disposed of without either a coroner's order or a registrar's certificate. Regulation 30A, authorising coroners to inquire into deaths caused by war operations and to issue certificates enabling registrars to register the deaths, was not issued till last March and so falls outside the year under review. The total of 538 cases of suicide is fewer by 14 than in 1939, 171 of them were persons over sixty years of age. Deaths due to excessive drinking were 58 against 77 in 1939. Inquests on newly born children fell from 36 to 27, 20 of these cases were found due to want of attention at birth. Lastly in spite of all shifts of population or other changes due to war, the number of verdicts of murder (3) remains the same as in the previous year. The steadiness of murder figures is one of the curiosities of our social statistics and has often attracted comment in the annual reports of the Home Office. That department's volume of criminal statistics for 1940, when at length it is published will give us much fuller information of the work of coroners throughout the country. There is no evidence that their usefulness is decreasing.

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[1] Beck A C Taylor E S and Colburn R I *Amer J Obstet Gynec* May 1941 p 765

[2] Capon, N B *Lancet* 1937, 2 431

FATE OF THE SKIN GRAFT

As in the last war, skin grafts are being done up and down the country and on all fronts in an attempt to cover the raw surface of wounds or burnt areas. These may be considered grafts of emergency, and in them the surgeon will be more concerned about the likeliness of the "take" than he will be about the appearance or function. With more and more knowledge of the bacteriology of wounds, of cleansing methods, local chemotherapy and the prevention of cross infection in wounds, the percentage of takes will increase and the appearance and function of the graft will come in for a greater measure of criticism. In grafting done at leisure a high standard must be expected and attained. Such grafts are required to cover a surface after removing scar tissue or neoplastic tissue or to improve the function of a part. Cole,[1] for example has lately described operations designed to improve the function of damaged hands, and the plastic units are kept busy with such cases today. It is therefore important to learn not only what can be achieved by grafting but also the fate of the grafts so that the patient and surgeon may know what to expect.

Like tissue should as far as possible be replaced with like and for this reason all advantage should be taken of local flaps before considering flaps from a distance or free grafts. Local flaps make the best repair. When skin and deeper tissue are missing pedicled flaps from a distance may be required and such flaps may give a very fine result though the skin tends to remain rather white, especially if the donor area is the abdomen. The skilful use of cosmetics is justified in these cases. Free grafts are liable to fall short of the desired standard. In grafts of emergency where the take may be indifferent, and the recipient area is covered with granulation tissue and fibrous tissue, the graft tends to be stiff, irregular and fixed. The same thing happens if any scar tissue is left under a graft done at leisure: such grafts are liable to break down under the slightest trauma, or merely when placed in a dependent position. But when all scar tissue is removed an even flat surface can be obtained, and it is remarkable how supple such a graft will become with the lapse of time. But some contraction is to be anticipated and the thinner the graft the more the contraction. Pigmentation is also liable to develop in free grafts. Brown and McDowell,[2] have recorded their observations on the fate of grafts in growing people. They show that if the grafts have been satisfactory at the start they enlarge and stretch with the growth of the patient and remain satisfactory. By this they mean that the skin will be enough for free movement, of moderate looseness and able to withstand the usual traumata and will develop normal sensation. If scar tissue is the edges at the time of grafting this will imp result. Grafting on an area of fibrosis such as radiation will either fail in the first instance or surface that cannot withstand trauma. Wrinkl the graft is probably due to failure to remove fine of scar tissue from the raw surface. Blood vessels early on the scene while lymph channels grow in s Œdema below a circular scar may even be cured grafting after removal of the scar. Sensation begins appear in a graft after some months (always pro the cutaneous nerves have not been com destroyed), at first in isolated spots which enlarge and coalesce, while some nerve fibres grow in from the edges. Metaplasia does not occur. A graft to the sole of the foot never becomes as thick as the rest of the sole. Skin replacing mucous membrane or conjunctiva always remains white and secretes sebaceous material, and hair will grow if the graft is cut thick. Grafts to cavities must therefore be cut very thin. Heterogenous graft never survive as such but are either shed or gradually replaced by new tissue. They have an occasional application as a temporary covering during a critical phase and have been used for this purpose in badly burnt children.

REGURGITATION OF TUBERCLE BACILLI FROM THE PHARYNX

THE portal of entry is not a very fashionable subject in the study of tuberculosis nowadays, when everybody is thinking on community lines about large scale infections and mass surveys. A year ago Gloyne[1] reviewed the literature chiefly from the angle of the primary focus and contact infection. Now White and Minett[2] have produced a helpful paper on the pathogenesis of tuberculosis in the calf, which contains facts which may well be translated into terms of childhood infection. Young bull calves from a tuberculin tested herd were used for the experiments, and the tubercle bacilli were introduced by (1) naturally infected raw bulk milk or mixed samples of milk from cows suffering from tuberculous mastitis, fed to the animals by the ordinary bucket method or introduced by stomach pump, (2) culture of bacilli suspended in milk and administered by the teat bucket as used in commercial calf-rearing, (3) intratracheal inoculation of cultures, and (4) injecting cultures suspended in milk into the duodenum by a stomach-tube, or placing them, enclosed in a gelatin capsule, directly into the duodenum by operation under intravenous anæsthesia. Apart from results important from a veterinary point of view, the work of White and Minett is of value in calling attention to primary lung infections by regurgitation from the pharynx. This was clearly demonstrated by the experiments. The teat or bucket feeding of young calves, with their well known propensity for immersing their head in the bucket and splashing the milk throughout the naso pharynx, affords an excellent opportunity for primary throat or aspiration tuberculosis. The Lübeck disaster[3] with the administration by mouth of B C G tubercle vaccine to young infants, whose facility for regurgitation is remarkable, led to similar conclusions. There a virulent strain of tubercle bacillus accidentally gained access to the vaccine, and 77 children died. Primary foci found in the lung and in the middle ear suggested that these areas were probably infected by regurgitation and vomiting after the administration of the vaccine and there seems no reason why natural infection should not take place in this way if feeds of raw milk happen to contain tubercle bacilli, as they must often do. Cobbett raised this possibility many years ago in his criticism lmette s experiments on animals which were made pport of the intestinal route of infection He es one series of experiments on goats, animals rally possessed of a good resistance to tuberculosis, hich Calmette failed to produce tuberculosis when the rcle bacilli were fed to the goats in enormous quanti- between slices of bread but succeeded in producing erculosis of the lungs without obvious involvement the mesenteric glands when the bacilli were ad- nistered with an œsophageal tube Cobbett's chapter the portal of entry in his classical textbook,[1] written 1917, is well worth reading today It is an odd thing out the battles of long ago that they are so often ight all over again by the next generation The ntroversy on the portal of entry seemed to be closed, d regurgitation from the pharynx was a mere " snag " the experiments Now the evidence of the Lübeck saster with infants, supported by White and Minett's periments in calves, suggests that the regurgitation infected raw milk may be a common route of infection acute pulmonary tuberculosis of infancy and childhood

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[1] Cole, P *Brit J Surg* 1941 28, 585

[2] Brown, J B and McDowell, F *Surg Gynec Obstet* 1941 72 848

[1] Gloyne S R *Tubercle* 1940 21, 161

[2] White E G and Minett F C *Brit J Tuberc* 1941 35 69

[3] Schurmann P and Kleinschmidt H *Arb Reichsgesundh Amt* 1935, 69, 25

SELECTIVE TESTING FOR THE ARMY

IN a recent leading article (July 26) some account was iven of what is being done in the United States of merica to assess the mental fitness of army recruits ention was then made of a call for men and women ith psychological training to enlist in the British Army or the purpose of selecting personnel We understand hat a system of selective testing is being introduced esigned not to estimate a man's mental fitness from the nedical point of view, but to assess, so far as this is ossible by testing, a man's latent qualities with a view o employing him in the job for which he appears to be nost suited The object of the scheme is to ensure that he best use is made of our man-power and that the right nan is employed on the right job A Directorate of election of Personnel has been set up in the War ffice to organise the scheme

TRANSMISSION OF YELLOW FEVER

BELIEVING that the important work of his father in lucidating the mosquito transmission of yellow fever as been largely ignored in English-speaking countries, rof Carlos E Finlay has with filial piety produced an xtremely interesting book[2] to rectify this apparent eglect In 1881, some years before the discoveries of anson and Ross in malaria, Carlos Finlay had already romulgated his theory of the transmission of yellow ever and had successfully pointed out the guilty o-quito, *Aedes ægypti* In 1894 Finlay read a paper hich laid down the measures necessary to prevent the pread of yellow fever These measures were in all ssentials those employed by Gorgas in his successful ampaign to eradicate yellow fever from Havana For wenty years Finlay with unabated patience preached to credulous world the doctrine of the mosquito trans ission of yellow fever , his incentive it was that caused he American commission to investigate and finally to rove the rôle of mosquitoes in transmission Such are inlay s titles to a fame which will last as long as tropical edicine endures But when it comes to Finlay s fforts to prove his theory it is another story It is now greed that after the bite of an infected mosquito the cubation period in man is 2–6 days , that after the hird day of fever the virus can no longer be obtained om the circulating blood since it is neutralised by mmune bodies , that after taking an infective meal an extrinsic incubation period occurs in the mosquito which even in a tropical climate is not shorter than 8 days that it is impossible to diagnose yellow fever clinically, and once a person has had an attack of yellow fever he will not again contract the disease Finlay made 102 attempts to infect human volunteers with yellow fever by the bites of presumably infected mosquitoes In only one instance did 7 days elapse between the time that the mosquito had taken its infective meal and the time that it fed on the volunteer ; the extrinsic incubation period was therefore too short In 4 cases only did the mosquito feed on a patient with yellow fever on the second day of the illness and in only 17 cases on the third day of illness The incubation period varied from 5 to 27 days in only 4 instances being under 6 days while of 16 patients who showed symptoms following a supposed infective bite 5 are reported to have had second attacks. None of the 102 volunteers died of yellow fever, the diagnosis of infection being based on clinical grounds in every case It is therefore hardly surprising if Finlay s experimental proof of his theory has failed to carry complete conviction

THE MIDWIFE WHO PRACTISES

ON April 1 there were 64 440 names on the roll of midwives or 854 more than the roll has ever contained before The Central Midwives Board, which provides this information but cannot publish it for lack of paper, gives the date as March 31 , but in view of the fact that more than three-quarters of the enrolled women have no intention of practising as midwives the overnight date seems more fitting Of some 16,000 women who enrolled in the 5-year period 1935–39, just before the new rules came into force, only 28% gave notice of intention to practise during 1940 Of course the old rules were largely to blame, for the board's certificate had come to be tacitly recognised as an academic diploma, honourable indeed but carrying no obligation Under the new rules only the pupil-midwife is likely to take the second period of training which qualifies for the full certificate and gradually the roll will become a real list of practitioners This real list last year had 15,874 names 1347 less than in the previous year, and 1620 less than the peak year of 1937 when the need for midwives was so much smaller that many of the less efficient could safely be pensioned off Let it be noted, however, with thankfulness that at the second (and final) examination last year 818 of the 948 candidates were successful , despite overheads the board s programme of examination was carried through according to plan Encouraging also is the willingness last year of 202 women to resume the practice which they had seen fit to lay down, whether from age or domestic ties A reflexion of the latter appears in a special ruling of the board in response to inquiry that a midwife must remove her wedding ring while attending a confinement

Awards to Medical Men —The D S C has been awarded to Surgeon Lieutenant G L Ward, M B Camb , R N V R , for bravery in the Battle of Cape Matapan The M B E has been awarded to Dr William Remington of Woolwich for brave conduct in civil defence

Pension for Naval Officer —Surgeon Captain P M May, M R C S , R N retd , has been awarded a Greenwich Hospital pension of £50 a year in place of Fleet Surgeon C S Facey who died on June 20

Medical Prisoners of War —In a recent casualty list the following R A M C officers are posted as prisoners of war W S ,Captain Graham Forrest Hay M R C S W S Captain G B Leyton M B Camb Captain G R Mackay, M B Aberd , W S ,Captain J G Munro, M B Aberd , W S ,Captain Kenneth Todd, M B Manc and Captain H W Wykes M R C S The *Yorkshire Post* states that Captain W G France who was reported missing in June is now known to be a prisoner of war

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Causes of Tuberculosis London

Carlos Finlay and Yellow Fever By Carlos E Finlay M D F A C S , professor of ophthalmology in the University of Havana Edited by Morton C Kahn Sc D associate professor of public health and preventive medicine Cornell University Medical College London Humphrey Milford, Oxford University Press Pp 249 21s

In England Now

A Running Commentary by Peripatetic Correspondents

DURING an April blitz on London I took a letter to the post. Big, almost stationary, flares lit up the sky, flack-fire was like twinkling stars, the dogs of war barked hungrily. At the corner of the street watching it was a group of youths and girls. Their voices had the ring of casual conversation, with the sound of rejoinder and snatches of laughter. My mind went back to Mr. Wells's film "The Shape of Things to Come" with its terrified stampeding crowds. Well, it has not turned out like that at all, but all the same it was an amusing film. Most of us have these penetrating yet inaccurate glimpses into the future—mine come specially when I have a little alcohol. A sherry? Well, thank you, I don't mind if I do. My thoughts are at first soberly pharmaceutical as I gaze into the medical future. In the very foreground I see Tab. sulphapyridine co. (osonin, Dover's powder and sulphapyridine), Gargarisma sulphanilamide, Ung. derris co., Tab. sulphathiazole cum vitamins A-Z. Nothing very startling in those. This one's on me. I don't think medicine has used ordinary mechanics enough. Take the centrifuge for instance. That case of dropsy of the legs could easily ... Yes, Nurse, with legs towards the centre, of course. Quite comfortable? Right you are. Whirr. What's this case? Difficult labour? Certainly. We'll want the nets up for this, Nurse. Whirr. Or a mechanical heart which can fixate a limb and put an endless chain of mechanical strokers down the course of the main arteries, while another series of coaxers run up the main veins. What's this, Nurse? A pneumonia. Heart flagging, what? Oh well, adjust a M.H. to his left arm and right leg and give him—well, perhaps just one more. One always comes down to politics in the end, doesn't one? Have you seen that order from the Medical Gauleiter, the one about in the future there's to be no such disease as diabetes, because it is so common among non-Aryans? What's it mean? What, don't you know? Well, this is strictly between you and me and the G.P. The real reason is that the Pharmacy Gauleiter has made a corner in insulin and the M.G. who loathes him like pink poison is getting his own back. Have another. Beastly, that sort of thing, isn't it? Still I'd rather have that than the old laisser-faire methods of the degen. democs. They say they have got chain doctors there now. Chap called McJoseph. Hundreds of assistants everywhere, all have to take his name by deed poll. Poor old G.M.C. can't do a thing. Front doors scarlet with green R.A.M.C. snakes, like Woolworths. Red lights twinkling outside, electric signs "Midwifery, a speciality," "Surgery for sixpence." Dreadful state of affairs. Why ... "Time, gentlemen, please." Quite.

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The fathers' match this year lacked something of its accustomed glamour, but the headmaster assured us beforehand that the boys had had a thoroughly bad season so we looked forward to putting up a fair show and perhaps even winning for once in a way. The boys batted first and their innings was noteworthy for the vigour and ferocity with which they attacked the bowling, the number of catches dropped and the lamentable lack of agility in the field. The first wicket fell at 40 and, to cut a long story short, the little squirts had the colossal crust to declare at tea-time with the score at 200 for 5. I bowled my guts out (metaphorically speaking) for two costly wickets. Tea, if less lavish than in past years, was adequate and bulky. The fathers started briskly by losing 3 wickets for 10. Going in myself about number six to stop the rot, I failed to stop a rather straight one that shattered my castle. When I left to take evening surgery we were still 70 behind with only three very unreliable wickets still to fall. I bet we lost again. [Later. We did.]

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Coupon woes are not confined to the females of our hospital staff. It is true that such matters as the supply of white coats assume added importance when the articles have to be paid for in margarine as well as money, but the thing goes further than that and has introduced to our hermit-like existence yet another touch of simplicity, compelling the formerly re rather plethoric members of our brotherhood to things which they would not otherwise have Darning and the execution of miscellaneous have come into their own, and those who were discard are now compelled to renovate and Suits that had long been consigned to the forgotten things, or written off in terms of some have been turned out to render further service the most devastating effects of the new economy their insistence on a policy of repair. Some of colleagues are evincing a new interest in medicine, learning again that a stitch in time nine, and there is something homely and uns —if unusual—in the sight of sober surgeons with the intricacies of torn shirts, holey socks refractory buttons. The new order promises to a new pride in craftsmanship, Surgeon vying Anæsthetist, and General Duties contending with

The Surgeon's socks are his chief woes. They The Surgeon is tall, and if his socks shrink in both they become difficult to pull on in the first instance, even then irksome and restrictive. On more than one occasion he has been delayed by fierce battles with his socks well into the forenoon, and things have come to such a pass that he has taken to washing his own socks rather than let them take their chance in the laundry. Occasionally a maid, stumbling on his secret treasure, sends some of his possessions to the laundry unbeknown to him, and a mistake of this sort is inevitably be-et with unhappy consequences. The Surgeon has recently been practising some species of tension relieving incision, which will restore to circulation socks that seemed to have assumed irretrievably the atrophy of age, and he has borrowed from his theatre a dilator sometimes used for other purposes but now making heroic efforts to stretch again his abbreviated woollens. Nor are these stocking woes confined to the Surgeon. The Anæsthetist has them, too, but his are not so much the pains of contraction as the inherent pains of holeyness. He has taken to darning his own socks, and the process is successful in so far as it obliterates empty spaces, but it substitutes great hard lumps of tightly drawn thread that suggest some loathsome disease, and at the same time produce on his unhappy soles alternate corns and calluses that have driven him to wear broad nosed shoes, serving to accentuate his already lugubrious tread. He, too, has evolved a darning technique, and of an evening can be heard in his corner mumbling some ancient rites ("one, two, three, four"), related to the work in hand.

General Duties has lived in the East, and in the back woods has had to fend for himself. He has immense faith in his ability to sew on buttons in a way that ensure their permanent anchorage. "Give me needle and thread," is his motto, "and I shall sew them on," and they seem to stay on as if fixed in place by terrific hawsers as everlasting as the world itself. He airily spurns all offers of feminine assistance in these rehabilitative pursuits, preferring to stand firmly on his own feet, though some of his lady colleagues, and even some of our students, have offered to tie him together, all he will have from them is the loan of their needles and thread. Not all of his professional brethren share his self-sufficiency. Most of them have ward sisters somewhere who will, for a consideration (unspecified), do what is necessary to preserve their patrons in a state respectability and comfort. The sewing on of butto and the darning of socks is regarded by some of unprincipled, if prudent, ones as a part of ward like the making of 11 o'clock tea, which seems rather hard on the noble spirits who try to do their own There has recently been some discussion as to the welfare officer in such a hospital as ours ought to a male or a female, and arguments have been put in support of each belief, but surely in this the welfare of the medical staff is an important that has been overlooked. Since the medical staff predominantly male, it seems clear that the welf officer should be a lady—a lady possessed not of tact and perseverance and all those other qualit that go to make up the ordinary conception of an welfare officer, but possessed also of those dome s without which no residency is bliss and without none of our male colleagues can be expected to f their best in these exacting days

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king to the push-bicycle again after an interval of a e of decades or so I find that I no longer get the thrill as I used to out of riding down steep hills defective brakes , I like to be able to stop the thing leads me to wonder why as we grow older so many , tend to put a higher price on our heads That we ld take increasing care of our vile bodies at a time of when we are intrinsically less valuable to the com-uty doesn't seem reasonable My second profound ction is that the modern so-called super-sports are less comfortable to ride than the old upright models ill grudgingly concede that, bent low over drooping dlebars, the rider offers less resistance to the wind, surely when each time he bends his knee he strikes iself a powerful blow in the abdomen, he is working a mechanical disadvantage But perhaps I am no ger worthy to be called a super-sportsman

* * *

Some time ago I had occasion to speak in these lumns about my hens Of the original 18 there are 15 rvivors still filling on an average 6 shells a day Dopey id to go, she was a nice bird but slow off the mark and ioroughly hen-pecked Moreover there was convincing idence that she wasn't pulling her weight in the factory bsenteeism from the laying box is little short of treason iese days, so we ate her Knowing her so intimately it as hard for any of us to administer the coup de grâce, ut a billeted soldier twisted her neck neatly and without ompunction, and there's no denying that she was good n the table Among the newcomers to the hennery re 6 half-grown light Sussex pullets and a cockerel, hich are veritable Nazis among poultry They bully all naller birds and are constantly seeking fresh lebensraum f the french windows are inadvertently left open the ght Sussex instantly occupy the drawing-room carpet r the dining-room table, when ejected they look idignant I am looking forward to eating that cockerel ho is nothing more nor less than a fuhrer on a slightly naller scale Recent additions to our fauna include a osling and two young nanny goats Gertie the gosling very young indeed, but takes kindly to a diet of clover nd water and we already say "Boo" to her The annies, Syrene and All-cleara by name, were carried in y two small girls of about the same size We under-and that their staple diet is nettles with an occasional .R P memorandum as a special treat

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There are subtle slight changes going on in our daily fe that lead on to others which at first sight may seem nconnected Thus the O P sister has encountered a ew minor anxiety in patients fainting in the dispensary ueue They had all been to the throat department nd had all had their noses cocainised We have always een on the lookout for the patient who in the hands of n extravagant dresser faints in the examination room, ut this was a new one Sister discovered that they ad all come up without breakfast Difficulties in avelling are bringing many people up to London ithout any This is reflected in the crowds at the yons shops at 8 30 A M If you catch a 7 A M green-ne bus it is really 5 A M and even in these hot days ou will be cold on arrival So those that go in for a arming cup of coffee are added to those who habitually reakfast there But these are not all There are ose who have been on duty all night and come in for meal when going off duty And so the marble tops ave a busy time Shortage of starch and material as changed the Nippy's costumes The white caps nd aprons over the black uniform have gone A black eaked cap and overall has replaced them This means at the girls have now to provide their own dresses nd it means that the customers can observe their rearms It has always been recognised that a man a right and even a duty to look at a girl's feet and nkles before judging her character I learnt this from father The old man would settle after dinner in e arm-chair, in which I now doze on Sunday after-oons, and there suck at his pipe and read his book rvant my mother was all agog to know his opinion and hardly had the dining-room door closed upon her before she would say, 'Well Tom ! what do you think of the new girl ?" 'Humph' the old man would say, "She'll do Her ankles are tidy," and then would return to his pipe and his book Acting on this paternal education I have always held that in selecting a nurse for the operating theatre we should pick one with neat ankles and feet and one who can fit up a nasal snare while one barks at her But the new Nippy costume has made me realise that whereas ankles are questions of form, forearms and hands are a question of emotion When you watch a Nippy with her bare arms sorting out cups of coffee saucers spoons and an odd lump of sugar or two you can see into her soul In future I shall insist on rolled-up sleeves when the test snare is being prepared Incidentally nurses would be much better off without their stiff cuffs and tight sleeves, and if the little bit of muslin above the elbow that first was characteristic of the London Hospital nurse was made universal

Special Articles

SCOTLAND

WAITING FOR HOSPITAL

Lord Craigmyle is satisfied that emergency hospitals should be used to reduce the long waiting-lists of voluntary hospitals Speaking in aid of the County of Selkirk cripples' aid committee he admitted the need for a reserve of beds to meet a great emergency, but, said he 80 per cent or more of emergency hospital beds could be cleared rapidly at a crisis, patients being no worse off than before A physician in charge of beds at an E M S hospital had told him that his ward could be cleared in two hours But even if it took two days could that excuse the policy of keeping down the number of patients to a bare minimum and of turning the rest away ? He was thinking particularly of that long, pathetic queue of men and women requiring operation who could only be cured in a hospital bed These people were paying for the upkeep of the new hospitals , they were paying the salaries of doctors and nurses who were eating out their hearts in idleness How could we have an efficient hospital system when it was starved of patients, and how could we have an efficient population if it were excluded from the hospitals for which it paid ? He was not criticising the voluntary hospitals ,- the long waiting-lists were no fault of theirs All the same the waiting-lists were a scandal to Scotland Nor did he criticise the Department of Health for Scotland , he knew a little of the laborious days and nights which their officials had been spending since (and indeed before) the war broke out But civil servants, however able were not the makers of policy If the policy were timid and inadequate it was for the central government to define a more humane and a more courageous one The more work the emergency hospitals did, and the stronger the link between them and the voluntary hospitals the better it would be for Scotland now and after the war It was only by keeping the machinery in running order that it would be efficient in an immense crisis, if ever it came

DEATH OF PROF A J CLARK

The Edinburgh faculty has lost one of its most distinguished members by the sudden death on July 30 of Dr A J Clark, professor of materia medica since 1926 when he succeeded the late A R Cushny Professor Clark came to Edinburgh with a distinguished record After taking a first class in the natural sciences tripos in 1907 and qualifying from St Bartholomew's in 1910 he held appointments in pharmacology at King s, University College and Guy's In 1918 he was offered a chair at the University of Capetown, and a year later succeeded Cushny at University College becoming also dean of the medical faculty He succeeded Sir Charles Sherrington as a member of the Medical Research Council in 1931 In the last war he was awarded the M C and he again saw active service for a short time during the present war, being in France and Flanders during the German drive in the spring of 1910 After returning to this country he was seconded for university duties and under his direction active work was in progress in connexion with the war effort His textbook on Applied Pharmacology ran through many editions and became a standard work Professor Clark was known by colleagues and students alike as a rather shy but most approachable man to whom problems could be taken at any time with the assurance of his fullest help In his immediate associates he inspired an affection and respect such as can have been enjoyed by few He took an important part in building up the central medical library in Edinburgh University and in its daily running Of the medical school he came to be an active and integral part Professor Clark is survived by his wife herself unhappily an invalid and by four children, his eldest son being a medical student at the university

INFANT LIFE

In an address at the annual meeting of the Fife Children s Home, Prof Charles McNeil said it was a melancholy fact that in Scotland the infant death-rate was too high The Scottish was now much above the English rate, although forty years ago the reverse was true That meant that England had tackled more successfully the control of the health of her children The problem was how to give all mothers adequate homes along with knowledge of health matters and the will and ability to apply that knowledge Scotland had prided herself on progressiveness in education but if the health of the children was to be improved they would need to revise some of their educational methods To education in reading and writing and adding up figures must be added that final coping-stone—education for life itself

PALESTINE

After last autumn's air-raids, which mainly affected Haifa and Tel-Aviv two meetings were held to discuss the problems which they had raised and the experience we had gained from them It was decided to increase the number of hospital beds available for casualties both in these towns and in the smaller ones, and more operating theatres have also been provided In addition the Jewish Red Cross have erected many stations for giving first-aid in raids The public has been instructed by articles in the newspapers, courses of training and so on as to what to do when bombs fall, and a service of blood-donors has been organised In those raids there were a lot of cases of ruptured ear-drum, so the public have been advised to plug their ears with cotton-wool when a raid is on There was, too a good deal of thrombosis following operations performed immediately after the raids, and it has therefore been decided where possible to delay operation until the first shock is over Some of these measures have proved their value in subsequent raids

In March a congress of the Jewish Medical Association of Palestine took place in Tel-Aviv It was well attended by Jewish doctors from all over the country as well as many English and Polish ones One day was taken up wholly with papers in English, and there were some lively discussions, particular interest being shown in the papers by Professor Zondek on the biology of the heavy metals and by Dr Goldberg on the curious allergic disease, favism Allergic diseases are particularly common and severe in Palestine and the Near and Middle East generally, as Wodak has lately pointed out in the Hebrew medical paper, *Refuah* (Medicine), and those which affect the nose are shortly to be the subject of a meeting of Palestine otorhinologists In Haifa a meeting has been held between doctors of the various nationalities in Palestine—Hebrew, Arabic and English—and the government are sponsoring similar meetings aiming to bring together the Hebrew and Arab medical men The few meetings which have so far been held seem to have been successful and the scientific standard has been high,

Shimkin of Haifa has been treating trachoma with sulphanilamide, and reports his results in *Refuah* In 32 severe cases some of them complicated by ulceration, pannus crassus and the like photophobia and blepharospasm disappeared on the second or third day He gives 1 gramme of sulphanilamide three times a day. Rosenbaum and Alper of Tel-Aviv in the same number of *Refuah*, discuss the relation between complexion and susceptibility to colds They have observed dren mostly between the ages of two and five, period of several years, the racial sociologi nutritional conditions being much the same About 80% had a comparatively light colouring of these had more than four colds a year , of the der, with dark complexions, only 20% had mo four colds More of the fairer children than t show enlargement of tonsils and adenoids , pre this is a consequence rather than an explanation greater liability to colds

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Public Health

From the Annual Reports

EALING

The population of this borough increased from 11 in 1931 to 164,400 in mid 1939 At the census t were 26,700 structurally separate dwellings , in 1 the rate-books showed this number to have increased 46 000 House density therefore diminished from 4 3 3 5 The birth-rate in 1939 was 14 8, the infant mortality rate 48 and the general death-rate 9 5 Th are about average for the past few years A notable point in the death table is the rise in suicides from 8 in 1938 to 26 in 1939 No case of cerebrospinal fever was notified in the borough during the year Dr Or reports that a scheme was drawn up whereby municipal midwives could assist at the Perivale Maternity Hospital or the staff at the hospital could assist the municipal midwives in any emergency This is a system which many boroughs favour, but of which the Ministry of Health does not approve

HAMMERSMITH

In 1911 the infantile mortality of Hammersmith wa 146 , in 1939 it had sunk to 43 Since 1924 the general death-rate of the borough has remained fairly constant the lowest rate in the period being 11 4 in 1928 and the highest 13 in 1927 In 1939 it was 12, about the averag for the 16 years Dr Howell in his report gives a table of deaths from cancer in the ten years 1930–39 Th average yearly toll was 227, a number recorded in 193 and 1939 This table shows a fairly constant death roll but a remarkable difference in its age-distribution, the most interesting features of which are a great reduction of persons aged 25–35 and an even more significant reduction in those aged 45–55 In 1930 cancer killed 99 persons in this latter age-group, in 1937 it killed 5 in 1938 only 41 and in 1939 only 29 Another favourable feature is the reduction of maternal mortality from in 1925 to 1 in 1939 Here substantial reduction started in 1935 In the first five years of the period the average was 3 9 , in the second five, 4 1 , and in the third five 1 2

DERBYSHIRE

Dr W M Ash's report for 1939 is cut to the bone but he gives a full account of an action brought again the county council under the Midwives Act of 193 which imposes on authorities the duty of supplying a adequate number of domiciliary midwives The inciden was the usual one of no midwife being obtained whe wanted in an emergency, but the case is importan because the county court judge found "The statut discloses no intention to give private right of action i addition to the remedies provided in case of failure '

SHEFFIELD

Dr H M Cohen gives tables of the average height and weights of Sheffield children in elementary an secondary schools in 1920, 1928 and in each of the p four years, with the Board of Education standard (1928 for comparison These show, as do all such table for all parts of Britain, that in both sexes and at a ages the heights and weights of children have increa regularly during the past 20 years, the only appar exceptions being in groups in which the numbers a too small for the results to be significant Speaking lousy heads, Dr Cohen makes the important stateme (founded on findings) that though children cleansed as a rule found to be re-infested on subsequent exami tion, evacuated children found lousy on reception a cleansed have remained clean

connexion with the war effort His textbook on Applied Pharmacology ran through many editions and became a standard work Professor Clark was known by colleagues and students alike as a rather shy but most approachable man to whom problems could be taken at any time with the assurance of his fullest help In his immediate associates he inspired an affection and respect such as can have been enjoyed by few He took an important part in building up the central medical library in Edinburgh University and in its daily running Of the medical school he came to be an active and integral part Professor Clark is survived by his wife, herself unhappily an invalid and by four children, his eldest son being a medical student at the university

INFANT LIFE

In an address at the annual meeting of the Fife Children's Home Prof Charles McNeil said it was a melancholy fact that in Scotland the infant death-rate was too high The Scottish was now much above the English rate, although forty years ago the reverse was true That meant that England had tackled more successfully the control of the health of her children The problem was how to give all mothers adequate homes along with knowledge of health matters and the will and ability to apply that knowledge Scotland had prided herself on progressiveness in education but if the health of the children was to be improved they would need to revise some of their educational methods To education in reading and writing and adding up figures must be added that final coping-stone—education for life itself

PALESTINE

AFTER last autumn's air-raids, which mainly affected Haifa and Tel-Aviv two meetings were held to discuss the problems which they had raised and the experience we had gained from them It was decided to increase the number of hospital beds available for casualties both in these towns and in the smaller ones, and more operating theatres have also been provided In addition the Jewish Red Cross have erected many stations for giving first-aid in raids The public has been instructed by articles in the newspapers, courses of training and so on as to what to do when bombs fall, and a service of blood-donors has been organised In those raids there were a lot of cases of ruptured ear-drum, so the public have been advised to plug their ears with cotton-wool when a raid is on There was, too a good deal of thrombosis following operations performed immediately after the raids, and it has therefore been decided where possible to delay operation until the first shock is over Some of these measures have proved their value in subsequent raids

In March a congress of the Jewish Medical Association of Palestine took place in Tel-Aviv It was well attended by Jewish doctors from all over the country as well as many English and Polish ones One day was taken up wholly with papers in English, and there were some lively discussions, particular interest being shown in the papers by Professor Zondek on the biology of the heavy metals and by Dr Goldberg on the curious allergic disease, favism Allergic diseases are particularly common and severe in Palestine and the Near and Middle East generally, as Wodak has lately pointed out in the Hebrew medical paper, *Refuah* (Medicine), and those which affect the nose are shortly to be the subject of a meeting of Palestine otorhinologists In Haifa a meeting has been held between doctors of the various nationalities in Palestine—Hebrew, Arabic and English—and the government are sponsoring similar meetings aiming to bring together the Hebrew and Arab medical men The few meetings which have so far been held seem to have been successful and the scientific standard has been high,

Shimkin of Haifa has been treating trachoma with sulphanilamide, and reports his results in *Refuah* In 32 severe cases, some of them complicated by ulceration pannus crassus and the like, photophobia and blepharospasm disappeared on the second or third day He gives 1 gramme of sulphanilamide three times a day. Rosenbaum and Alper of Tel-Aviv in the same number of *Refuah*, discuss the relation between complexion and susceptibility to colds They have observed dren mostly between the ages of two and period of several years, the racial, sc nutritional conditions being much the same About 80% had a comparatively light colouring of these had more than four colds a year, of der with dark complexions, only 20% had four colds More of the fairer children than show enlargement of tonsils and adenoids, this is a consequence rather than an explanation greater liability to colds

Public Health

From the Annual Reports

EALING

The population of this borough increased from 1 in 1931 to 164,400 in mid 1939 At the census were 26,700 structurally separate dwellings, in the rate-books showed this number to have increased 46 000 House density therefore diminished from 43 3 5 The birth-rate in 1939 was 14 8, the mortality rate 48 and the general death rate 9 5 are about average for the past few years A point in the death table is the rise in suicides from 9 1938 to 26 in 1939 No case of cerebrospinal fever notified in the borough during the year Dr Or reports that a scheme was drawn up whereby municipal midwives could assist at the Perivale Maternity Hospital or the staff at the hospital could assist the municipal midwives in any emergency This is a system which many boroughs favour, but of which the Ministry of Health does not approve

HAMMERSMITH

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Winsford, Cheshire W N LEAK

SANDFLY FEVER

SIR —Your leading article of Aug 2 recalled a study made in Baghdad on the blood-picture in sandfly fever *rans R Soc trop Med Hyg* 1937, 30, 309) A series of 30 cases were investigated They showed a neutropenia nd monocytosis, and the eosinophils reduced to less han half the normal figure A striking characteristic f the white cells was the large proportion which showed egenerative changes Smear and basket cells were ommon, the granulation of many neutrophils was eficient and even absent, and numbers of monocytes ere vacuolated or had pale, diffuse cytoplasm and lightly aining nuclei, and the chromatin network had a ashed out appearance Even more striking was the xtremely low polynuclear index—i e, the Arneth count s modified by Cooke and Ponder The deviation was the ost "left-handed" of any blood-picture met with in aq This proved a useful point in the differentiation etween sandfly fever and malaria Numbers of meta-yelocytes and other "abnormal" leucocytes were found the original paper by Walker and Dods on which u comment, it is stated that mental depression was a stinct feature of convalesence in some cases, and that patients looked well for at least a week after an attack average severity Full health was usually regained ite quickly once this phase had passed In my perience (which includes many more cases than the ries mentioned above) an aftermath of depression, th mental and physical occurred in almost all cases, d often lasted for months In none of my own cases d the depression go as far as suicide, but this has ppened in the experience of some of my colleagues he treatment generally adopted in Baghdad is full ses of tincture of opium and an aperient

London WALTER P KENNEDY

SUTURE OF CAUDA EQUINA

SIR,—I should be glad to know of any successful case suture of the cauda equina In the official history of e last war it is stated that not a single example was met th, yet most textbooks comment on its feasibility If u can put me in touch with anyone who has sutured e or more elements of the cauda equina with success hall be obliged LAMBERT ROGERS

o Medical Department, Admiralty London S W 1

POSTGRADUATE COURSE IN TUBERCULOSIS —The Joint berculosis Council has arranged to hold a postgraduate rse in tuberculosis and allied conditions at the Middlesex nty sanatorium, Harefield, from Sept 1 to 5 Special leave attend the course will be granted to members of the E M S rther information may be had from Dr Frederick Heaf, unty Hall, Westminster, S F 1

Obituary

DUNCAN FORBES

M B E M D, B SC (PUBL HLTH) EDIN D P H

DR Duncan Forbes, for thirty years Brighton's chief health officer, died on July 25 in University College Hospital, London, after an operation He was in his 68th year and leaves a widow, a son recently qualified in medicine, and three daughters of whom one was called to the bar in 1935 Forbes was an Aberdonian who qualified at Edinburgh in 1898, became Crichton scholar in pathology, and spent three years in intensive study of hygiene and acquiring higher degrees, before entering the public health service at Leith, passing on to Manchester and Cambridge, and in 1908 succeeding Sir Arthur Newsholme as medical officer of health for Brighton Between them they covered half a century and now, looking back on the intervening years, Newsholme writes of the integrity and originality which fitted Forbes to be the medical adviser of a community which in process of urbanisation remained one of the healthiest places of residence in the world Integrity shown in his indifference to popularity when he cleared the Carlton Hill slums and insisted on rehousing some of the dispossessed tenants on the site Originality when he discarded the outworn shibboleths of fumigation in favour of soft soap and elbow grease Forbes, the Scot, with native dourness and pawky humour, embraced the ideas and life of Southern England but lived a little apart from the ordinary social activities of the town, descending now and again into the arena to bring forward some quasi-Shavian solution of a current problem, as when a few weeks ago he propounded to the local health planning committee an embargo on meat and tobacco, the consumption of greenstuff raw, doubling the ration of potatoes, destruction of useless animals (especially dogs), and the emigration to Canada of people over 65 not engaged in essential work But behind the occasional pyrotechnic was a life of duty quietly and consistently lived, it was, for instance, told of Forbes that up to the day of his retirement in 1938 no case was discharged from the fever hospital without his personal inspection There will be many to miss the well-known figure, always in the same garb and never in an overcoat, striding over the Downs or to his office in Castle Square

LEONARD MORTIS WEBBER

M R C S, D P M

DR Webber, who died on July 25 following an operation, spent his life in the service of the Surrey county mental hospital at Netherne of which he had been superintendent since 1934 He was educated at Wellingborough and qualified from Charing Cross Hospital, where he won the governors' clinical gold medal, in 1909, becoming resident obstetrical officer there After a term at Lewisham Infirmary, as it was then called, he was appointed second assistant to Netherne, a year after it was opened, remaining there except for a break in the R A M C from Nov, 1915, to March, 1918 He was a sound psychiatrist, not quick to accustom himself to changes but giving full trial to established treatments and every encouragement to his staff to pursue them His main interest lay in the care of his patients and he would never spare himself in making them comfortable and happy He never missed their dances or entertainments He was greatly interested in occupational therapy and the departments grew through his efforts At first he was a little difficult to know and would hide his own shyness with a rather short manner, but his integrity, his genuine character and his real kindness were the foundation of solid friendships which grew as time went on He was a great reader, never at a loss to quote Thackeray or Dickens, he loved his garden and was very

Archer Handford Croydon

American Doctors for Britain

According to information recently received from the American Red Cross some 80 United States doctors who have applied to help in our medical services are at present being considered for acceptance, in addition to one who has already arrived and is at work in a civil hospital and four who are on their way to this country (Miss HORSBURGH replying to Sir HENRY MORRIS JONES)

Pasteurisation of Stale Milk

Mr W LEACH asked the President of the Board of Education whether he was aware of the unsatisfactory condition, supply and distribution of milk delivered to Southport schools, and of a report of the Southport health department which indicated that one sample of milk must have been stale before it was pasteurised, and whether any regulations exist which forbide the pasteurisation of stale milk —Mr R A BUTLER replied I am aware of the difficulties which have arisen in Southport about the supply of milk to schools, and my department have been in communication with the Ministry of Food who have taken the matter up actively I am informed by the Minister of Health that the conditions prescribed for pasteurised milk include a bacterial standard for the milk after, but not before, pasteurisation

Grants for Medical Research

Replying to a question Sir JOHN ANDERSON stated that the grant in aid of the Medical Research Council exclusive of a special capital grant of £70,000 for building in 1939–40 was £195,000 in each of the years 1938–41

Diphtheria Immunisation

Answering a question Mr E BROWN announced that statistics will be obtained from all local authorities in due course which will show, as from Jan 1, 1940, to what extent notification of diphtheria has occurred among children under 15 who have been immunised

Special Clothing for Disabled Men

Stump socks and certain other garments needed by disabled ex service men have recently been exempted from rationing Arrangements will be made in due course to meet any further needs of persons who for medical or other special reasons require more than the normal clothing ration, but I cannot say at present whether persons with artificial legs are likely to fall into this category (Captain C WATERHOUSE replying to Sir SMEDLEY CROOKE)

Hospitals and Army Road Casualties

Sir WILLIAM WAYLAND asked the Secretary of State for War what responsibility the War Office accepted for reimbursing a hospital for the cost of a patient injured by an Army vehicle, even though the cause of the accident might have been purely accidental or due to contributory negligence on the part of the injured person, or when the cause of the accident was in dispute —Mr D SANDYS, financial secretary to the War Office, replied When a person is afforded emergency treatment as the result of an accident arising out of the use of a War Department vehicle on duty on a road, claims are accepted against Army Funds for the cost of such treatment at the rates and in the circumstances specified in section 16 of the Road Traffic Act 1934, notwithstanding that that part of the act does not apply to the Crown Refund of other hospital expenses is considered in connexion with any claim to compensation arising out of the accident In general, the War Office accepts liability in respect of such expenses to the extent to which a private employer would be liable in similar circumstances

Home Guard Medical Officers

Captain H D R MARGESSON replying to a question said that instructions will be issued shortly authorising the appointment, where necessary, of medical officers to Home Guard companies, in addition to the officers at present authorised for battalions

Lack of Canteens in Scottish Mines

Replying to questions Mr T JOHNSTON said that the policy of the Government was to provide adequate nutrition for all classes of workers Any disparity in the provision of food canteens was receiving urgent attention At the coal pits in Scotland they were exceptionally badly off, they had only two canteens in active operation

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ST JOHN OPHTHALMIC HOSPITAL, JERUSALEM —Dr Norman Manson has been appointed warden of the hospital in succession to Sir John Strathearn, who has resigned owing to ill health after holding the office for twenty two years

Letters to the Editor

"SIDEROCYTES" IN MAN?

SIR,—The presence of iron in the hæmoglobin m cannot be demonstrated histochemically It has been discovered that normal mouse and rat embryos newborn young have in their circulation a small centage of erythrocytes in which the presence of non-hæmoglobin iron can be demonstrated by of the prussian-blue reaction (Gruneberg, H July 26, 1941, p 114) These "iron cells" or cytes" are greatly increased in numbers in an anæmia in the mouse, which is associated with recessive gene for flexed-tail and belly-spot It be of interest to discover whether the presence of s cytes is an embryonic feature confined to rodents whether it also occurs in other mammals, particularly man I have recently examined blood-films (cord blood kindly supplied by Dr H H F Bains) of full-term baby girls It seems that a very few s cytes occur in these films, but on account of scarcity I do not regard the question as settled doubt It would thus be desirable to confirm this f in the blood of premature babies or, better still, in th blood of embryos obtained in therapeutic abortion As no such material is accessible to me at present, should be most grateful for suitable blood-films (thi fixed in absolute methyl alcohol, unstained, with dat about the approximate age and length of fœtus)

HANS GRÜNEBERG

Pathology Department, Mount Vernon Hospital,
Northwood, Middlesex

FOUR PHASES OF BIRTH

SIR,—Sir Joseph Barcroft's fascinating lecture is fu of points of first-rate importance for midwifery H revelation of the state of *semi-asphyxia* of the fœtus the last few weeks before birth emphasises the importan of paying particular attention to the maternal circulatio during these last weeks of pregnancy It is still too common to find women coming to term with seve anæmia and less commonly with circulatory disea The state of semi-asphyxia in which the child is bo adds interest to the undoubtedly successful results whi attended the use of the Sparklet resuscitator, althou this has somewhat fallen into disuse since more elabora methods of giving carbon dioxide have been used seems that the effect of the resuscitator was not due the carbon dioxide at all, but to the impingement on t baby's face of intermittent streams of gas which h been chilled by rapid expansion When warmer carb dioxide was used no such stimulating effect was obtain This confirms clinically Barcroft's finding that increa carbon dioxide in the blood in the fœtus does *not* stim late respiration but that the nasal area is extreme sensitive to stimulation which excites respiratory mo ment Your excellent abstract, when stressing t effect of asphyxia on inhibition (p 94), may mislead this point, for, unless my memory of the original lect at Aberdeen is at fault, Sir Joseph pointed *out* a demonstrated on the film that at term clamping t umbilical vessels had practically no power to init respiratory movements compared to the effect cutaneous stimulation

His further observations on the effect of cutane stimulation on respiration suggest, what I believe fact, that some of our very gentle methods of treat newborn babies fail in their object and I am sure t sometimes a sharp slap will start an asphyxiated ba breathing when the recommended gentle rubbing of skin and so on is quite ineffective The final sentence your abstract that "sensory impulses from the heighten the tendency towards respiration" is *of* very greatest clinical importance The remark that factors making for movement are "stimuli from the n mouth, skin or muscles reaching a brain of exalted sitivity" also seems to me important, because it sugg that what is required in the asphyxiated baby is n direct respiratory stimulant, if such exists, but someth which will exalt the sensitivity of the brain A w ago (*Lancet*, 1941, 1, 433) I reported the successful re of injecting 0 5 c cm of Cardiazol-Ephedrine into

d Souter Firian Spickett, I M Stansfeld A W P Stone, torey, C G Stringer Andrew Tay, G G Taylor, J G Taylor, homas, E F Thomas, M G B Thompson Joan M Thornton, Turney G K Tutton A B Unwin Carolina M van Dorp Vincent, W K J Walls, J A Ward K O Warner R P n P C Watson, Mary F Wehner, Erich Wellisch, Alison D Leopold Wertheim, I T Wheeldon, A H Widdup, H L J n, J R J Winter, P H Wood R C Woolls G A Yorke lary Young

e diplomas in anæsthetics, laryngology and otology, and iological medicine were conferred on the candidates ed at the meetings of the Royal College of Surgeons rted in our issues of June 21, p 808, and July 19, p 89 ie following diplomas were also conferred, jointly with College of Surgeons

M R—G W Blomfield Mary A C Cowell and Ansel Fi

O M S—K A Abayomi H C Black P A Gardiner Jacob penn L H Lake T A Narayanan Jean M G Shaw J L S le Perkins and Daniel Turner

val College of Surgeons of England

At a meeting of the council held on July 31, with Sir red Webb Johnson, the president, in the chair, Prof exander Primrose of Toronto was appointed representative the college at the centenary celebrations of Queen's University, Kingston, Ontario, and Surgeon Rear Admiral G ordon Taylor as delegate at the annual clinical congress in oston of the American College of Surgeons

Diplomas of membership and diplomas in ophthalmic edicine and surgery and in medical radiology were granted o those named in the report of the Comitia of the Royal ollege of Physicians published above

Extra Meat for Cases of Nephrosis

The Food Rationing (Special Diets) Advisory Committee of the M R C have recommended that people suffering from nephrosis or the nephrotic type of glomerulonephritis should be granted three extra meat rations a week Doctors may therefore complete certificates on behalf of their patients suffering from these diseases for submission by the patient to the local food offices

Course for Surgical Specialists

Because of the need, both in the E M S and in the Services, for more surgeons with training and experience in the diagnosis and treatment of disabilities of the locomotor system, arrangements have been made for courses of instruction in the subject Each course will extend over six weeks and will provide practical experience and instruction for the whole of that period The surgeons attending the course will be divided into groups of not more than four, and each group will be attached to the wards and outpatient department of a senior surgeon experienced in this type of work They will have charge of cases, carry out treatment and receive practical demonstrations They will also attend the work and teaching at neighbouring hospitals, fracture departments and clinics The first course will begin on Sept 15, and will be given at Alder Hey Hospital, near Liverpool It will be conducted by Mr T P McMurray, Dr B L McFarland, Mr R Watson Jones, Mr F C Dwyer, Mr N E Thomas and Mr W R Mitchell In addition to Alder Hey Emergency Hospital, the Royal Infirmary, the David Lewis Northern Hospital and the Royal Southern Hospital, Liverpool, will be utilised This course is designed for surgical specialists in the E M S and Fighting Services, who should be of the status of junior honorary staff or senior registrars The number will be limited to 16, and applications should be sent as soon as possible to Dr F Murchie, Ministry of Health, Whitehall Suitable accommodation will be arranged through Mr McMurray in the neighbourhood of Alder Hey Hospital Before sending in their applications, medical officers in the E M S should obtain through the medical superintendent or medical officer in charge of their hospital the permission of the hospital officer or group officer, and those accepted will be granted special leave to attend the course Medical officers enrolled in classes 1, 2 and 4 will be continued on their existing contracts and will be refunded return travelling expenses from their present hospitals For those enrolled in class 3, in addition to travelling expenses, a subsistence allowance is authorised to meet the cost of their billeting

Appointments

HICKINBOTHAM, P F J, M B Birm F R C S R S O at Bradford Royal Infirmary

LEWIN W S M B Lond F R C S Harker Smith registrar at University College, London

PEREIRA ERIC, M B Lond D P H M O H for Richmond Surrey

TAYLOR, HELENA S L M B Edin temp asst M O for Ipswich

Notes, Comments and Abstracts

STERNAL BIOPSY IN DIAGNOSIS

In his Honyman-Gillespie lecture in Edinburgh last week Prof L S P Davidson said that the scene of interest in hæmatology had shifted from the peripheral blood to the bone-marrow That did not mean that the diagnosis of the majority of blood-diseases could not be made accurately from examination of the peripheral blood changes, but it did mean that biopsy of the bone-marrow had led to a much clearer understanding of the underlying mechanism which implemented the peripheral changes and had opened up a new field for studying the effects of therapeutic agents In addition it offered the only hope of making a correct diagnosis in certain macrocytic anæmias of widely differing ætiology which failed to respond to liver extract, and in conditions in which the presenting sign in the peripheral blood was leucopenia or thrombocytopenia In such diseases as cancer Hodgkin's disease, multiple myelomatosis and the lipoidoses the diagnosis might be established by finding the specific cellular elements in the bone-marrow while the peripheral blood might merely show some degree of hypochromic anæmia In such diseases the involvement of the bone-marrow tended to be local rather than diffuse and hence a negative finding was of no value Sternal biopsy might be of great service in excluding the presence of disease Although a well-marked leucocytosis occurred in the blood in many conditions it was only in lymphatic leukæmia that lymphocytic hyperplasia of the bone-marrow was found The bacteriologist and protozoologist were finding that valuable information could be obtained from the bone-marrow in such diseases as enteric fever, malaria and kala azar

Examination of the bone-marrow could be carried out during life either by trephining the tibia or sternum, or by sternal puncture Each method had advantages and disadvantages but the last had the widest application in view of its ease and quickness A study of the sternal bone-marrow before and at various stages after the injection of liver extract in cases of pernicious anæmia had shown that as early as 12 hours after injection a complete change occurred in the bone-marrow due to the maturation of the large number of megaloblasts In iron-deficiency anæmias, whether induced by hæmorrhage, toxæmia or nutritional deficiency, the bone-marrow showed an erythroblastic reaction, but the more severe the anæmia the more primitive the red cell precursors and in very severe cases the marrow contained primitive cells similar to the megaloblasts of pernicious anæmia In the white-cell diseases sternal biopsy had been of great service in the diagnosis of acute leukæmia and leucopenic leukæmia The peripheral blood might show a low white count and a doubtful differential count but the sternal marrow picture was diagnostic In both manifest and leucopenic lymphatic leukæmia Professor Davidson had always found the marrow crowded with lymphatic cells, in spite of the published statements that in the early stages a lymphocytic reaction in the marrow was absent In aplastic anæmia and in agranulocytosis the bone-marrow might either show a great reduction of the formative elements or else a hyperplastic state This indicated that in some cases there was a maturation arrest and showed an obvious need for further research into therapeutic agents which would restore normal maturation Thrombocytopenia might occur as a primary disease or as a secondary feature of recognised toxic and infective processes, or as part of a generalised blood disease such as aplastic anæmia or leukæmia In all forms of thrombocytopenia where the cause was not obvious sternal puncture should be carried out A study of the megakaryocytes, which he now firmly believed to be the precursors of the blood platelets, might show either a great reduction in their numbers—an aplasia—or a great increase In the latter cases the megakaryocytes were found to be of a very primitive type which might be called megakaryoblasts This finding suggested yet another form of maturation arrest and the discovery of a specific therapeutic agent would save many lives In multiple myelomatosis, cancer and Hodgkin's disease the marrow might be involved with metastatic deposits fond of his roses, and he had a great knowledge of birds His staff will miss him wholeheartedly

JAMES WILLIAM KEAY

M D EDIN, F R C P E, M R C P, D P H

Dr Keay medical superintendent of the Western General Hospital, Edinburgh, died suddenly on July 17 He had not been in good health for about a year but was improving and had been able to take part again in the administration of the hospital After graduating in medicine at Edinburgh University in 1903 he held house-appointments at Glasgow and Edinburgh infirmaries, later becoming clinical tutor in the gynæcological wards of the latter He took his D P H in 1909 and for a time he was school medical officer for Stirling, before entering general practice in Edinburgh He was elected F R C P E in 1910 At the outbreak of the last war he gave up practice and served in the R A M C with the rank of lieut-colonel On demobilisation he was appointed by the Edinburgh parish council to be superintendent of the Craiglockhart, Craigleith and Seafield Hospitals When the parochial functions were transferred to Edinburgh town council in 1930 he was appointed superintendent of the Edinburgh municipal general hospitals and played a large part in their reorganisation Since the outbreak of this war he had had much to do with the preparation of the hospitals for the reception of air-raid casualties Dr, Keay was approachable at all times, every one who knew his work appreciated his quiet manner and kindly disposition In the organisation of the municipal hospitals and their incorporation into the teaching facilities of Edinburgh University he often acted as a tactful intermediary between what were sometimes strongly conflicting interests

DR CHAVASSE

Sir Robert Kelly writes The tragic death of Bernard Chavasse at the early age of fifty-two removes from Liverpool one who could least be spared His zeal for work was unbounded, he took the liveliest interest in his hospital and was one of the most popular lecturers in the university I shall always remember a clinical meeting of the Medical Institution held at the Eye and Ear Infirmary, it was one of the most interesting I have ever attended and its success was largely due to Chavasse's enthusiasm He was an original thinker and in the last few years had spent much of his spare time on his book on "Squint" In this he treats binocular vision from the biological standpoint showing that true dual vision occurs in all vertebrates, even in those with widely separated eyes like the deer and the fish, and even in the swivel-eyed chameleon Chavasse took endless trouble with his many patients who will feel lost without him, his quiet demeanour gave them confidence His intellect and qualifications were of the highest order but he was always most modest about his achievements He had that rare combination of the trained mind of a research worker with infinitely delicate operative skill

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Surgeon Commander Henry Hurst, R N, who was reported missing after the sinking of H M S *Hood* last May, was born in 1895 and qualified L R C S I in 1917 He joined the Navy at the beginning of the last year of war and remained in the service after peace was concluded, being promoted surgeon lieut-commander in 1924 He was twice congratulated by the medical director-general for operations performed at sea under difficult conditions, and in 1928 while serving at the R N Hospital, Hong-Kong, reported on his investigations into the treatment of amœbic dysentery The greater part of his leave was always spent in postgraduate study abroad and in 1932, after a period in the ear, nose and throat department of Haslar Hospital, he worked under Neumann in Vienna In 1937 he returned to practise this specialty at Haslar where he remained until he joined *Hood* in August of last year Hurst was an enthusiastic sportsman and played hockey, tennis, squash and water polo

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Ophthalmological Society of the United Kingdom —The annual congress of this society will be held in Cambridge on Sept 4 and 5, when Dr O M Duthie and Dr S Zuckerman will open a discussion on ocular injuries resulting from the war Further information may be had from Mr Frank Law, hon secretary, 36, Devonshire Place, London, W 1

Medical News

Royal College of Physicians of London

At a meeting of the college on July 31, with Sir Wilson the president in the chair, the following fell elected officers for the ensuing year —

Censors Prof W E Hume, Dr Douglas Firth Prof and Dr C M Hinds Howell Treasurer Dr H E A Harveian librarian Dr Arnold Chaplin Assistant Dr Reginald Hilton Library Committee Dr Herbert Dr J D Rolleston, and Dr Cecil Wall, Finance C Dr George Graham, Dr F E Tylecote and Dr J Purdon

The following were elected examiners —

Chemistry Mr Leslie Brown and Mr G W Ellis, D Sc Mr D Orson Wood and Prof F L Hopwood D Sc medica and pharmacology Dr E B Verney, F R S, Prof Wilkinson Dr H A Dunlop, Dr Clifford Hoyle and Prof Macdonald Physiology Prof R J Brocklehurst and F R Winton Anatomy Prof J D Boyd Pathology K Shirley Smith, Prof J H Dible, Dr W E Lloyd and G Payling Wright Medical anatomy and principles and of medicine Prof O L V S de Wesselow Dr A Hope Dr William Johnson Dr T Izod Bennett, Dr Terence East, T L Hardy, Dr Hugh Gainsborough, Dr Donald Hunter R A Hickling, Dr D T Davies, Dr Kenneth Harris and H H Carleton Midwifery and diseases peculiar to Mr Clifford White, Mr V B Green Armytage, Prof E F Mr W J H M Beattie and Mr Arthur Gray Public Dr G Roche Lynch and Dr James Ferguson Tropical Sir Harold Scott and Prof P A Buxton Ophthalmic and surgery Dr J Purdon Martin Psychological Dr E B Strauss Dr Charles Putnam Symonds and Dr A A W Petrie Laryngology and otology Mr Lionel Colledge Me radiology Mr Gilbert Stead and Dr S Cochrane Shanks Anæs thetics Dr C Langton Hewer and Dr I W Magill Child health Dr H C Cameron and Dr Norman Capon

The Bisset-Hawkins medal was awarded to Sir Frederick Menzies for his work as chief medical officer of the London County Council, the Baly medal to Prof Edgar Allen, of Yale University for his work on œstrogens, and the Murchison scholarship (by Edinburgh University) to Dr A Alan Guild Prof J C Meakins was appointed to represent the college at the centenary celebration of the Queen's University, Kingston, Ontario

The following candidates, having satisfied the censors' board, were admitted to the membership —

C L Davidson, M D Leeds J V Davies M B Lond Flying officer P H Denton M D Lond, R A F V R, William Dodd, M D Lpool, C M Fletcher, M B Camb, Stella M Instone M B Lond, G A Kiloh, M D Lond, Harry Kopelman, M B Lond Captain A D Leigh, M B Manc, R A M C, John McMichael, M D Edin, Hilary F March, M D Durh, H V Morgan, M B Camb, R W Parnell, M B Oxfd, A M Payne, M B Camb, James Reid, M B Glasg, J C Roberts, M D Lond, R E Rodgers, M D Camb, Alec Sakula, M B Lond, L D W Scott, M D Glasg, Major H L Sheehan, M D Manc, R A M C, Margaret D Snelling M B Lond, R H Taylor, M B Camb, J B L Tombleson M D Lond Leslie Watson M B Leeds D A Williams, M D Wales, A/Squadron Leader Donald Wilson, M B Lond, R A F V R, and Richard Wilson, M B Camb

Licences to practise were conferred upon the following 196 candidates (169 men and 27 women) who have passed the final examination of the conjoint board

Ernst Adler, Brenda N Akeroyd, G A Anderson, E T Anthony G O Ashworth W J Atkinson, G A Barclay A G Beaton M Q Birkbeck, K F Blackburn D W Briggs, Jutta Brokar W A Bromley, H J S Brown, H J M Browne, J P Bull, D W Burgess Katherine D Caddick David Caddy J H Capon L G Capra, W E Church T I A Clarke, S N Cole, F D H Com R A D Crawford, C H K Daly, Valerie M K Davies, J J Dawson J C Day S R Deenadayalu P J R Deller P B de Maré, Maurice Diamond, J P Donnell G B Downs Christian N Duigan H L le V Durell, K C S Edwards, R M Ellison M L H Evans W H M Evans, Alfred Feiner H P F J C Firth, R B Franks, F E Fraser, Robert Fuller Marc Gang, V O B Gartside D S G Genge, J A Gillett, Noel Gillman C W Glassey, E C Glover C L Grandage, D M Gregg, Henr Grylls, Joan I Hallman A P Hardman, K O Harrison, J L G Hartley, Alois Heller W G Helsby, J A Henderson Joan D K Hilditch, Cedric Hinson F H Howarth, Gwyn Howells, Janet Humphrey M P Hutchinson, E L Ives, Bertram Jackson, J Jackson Philip Jacobs C T A James Alberta M Jeans L Jones Evelyn A Kaye Barnett Kelion, S K Kellett Smith G R Kershaw, C A King Doreen H King M D King, Friedr Kohn Celia P Larkins W S Lewis Ursula M Lister, H Llewellyn Sophia Lucas G M Lunn, Stella M Luty, Jo Lyons J M McCurdy, J L B MacFarlane Joan Mack Sylvia I Macmillan J M H McMurray T E L J McNair, A D Maconochie, F M McRae, Myer Makin, A E de la T Malle J A Mantle W J C Markby, D E Marmion, A H E Marsh S A Mason, J P Matthews P H N Matthews Violet D Maxwe R J Melhuish S L Melville, A R H Mills D V Milward, F Mooney, T K Morgan F P Morris G A Mott, R A Nabi, D Nicholls, J A B Nicholson H H Nixon, J F North Ack O Connor, Joyce P H Ogilvie D J O Meara T M L Owen Paradis, T E Parry, J H Peacock M T Pheils J H C Phill L G Picciotto, G H Pickering R J F H Pinsert, R J Pi Peggy O M Plews, Alexander Potchakhoff Cecil Margaret E Rhodes C W Richards G K Riddoch T B Roberts, Dorothy H Robertson J A Robertson, Edmund Robin- A C Rogers, Morris Rosten Bernard Samet C S Savage, G P Sechiari J A Segal Josef Seiler B A Sellick Jacques St O H C Shelswell J J Shipman, Maurice Shoham, George Sh

ORIGINAL ARTICLES

FURTHER OBSERVATIONS ON PENICILLIN

E P ABRAHAM,*
D PHIL OXFD

E CHAIN,*
PH D CAMB

C M FLETCHER,‡
M B CAMB, M R.C P

A D GARDNER,
D M OXFD, F R C S

N G HEATLEY,†
PH D CAMB

M A JENNINGS,*
B M OXFD

H. W FLOREY, M B ADELAIDE F R S

(*The Sir William Dunn School of Pathology and the Radcliffe Infirmary, Oxford*)

THE work on penicillin briefly reported by Chain and others (1940) is here presented in greater detail, and its further development to the stage of human therapy is described

Growth of Penicillin-producing Mould

The mould will grow and produce penicillin on a variety of different media, but that used by Clutterbuck, Lovell and Raistrick (1932) is easy to prepare and gives as high a yield of penicillin as others containing peptone horse-muscle digests, &c This modified Czapek-Dox medium consists of $NaNO_3$ 3 g, KH_2PO_4 1 g, KCl 0 5 g, $MgSO_4$ $7H_2O$ 0 5 g, $FeSO_4$ $7H_2O$ 0 01 g, glucose 40 g, with water to 1 litre Oxford tap-water has proved as good as distilled water for this purpose Yeast-extract has usually been added to speed up the growth of the mould (details later)

The medium, sterilised by autoclaving, is sown with a spore suspension made by shaking up sterile water in a screw-capped bottle containing a slope on which the mould has grown and spored freely Twenty-four hours after sowing a very delicate fluffy gauze-like growth can be seen with difficulty on the bottom of the vessel (at 24° C) The growth becomes more voluminous during the next day and on the 3rd day, if the liquid layer is not more than 1 cm thick, this reaches the surface of the medium and throws up dry white mycelium, usually in isolated foci, particularly around the sides of the vessel Usually by the 4th or 5th day the whole surface of the medium is covered by dry mycelium, which about 24 hours after it appears begins to turn bluish green The colour is first seen at the centre of each focus of white mycelium, but it rapidly spreads outwards and by the 6th or 7th day the growth consists of a continuous, compact, often corrugated, dark greenish-blue felt whose upper surface cannot be wetted by water The under surface is of course freely wetted, and is brownish yellow and slimy If on the 1st or 2nd day the culture-vessel is disturbed or rocked the gauze-like growth tends to conglomerate into ropes and balls, and those parts of the surface of the medium which do not lie over these will only be covered several days later by secondary growths, for this reason once they have been sown the vessels should not be touched for some days Droplets, usually but not invariably yellow, may or may not appear on the surface of the mould, but the mould is never wetted by them As incubation is prolonged the colour of the mycelium becomes more faded and grey

The changes in the appearance of the mould are accompanied by changes in the pH of the medium, which starts between 6 and 7 and may fall as low as 3 by the 3rd day—usually as the dry mycelium is forming It then rises, reaching 5 as the greenish-blue colour appears At this stage a faint yellow colour can be seen in the medium and traces of penicillin can be detected The pH continues to rise and the titre of penicillin and the yellow colour both increase rapidly As the mycelium becomes more faded the pH rises more and more slowly, it seldom exceeds 8 8 Penicillin production is usually at its maximum at about pH 7, and may stay almost constant for some days or may fall again rapidly The pH is perhaps the most useful gauge of the state of the growth, apart from an assay for antibacterial activity The rate of development may be greater or less than that described, depending largely on the depth of the medium A systematic study of the factors influencing penicillin-production was begun, but it could not be completed owing to the very numerous and often interdependent variables, and to the fact that the assay-method then in use could only detect large differences of titre The following conclusions, however, could be drawn

1 Penicillin production seems to take place over a wide range of oxygen tension (The mould will not grow anaerobically)

2 The mould grows satisfactorily at 24° C At lower temperatures growth is delayed and as harvesting of the medium is carried out in the incubator higher temperatures have not been studied, 24° C being about the upper limit of comfort Fleming (1929) in his original description stated that the mould would not grow at 37° C and this has been confirmed

3 Crude attempts to change the pH of the medium or to maintain it at a constant value have not resulted in a noticeable increase in yield of penicillin, nor has the incorporation of ten times the normal amount of phosphate buffer

4 The medium should not have a depth greater than 1 5–2 cm If deeper than 2 cm diffusion is visibly inadequate, for two distinct layers can be seen in it, the upper being yellow, the lower colourless

5 When the medium is fit to be harvested it can be drawn off from under the mycelium and replaced with fresh medium in which more penicillin will form in about half the time required for the initial production The medium can be changed several times in this way, with one batch it was changed 14 times

6 The mould must be grown and the medium harvested and replaced under strictly sterile conditions since penicillin is destroyed by certain bacteria (Abraham and Chain 1940)

7 The addition of yeast extract (Gladstone and Fildes 1940) accelerates the growth of the mould but does not affect the yield of penicillin In large scale growth we have always used yeast extract, in starting a batch the medium is made up to contain 10% of it, but the medium used for replacement contains only 2½% The accelerating effect of the yeast is not impaired by prolonged autoclaving at a high temperature Marmite or malt extract have no effect on the rate of growth or on the yield of penicillin

8 The yield is not greatly affected either by doubling or by halving the strength of the medium

9 If the sodium nitrate is replaced by ammonium lactate the pH of the medium falls to below 3 and development almost ceases On adjusting the pH to about 6 5 development proceeds and the medium ultimately becomes very alkaline Very little penicillin is produced

10 The sodium nitrate can be wholly or partly replaced by peptone or by peptic and tryptic digests of muscle, and sucrose or maltose can be used in place of glucose, without materially altering the yield of penicillin

11 Occasionally a batch produces little or no penicillin Although this can generally be traced to bacterial contamination in some instances contamination could not be proved, and the suspicion arose that penicillin production might be a variable and easily disturbed function of the mould To test this, pure line cultures were made from single cells of two batches, one of which had given a yield of penicillin and the other none Five pure lines of the former and nine of the latter were inoculated in triplicate into bottles of medium and the penicillin titre was followed No difference could be detected between any of the lines, proving that the mould had not lost its power to form penicillin The possibility that the failure had been due to contamination by another mould was investigated, but no evidence of this could be found

Method of Assay

The serial dilution method used by Fleming (1929), which measures the lowest concentration of penicillin that will prevent growth of the test-organism in broth, is laborious and can only be applied to sterile material This at once reduces its usefulness for chemical investigations, for the material to be tested would have to be sterilised by filtration and it seems that under some conditions penicillin may be partially adsorbed on Seitz filter pads The method of estimation finally adopted is

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* With personal grants from the Medical Research Council
† Philip Walker Student ‡ Nuffield Research Student

In the first the marrow might be widely and diffusely infiltrated and in a high proportion of cases an accurate diagnosis could be made by sternal puncture In cancer and Hodgkin's disease the deposits were usually more focal and the chance of obtaining specific cells much less, but Professor Davidson gave illustrations of cases in which sternal puncture had enabled the diagnosis to be made by the finding of carcinoma cells In such cases it was his practice not only to make smears of fresh marrow but also to allow the material obtained from the marrow cavity to clot and then to fix it and cut paraffin sections

EPIDEMIC JUVENILE DELINQUENCY

DISCUSSION at a council meeting in a county town has revealed an epidemic of wanton and wilful damage to property which provokes speculation A great part of the damage was done by children and the prevalence of similar offences in other places has been ascribed, perhaps correctly to the war-time disturbance of those ordinary restraints parental or other, that should normally keep juvenile behaviour in reasonable harmony with social demands In the discussion it was demanded that somebody should be 'made an example of" and complaints were made of slackness on the part of police and public in not taking action to that end The inertia complained of was blameworthy, but the assumption that making a punitive example would do more than satisfy moral indignation was a triumph of hope over experience There were possibilities in old-fashioned methods certainty of detection and swiftness of punishment at the hands of an incensed adult might in their results justify Bernard Shaw's advice never to strike a child except in anger but the law's deliberation is too slow to set up a conditioned reflex and in a juvenile community asocial enough to give prestige value to wilful damage any punishment the law can inflict is likely only to increase that prestige For better or worse we have now reached a state of things in which severity of punishment is not relied upon for the solution of a miniature social problem like this But the study of individual cases of delinquency has taught us a great deal about its causes in general and about the play of forces that may result in group delinquency, child-guidance clinics exist for the investigation and handling of the difficult or delinquent individual, and perhaps the day is not far off when social workers will be called upon to investigate and report on troublesome geographical groups

WHERE ARE THE SANE, JUST AND PEACEFUL?

THE League of Nations was a good idea but it failed in practice because there was no genuine international public opinion to support it Prof G W Keeton, director of the New Commonwealth Institute, founded in 1934 to "discover and disseminate knowledge of the true foundations of a sane, just and peaceful world order," believes that the achievement of the world commonwealth is an educational process, and this is the basis of his "Case for an International University" (Watts & Co 6*d*) "Any competent lawyer," he writes, "can draft a constitution for the world in a few hours The whole problem is how to make the behaviour of human beings in the international sphere conform to the standards which have been accepted within an individual State" The trouble is that people still think nationally instead of internationally, whereas cooperatively the human race could be, even materially, much better off than it is today An international university would teach the lesson of history—that wars will survive so long as national interests override the common welfare So far so good but the professor says, first, that before this war is over the British Commonwealth, the United States and Latin America will be so firmly knit together that no-one will be able to separate them, secondly that there is something unpleasant in the German national character which must be eradicated, and thirdly, that Russia has always been substantially outside the orbit of Western civilization, which is attached to values that differ widely from those which unite the Russian masses In 1941 these statements seem like an echo of 1917 If the world is to be divided into the three camps he indicates, will there really be no more war for Professor Keeton's international undergraduates?

PAYING CASUALTIES

THE Government provides free medical and treatment for civilian and service casualties but casualty chooses to make his own arrangement treatment as a private patient he must pay for his treatment Accompanying the Minister of H circular (No 2438) explaining this principle there declaration which the patient (or a relative) will be to sign when deciding to seek private treatment T casualty formally relinquishes his claim for free tre ment and agrees to pay for the treatment which he arranging for himself These paying patients fall out the Emergency Hospital Scheme—and the beds th occupy should not be included in the hospital's retur to the Minister Officers however are not accommodated in the general casualty wards and civilian casualties may also for medical reasons sometimes need separate rooms To provide for these special casualties a hospital may have to set aside some of its paying beds and the e bed will then come under the E H S , and their occupants may not be charged any fees When these beds are no being used for casualties they may be used as priv beds for the civilian sick, as distinct from casualties just as beds in the ordinary wards are at the disposal of the hospital in case of need Whole-time (class I) E M S officers are not entitled to fees from private patients but class II and class III officers may engage in private practice provided the Minister has first call on their services

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INSTRUMENT STERILISING FLUID —Messrs Boots have carried out bacteriological and metallurgical tests with their product Kramsol, a solution containing formaldehyde, amyl-meta-cresol and borax intended for sterilising surgical instruments Cultures of *Staphylococcus aureus* and *Streptococcus fæcalis* mixed with blood were killed by a 1 in 3 solution in 5 minutes Various instruments immersed in a suspension of spore-bearers, staphylococci and streptococci were rendered sterile by immersion in undiluted kramsol for 4 hours and a suspension of spore bearers was killed in 6–24 hours Steel and plated instruments lost no weight by corrosion during immersion for some weeks except where the plating was faulty o brass and steel came in contact, rubber and bristle were undamaged

PHENYTOIN SODIUM (B D H)—Under this name British Drug Houses have issued their preparation of sodium diphenylhydantoinate for the treatment of epilepsy The drug is in tablet form, each tablet containing 0 1 gramme

Messrs ALLEN & HANBURY have lately added Euval erol D to their Euvalerol elixirs It contains an extr of valerian prepared from the fresh root with chlor hydrate gr 20 and strontium bromide gr 10 in each fluid ounce, and can be prescribed as a sedative o hypnotic It is available in 4-oz and 8-oz bottles

Births, Marriages and Deaths

BIRTHS

FIFE —On May 3 at Roorkee, U P India, the wife of Capt J Gordon Fife, I M S —a daughter

GUERRIER —On July 28 at Horton Kirby, Kent, Dr Shel Guerrier the wife of Dr Hugh Guerrier—a son

HICK —On Aug 1 at Windsor, the wife of Captain Alan Hi R A M C —a son

MACGREGOR —On July 30 in Edinburgh the wife of Surge Commander William M Macgregor, R N V R —a daughter

STEVEN —On July 28 at Bath to Dr Muriel Steven, the wife Major G D Steven, R A M C —a son

THOMPSON —On July 28 at Chippenham, the wife of Major Geoffr Thompson, R A M C —a daughter

MARRIAGES

BALDRY—KERRIDGE —On July 29 at Farnham Charles Vic Nelson Baldry, M R C S to Dorothy V Kerridge

ISAAC—SHARP —On July 30 at Battersea Paul William Isaac, M surgeon lieutenant R N V R to Enid Estella Sharp

REES—TEESDALE —On July 26, at Epsom, John Emlyn Re M R C S , to Lyn Teesdale

DEATHS

CLARK —On July 20, Alfred Joseph Clark, M C M D Cam F R C P , F R S

HAYDON —On Aug 1, at Bideford, Frank Haydon, L R C aged 79

WILLIAMS —On July 28 at Farnham Surrey Charles Edw Williams M B Camb , lieut colonel I M S retd aged 7 e fluid is drawn out by tube G   Suction and pressure are ntrolled by the single trigger H of the "pistol"   A fresh ibe G is used for every batch of four vessels and F is changed ter every two batches   Both tubes are sterilised wrapped in aper and only one end of the tube is unwrapped when being fitted into the pistol, the tubes are unsheathed from the remaining paper wrappings immediately before use   From the pistol the harvested medium passes to the inverted bottle K, in which it is filtered through a silk bag   The filtered liquid than passes to the collecting bottle L which is changed after every batch of four vessels   When not in use the pistol is hung on the pin M   For refilling the vessels are tilted at about 45°   A fitting on each wooden slab enables the vessel to be wedged in this position (as shown by vessel N in fig 3), so that both hands are free to manipulate plug and bottle of medium

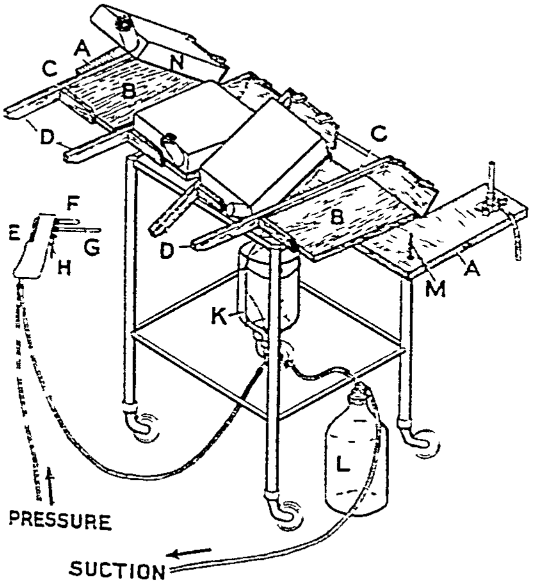

FIG 3—Changing trolley

EXTRACTION FROM CULTURE MEDIUM

Principle—Penicillin can be extracted by ether, amyl acetate and certain other organic solvents from an aqueous solution whose pH has been adjusted to 2   From the organic solvent the penicillin may be re-extracted by shaking with phosphate-buffer or with water the pH of which is kept at 6–7   Penicillin is quickly destroyed at pH 2 at room temperature, so the first extraction must be carried out rapidly or at a low temperature   Once it has been extracted into solvent the penicillin is stable for some days

Laboratory large-scale extraction—It was planned to produce a weekly output of about 500 litres of the crude medium containing penicillin, the working up of which by hand would obviously have been out of the question   A continuous, countercurrent extraction apparatus was devised, an adequate description of which cannot be included in this paper   The crude penicillin, having been filtered and acidified, is passed through special jets which break it up into droplets of uniform size   These are allowed to fall through a column of amyl acetate, to which the penicillin is given up   The crude solution is acidified immediately before entering the jets, so that the aqueous solution is at a pH at which penicillin is unstable for only a few seconds before it has been extracted   As the crude solution is passed through a cooling coil surrounded by circulating tap-water probably very little destruction of penicillin takes place   Phosphoric acid is used for the acidification as the pK of the first stage of dissociation is approximately 2, it will therefore act as its own buffer and inaccurate correlation of the rates of flow of the acid and of the crude solution will not cause big fluctuations in the final pH   Fresh solvent is continuously fed in to the bottom of the column, from the top of which an equal amount of penicillin-rich solvent is collected for further working up   This solvent has 1/10–1/5 of the volume of the crude solution from which the penicillin has been extracted, and many impurities, notably those forming emulsions have been eliminated

The preparation used in the mouse-experiments previously reported (Chain et al 1940) was purified only to the stage of recovering the sodium salt from a first ether extract (ether was at that time used instead of amyl acetate)   Though strongly active this product probably had less than 1/10 of the activity of our present "therapeutic penicillin"   A batch intended for injection into man was first tested on mice   A mouse was little affected by the intravenous injection of 10 mg in 0 3 c cm of water but became very ill after receiving 20 mg, though it recovered in about 1½ hours   When given intravenously to an afebrile human subject 100 mg of the same material caused a shivering attack with a rise of temperature in about an hour   Trial on other subjects gave the same result and left no doubt that a pyrogenic substance was present in the preparation   The pyrogen can be assayed by the method used by Lees and Levvy (1940) in which five rabbits of uniform weight (a little over 2 kg) are kept at a constant temperature (67° F)   On the day of the test they are deprived of food and the rectal temperature is taken hourly   Twenty milligrammes of the substance used in the mouse experiments dissolved in 1 c cm of distilled water, injected intravenously, gave a rise of about 2° F in each rabbit, but "middle fraction" from the adsorption column (see below) had no pyrogenic effect   The further purification here described secures a pyrogen-free product suitable for intravenous use

Further purification—Batches of 3 litres each of the penicillin-containing solvent as delivered from the extraction-apparatus are extracted with five successive amounts of 300 ml each of water, using baryta to adjust the pH to 6 5–7   The five watery solutions have already been used for former extractions and are used in order of decreasing concentration of penicillin   The first extract, which is the strongest, is set aside for further working up, but a sixth extract is made with fresh water so that the number of watery solutions remains the same   The amyl acetate which may still contain a small amount of penicillin, is recirculated in the extraction apparatus   In the course of time pigment accumulates in the solvent and is periodically removed by extraction with 1% sodium hydroxide followed by thorough washing

The strongest aqueous extract is partially decolorised by shaking with about 8% of animal charcoal and filtering   The charcoal residue is washed twice, the washings being put through the extraction apparatus or used in other ways   The partially decolorised solution is cooled acidified and extracted into successive amounts of ether   the strongest of the ether extracts is then passed through an adsorption column of Brockmann alumina   The spent ether contains solid matter but no penicillin, which remains behind in the column   Though the chromatograms vary, four main zones can be seen, their boundaries overlapping to some extent   These are, starting from the top

1 A dark brownish orange layer whose depth is inversely proportional to the amount of charcoal used for the decolorisation and which may be absent altogether   This layer contains some penicillin

2 A light yellow layer containing most of the penicillin but none of the pyrogen

3 An orange layer which contains some penicillin and some or all of the pyrogen

4 A brownish or reddish violet layer which contains practically no penicillin   The violet pigment disappears on exposure to light

The column is washed by passing successive small amounts of ether through it and is then divided into the four fractions, of which the fourth is discarded   The others are eluted with successive amounts of M/15 phosphate buffer (pH 7 2), from the strongest of which the penicillin is again extracted into ether, while the more dilute solutions are used for the elutions of the next batch   Finally the penicillin is extracted back into water using sodium hydroxide to adjust the pH   (As the solution is not buffered the greatest care must be taken in adding the alkali, for penicillin is rapidly destroyed in alkaline solution)

The "non-pyrogenic" or "therapeutic" fraction, which contains perhaps 80% of the penicillin put through the column, is extracted into pyrogen-free water, all glassware having been rinsed with the latter   It is a deep reddish-orange fluid, yellow in dilute solution with a faint but characteristic smell and a bitter taste as follows Ordinary nutrient agar plates are seeded with the test organism—*Staphylococcus aureus* has been used in this work—by allowing a broth culture of the organism to flow over the surface of the agar and draining off the excess broth The plates are then dried for an hour in the incubator at 37° C in a special rack which supports the lid of the Petri dish half an inch above the lower part When dry the seeded plates are removed from the incubator and can be kept in the refrigerator for one or two days Cylinders made from short lengths of glass tubing, the dimensions of which will be seen from the inset of fig 1, are placed on the agar The lower edge of the cylinder is carefully ground level and has an internal bevel so that the thin edge tends to sink into the agar and make a water- and bacteria-tight seal Vitreous porcelain cylinders of the same size and shape, coloured at the non-bevelled end to facilitate their orientation, have also proved satisfactory The cylinders are filled with the fluid to be tested, and the plates, resting on a block of wood, are incubated for 12–16 hours at 37° C (If placed directly on the warm incubator shelves moisture may condense on the lids of the Petri dishes and drop on the agar, thus obscuring the results) By the end of incubation most of the fluid in the cylinders has disappeared and each cylinder is surrounded by a circular zone where no bacterial growth has occurred The diameter of the zone depends on the concentration of the penicillin, the type of relation being shown in fig 1

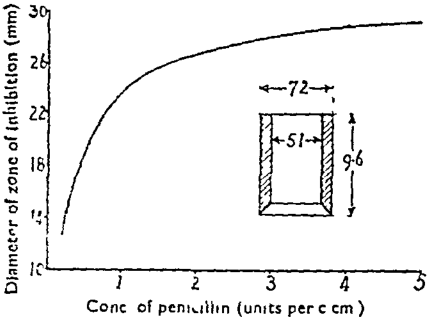

FIG 1—Relation between assay value and concentration of penicillin in solution being tested *Inset*—Median vertical section through assay cylinder, dimensions in mm

The possibilities and limitations of this method of assay have not yet been fully worked out but the following points may be noted

1 The diameter in mm of the zone of inhibition (which we have called the "assay value") is only slightly smaller (1–2 mm) when the cylinder is half filled than when it is fully filled

2 The assay value is unaffected by the pH of the fluid being tested, provided it is not strongly buffered and lies within the range pH 5–8 5

3 No inhibition is produced by a saturated aqueous solution of ether or by water containing free droplets of chloroform

4 Diffusion of penicillin seems to be practically complete in 2–3 hours, and assay values after 14 hours of incubation are only very slightly smaller (0 5–1 mm) than after a further 8 hours at 37° C

5 Provided the plate is not jarred the fluid cannot escape from the cylinders, and even if the fluid is not sterile the contaminating bacteria are confined to the inside of the cylinder

6 The assay value is not affected by the thickness of the agar provided it is between the limits of 3 to 5 mm

7 The assay value varies slightly with different batches of plates and with the density of bacterial population at the beginning of incubation For this reason uneven seeding of the plates must be avoided

8 Sometimes the clear zone of inhibition is surrounded by a halo of partial inhibition, which varies from a faint ghost to almost complete inhibition So far no explanation for, or means of controlling, this phenomenon has been discovered

9 When the antibacterial activity of blood is to be assayed plasma or serum must be used, since red cells tend to form a layer immediately on top of the agar which seriously impedes the diffusion of penicillin and leads to low values

High accuracy cannot be claimed for this method of assay, but if it is done in triplicate (preferably on three different plates), and if the unknown solution is diluted so as to give an assay value of not more than 25 mm (before the curve has flattened out), the error is probably not greater than ± 25% and may be considerably less We have no evidence that under suitable conditions this method is inferior in accuracy to the serial dilution method and it is certainly many times quicker In addition, less than 0 25 ml of fluid is required for each test

Unit of antibacterial activity —When day-to day comparisons have to be made rather large errors may be introduced for the reasons mentioned in note 7 above, unless a standard is set up on each plate to which all the assay values may be related We have been using as such a standard a partially purified solution of purely arbitrary strength It is made up in dilute phosphate buffer, is saturated with ether and is kept in the ice chest It gives an average assay value of 24 mm and as far as can be seen its activity has not altered during the three months in which it has been in use We have adopted as the arbitrary unit (until penicillin is obtained chemically pure) *that amount of penicillin which when dissolved in 1 c cm of water gives the same inhibition as this standard* The material used in the human therapeutic tests usually *contained 40–50 of these units per mg*

Large-scale Production of Penicillin

Culture vessels and sowing —After many types of containers had been tried a satisfactory ceramic vessel was eventually designed,[1] the shape and dimensions of which can be seen in fig 2 The vessels are glazed only on the inside, this both reduces the cost and renders them easier to handle and less liable to slide when stacked one on top of the other The inset of fig 2 shows a convenient way in which they can be stacked for autoclaving, sowing and so on, each plug is well separated from the other but no bench space is lost, and should the medium boil in the autoclave the plugs are unlikely to be wetted One litre of medium fills the vessels to a depth of about 1 7 cm When a batch of vessels is first set up the medium (containing 10% of yeast-extract) is sterilised in the vessels, which are then inoculated with a few drops of a spore-suspension[2] and incubated at 24° C Apart from an occasional test the vessels are not touched until the medium is ready to be harvested

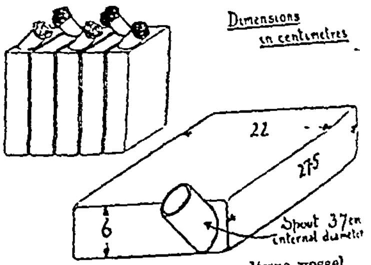

FIG 2—Earthenware culture vessel *Above* —Vessels stacked for autoclaving

Arrangements for withdrawing and replacing medium —The penicillin-containing fluid is withdrawn from the vessels and replaced with fresh culture-medium To carry out these two processes without introducing contamination is far from easy and needs thorough bacteriological precautions In order to hasten the production of penicillin we attempted to reduce these precautions to a minimum, and at first obtained satisfactory results, but lately contamination has become so frequent that substantial modifications have had to be introduced, some of which are still on trial and therefore cannot usefully be described

The withdrawal of culture-medium is done by suction, the medium being replaced with sterile air In the original method the refilling was done by simple pouring, but safer methods (not yet finally determined) have now been introduced, and precautions at all stages are being tightened up

The operations can conveniently be carried out on the "changing trolley" (fig 3), made by replacing the top of a small all metal table by a wooden plank A, to which are hinged the four wooden slabs B on which the vessels are placed The raised rim C is prolonged into a handle D, by which the slab (and the vessel on it) can be tilted forward The slab is not hinged square with the edge of A, but at a slight angle to it, so that on depressing the handle D the fluid in the vessel drains not merely to the front edge but to the corner nearest the spout The medium is drawn off by suction with the help of a special pistol shaped holder E, carrying two detachable sterilised tubes F and G F is plugged with cotton-wool before sterilising, and through it is blown into the vessel a current of (sterile) air at a somewhat faster rate than matise themselves to inhibitory concentrations of cillin, and if so whether they do so by producing the cillin-destroying enzyme penicillinase which has been onstrated in certain saprophytes and commensals aham and Chain 1940), a strain of *Staph aureus* was vated for some months in broth in the presence of easing quantities of comparatively crude penicillin n after a few daily subcultures there was evidence of eased resistance, the coccus showing growth in at t twice the previously inhibitory concentration In out nine weeks, with subcultivation every few days, approximately 30-fold adaptation was reached, and er a further 7 weeks the microbe was able to multiply in oncentration of penicillin a thousand times greater than at which inhibited the parent strain in a parallel test—ile the parent was almost completely inhibited by 1 in million, the adapted strain grew quite well in 1 in 1000

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[1] Made for us by J Macintyre and Co, who also made the porcelain assay cylinders

[2] The strains of penicillium used in this work have been obtained from Prof Alexander Fleming of St Mary's Hospital London

Contrary to expectation the main general effect of laptation to penicillin was a reduction both in the elocity of growth in ordinary media and of enzyme ctivities The adapted strain was repeatedly tested in omparison with the parent strain on a range of fermentble substances, and it was found that although after 0–14 days of incubation both strains showed the same eactions (acid in glucose, lactose, maltose, mannitol and accharose, no change in dulcitol , liquefaction of gelatin, acid and coagulation in milk) the adapted strain showed a considerable lag, taking 2 days instead of 1 to acidify lactose, 4 days instead of 1 for mannitol, and 11 days instead of 1 to coagulate milk. A reduction of growth-velocity in nutrient broth and agar was also seen and hæmolysis on blood-agar plates was much delayed Both strains however gave a good coagulase reaction

Both about the middle (9 weeks) and at the end of the experiment just described attempts were made to discover in the adapted strain a penicillin-destroying enzyme not present in the parent coccus The adapted staphylococcus was grown on nutrient agar in two batches of 20 rolled Winchester bottles, in order to obtain a sufficient amount of bacterial bodies to be used in the bacterial crushing mill of Booth and Green (1938) The rather poor growth was washed off after 3 days, centrifuged, washed with water, centrifuged again and made up with water to a pasty consistency It was then ground in the crushing mill for 3 hours After the crushing, which was very satisfactory, the extract was centrifuged at 7000 revs for 20 minutes 1 c cm of the extract was then incubated with 1 mg of penicillin for 5 hours at 37° C There was no sign of loss of penicillin-activity after this period There is therefore no evidence that the adaptation of the staphylococcus to penicillin depends on the production of a penicillin-destroying enzyme by the organism

In an earlier experiment, aimed at discovering whether the resistance of insusceptible bacteria is due to their power of destroying penicillin, *Bact coli* was cultivated in broth containing the strongest non-inhibitory concentration of penicillin for this organism (1/400) Incubation overnight produced a rich growth of the bacterium The culture was then Seitz-filtered and the filtrate was tested in serial dilutions on *Staph aureus* Complete inhibition occurred up to 1/500,000 which was the full titre for the batch of penicillin used It could therefore be concluded that the growth of *Bact coli* had not caused any destruction of the penicillin

EFFECTS OF SERUM, BLOOD, PUS, TISSUE AUTOLYSATES AND PEPTONES

In view of the inhibitory effect known to be exerted by products of tissue autolysis on the action of the sulphonamides, it was natural to look for a similar effect on penicillin None, however, was found

Serum —To exclude any such action on the part of blood-serum, penicillin was diluted with human serum and tested on the staphylococcus by a modification of the assay method described above

The modified method consists of making shake cultures of the microbe, in this case *Staph aureus*, in narrow glucose agar tubes, solidifying and then running 0 6 c cm of the penicillin or other solution on the top After 24 hours' incubation at 37° C a zone of clear medium is seen below the fluid and above the zone of growth A small inoculum of cocci gave the best results—e g one standard drop of a 24-hours broth culture diluted 1/100 added to 5 c cm of melted glucose agar

When penicillin diluted 1/10 000 with serum was thus tested in comparison with the same dilution in distilled water both in duplicate, the depth of the zones of inhibition measured in millimetres

In serum	(1) 23–24	(2) 22
In water	(1) 22	(2) 23–24

Serum, therefore, in no way interferes with the action and diffusibility of the active substance

Whole blood —One or two experiments were done in slide-cells to test the action of whole blood and of these it is enough to say that in one such experiment a penicillin dilution of 1 in 2 million in human blood inhibited a dose of *Strep pyogenes* which, when plated, produced about 50,000 colonies per c cm of inoculated blood Other experiments agreed in demonstrating that there was no antagonistic effect

Pus —With regard to pus, the following experiment failed to show any antagonistic action

Some very thick pus from a *Staph aureus* abscess was incubated for 3 days at 37° C to "thin" it, after centrifugalisation the supernatant fluid was diluted 1 in 2 with nutrient broth and filtered through a Seitz filter To 2 25 c cm of this 50% pus-broth 0 25 c cm of a solution of 0 2 mg of (impure) penicillin per c cm was added, making a penicillin dilution of 1 50,000 As a control 2 5 c cm of the pus broth without penicillin was taken Both these were inoculated with one standard drop (0 04 c cm) of a 1 1000 dilution of a 24 hour broth culture of *Staph aureus* The number of cocci in the inoculum was probably of the order of 40,000 After 24 hours' incubation at 37° C the control tube showed a rich growth of staphylococcus and the penicillin tube showed none Platings from this tube and cultivation of 20, 5 and 1 drops in 5 c cm broth tubes showed no growth, indicating that at least most of the cocci had been killed, since the amount of penicillin carried over with 1 drop (1 in over 6 million) was insufficient to inhibit growth

A similar experiment was done with a sample of urine loaded with pus due to infection with *Bact coli* and *Strep fæcalis* In this case several dilutions of penicillin were made in the filtered 50% pus-broth—1/50,000, 1/150 000, 1/450,000 and 1/1 350,000 The inoculum of *Staph aureus* was the same as in the previous experiment After due incubation the two stronger concentrations of penicillin showed complete inhibition of staphylococcal growth, while in the two weaker ones as in the control of 50% pus-broth alone, full growth occurred Since the full antistaphylococcal titre of the sample of penicillin used was only about 1/250,000 the experiment gives no evidence of any antagonism by the pus

Tissue autolysates —The possibly antagonistic effect of tissue autolysates was tested as follows

A liver taken aseptically from a rat was minced in the homogeniser of Potter and Elvehjem (1936) and allowed to autolyse in the homogeniser tube for 4 weeks at 37° C. There was no gas evolution during the incubation and no putrefactive smell at the end of the experiment The liver suspension had partly liquified and when it was centrifuged about 2 c cm of a clear, dark yellow solution were obtained This fluid (0 9 c cm) was incubated at 37° C for 16 hours with a penicillin solution in water (0 1 c cm) containing 1 mg of the crude material A control solution of 1 mg of penicillin in 1 c cm of water was incubated for the same period When after incubation the solutions were assayed, it was found that the liver autolysate had not destroyed the bacteriostatic power of the penicillin.

Peptones are equally devoid of antagonistic action ; in fact in the usual assay method agar containing peptone is used as the culture medium for the staphylococcus

CHARACTERISTICS OF ANTIBACTERIAL ACTION

The bacteriostatic power of penicillin against streptococci and staphylococci is as great as, or greater than, that of the most powerful antiseptics known, such as the heavy metal compounds, the acridine derivatives &c. Yet penicillin is no antiseptic ; it exerts no direct immediate bactericidal action. This was borne out by two observations First, the oxygen uptake of staphylococcal suspensions was not inhibited to any measurable degree by the addition of penicillin to a final concentration of 1/1000 over a period of 3 hours Secondly, after incubation at 37° C for 24 hours a staphylococcal suspension in broth containing 1/1000 penicillin grew

Yields and losses —The crude medium, as harvested, usually contains between 1 and 2 units per c cm and the dried purified therapeutic material has an activity of 40–50 units per mg A hundred litres of the medium, containing, say 150 000 units, gives a yield of about 1 g of therapeutic material containing, say, 45,000 units, so that about a third of the penicillin present is actually extracted in a form suitable for intravenous injection There are many stages in the preparation at which the loss may occur and as far as possible these have been checked individually, but owing to overlapping of different batches during the working up (e g , in serial extraction) and insufficient accuracy in the assay method, it has been difficult to analyse the losses accurately. No big loss, however, occurs at any one stage

Storage and dispensing —The strong aqueous extract saturated with ether is quite stable It is stored either as it is in the refrigerator, or is dried by the lyophilic method and kept in a desiccator, as the voluminous yellow powder is hygroscopic A solution of the sodium salt of penicillin in water kept in the ice-chest for 3 months did not lose any activity The barium salt kept dry at room temperature in the desiccator retained its activity for at least 8 months In dispensing the material for intravenous injection it is assumed that the ether-containing solution is sterile, but most of the ether must be removed by suction before use The ether-free solution is stored in the ice-chest in measured doses

BACTERIOSTATIC ACTION OF PENICILLIN

Using purified penicillin more than a thousand times stronger than the crude material employed by Fleming in 1929, we have been able to obtain more precise information about the bacterial species he examined and also about a number of other important pathogenic organisms

Method —To 4 5 c cm quantities of fluid culture medium 0 5 c cm of graded dilutions of a strong, filtered penicillin solution were added Each tube of a series was then inoculated with a standard drop (0 04 c cm) of a 24 hours fluid culture of the microbe under investigation In the case of the robust organisms, such as *Staphylococcus* or *Bacterium,* the culture was usually diluted 1 in 100 or 1 in 1000 before use All tests were done in duplicate Complete inhibition was shown by the absence of turbidity after 24 hours at 37° C , the control culture showing good growth , partial inhibition was recorded when the growth was clearly less than that of the control

Results —In table I the bacterial species are arranged as far as possible in their order of sensitivity, but both the order and the actual figures must be taken with reserv As the work progressed the penicillin was becoming purer and stronger, so that some of the figures obtained in the early stages may well be too low Moreover, there has sometimes seemed to be some loss in potency of penicillin solutions when sterilised by Seitz filtration, a point that needs further investigation Finally, only a few species have been tested in more than one medium and with a minimal inoculum, both of which factors influence the observed titre

Certain species, such as pneumococci and *Strep viridans*, cannot be put in a single place in the order of sensitiveness because they show great strain differences and it will be noted that in the pneumococci these cut across the type distinctions Maclean, Rogers and Fleming (1939) have recorded a similar variability in sensitiveness to sulphapyridine of individual strains of the pneumococcal types It seems likely that an experimental comparison of the effects of the two inhibitory agents on a wide range of pneumococci would throw light on their modes of action

The testing of *Myc tuberculosis* was not easy Owing to the imperfect stability of penicillin at 37° C and the slow growth of the microbe it was inadmissible merely to incorporate the inhibitor with the medium at the outset The microbe was therefore cultivated in glycerol-broth, and penicillin solution was added every 2 days in such a way as to maintain at least the stated concentration for 14 days The microbe grew well in all dilutions A similar experiment had already been done by Dr R L Vollum, with similar results

It should be noted that complete, or even partial inhibition of macroscopic growth after 24 hours of incubation is not the most delicate criterion of antibacterial action. In somewhat higher dilutions the growth is retarded, and, as has already been recorded (Gardner 1940), a microscopical effect on the bacteria, indicative of defective fission, may often be seen far beyond the macroscopically inhibitory dilution We cannot say whether the virulence of the bacteria is thereby reduced , but if it is the effect may be of therapeutic importance For example, in one experiment with *S typhi* (*Bact typhosum*), whereas the last visible, partial inhibition was at 1/10,000, an elongation of the cells was microscopically detectable up to 1/60,000, a concentration which may be a therapeutic possibility

Adaptation of Staph aureus to penicillin —In order to find an answer to the questions whether bacteria will

TABLE I—DILUTIONS OF PENICILLIN AT WHICH VARIOUS INHIBITORY EFFECTS HAVE BEEN OBSERVED

Bacterial species	No of strains	Dilutions at which inhibitory effects were observed			Notes
		Complete	Partial	None	
N gonorrhϾ	6	2,000,000	>2,000,000	>2,000,000	—
N meningitidis	1	1,000,000	2,000,000	4,000,000	—
Staph aureus	4	1,000,000	2,000,000	4,000,000	—
Strep pyogenes	3	1,000,000	2,000,000	4,000,000	—
B anthracis	1	1,000,000	2,000,000	4,000,000	—
A bovis (hominis)	1	1,000,000	2,000,000	4,000,000	Deep glucose agar shake cultures
Cl tetani †	1	1,000,000			Limit not observed
Cl welchii	1	1,500,000			
Cl septique	1	300,000	1,500,000	7,500,000	Fivefold dilutions used
Cl œdematiens	1	300,000		1,500,000	Inoculum of spores
Strep viridans‡	2	625,000		3,125,000	But see other strains below
Pneumococcus ‡	6	250,000	500,000	1,000,000	3 of type 1 , one each of types 3, 7 and 9 Some complete at 500,000
C diphtheriæ (mitis)	1	125,000		625,000	Intermediate dilutions not tested
,, *(gravis)*	1	32,000	64,000	128,000	—
S gartneri	1	20,000	40,000	80,000	—
S typhi	2	10,000	30,000	90,000	Higher of two results shown
Pneumococcus ‡	3	9000		27,000	Types 1, 7 and 19
Anaerobic streptococcus ‡	1	4000	8000	16,000	—
Proteus	3	4000	32 000	60,000	Best strain shown Others 4 times less sensitive
Strep viridans ‡	1	4000	8000	16,000	—
Past pestis	2	1000	100 000	500 000	Partial inhibition between 1000 and 100,000
S typhimurium	1	< 1000	8000	16,000	Partial 1000–8000
S paratyphi B	2	< 1000	5000	10 000	Partial 1000–5000
Bact dysenteriæ Shiga	1	2000	4000	8000	—
Br abortus	1	2000	4000	8000	—
Br melitensis	1	< 1000	2500	10 000	—
Anaerobic streptococcus	1	< 4000	< 4000	4000	—
V choleræ	1	< 1000	1000	2000	—
Bact coli	5	< 1000	< 1000	1000	One strain showed complete 200, none 400
Bact friedländeri	1	< 1000	< 1000	1000	—
Ps pyocyanea	2	< 1000	< 1000	1000	—
Myco tuberculosis	1	< 1000	< 1000	1000	See text
L icterohæmorrhagiæ	1	< 3600	< 3600	3600	Lower dilutions not tested

* Another strain was only inhibited up to 32 000 † Grown in Lemco broth In beef broth complete inhibition only reached 100,000
‡ In *Pneumococcus, Strep viridans* and anaerobic streptococci different strains appear at different levels in the table

tissue and the embryonic age The method determines erial dilutions the drug concentration *just sufficient* ippress all outgrowth of fibroblasts from fragments ie ventricle of the 10 day old chick embryo when bated for 24 hours at 37° C The drug is dissolved in an l mixture of fowl plasma and Ringer and the dilutions ared from it form a series each member of which is nine- hs of the strength of its predecessor At each level of the e five or ten explants are grown in separate chambers each aining 0 1 ml of the medium Inspection of the culture es after 24 hours makes it possible to determine the thres- l concentration of the drug for total growth inhibition ler the conditions described

Results—The threshold concentration for penicillin der the conditions described is 1/800 Growth at half s concentration (1/1600) is feeble and is arrested after e 24th hour of incubation The cells are small and cuolated and undergo retrogressive changes leading to igmentation and death if contact with the drug is olonged. The lowest concentration so far examined by is method, 1/6000, is still detectably toxic to fibroblasts

If the culture series used in the experiment described bove is maintained for 48 hours and each explant is then ashed for an hour in Ringer and re-cultivated into a ormal medium it is possible to give an estimate of the inimum lethal concentration of the drug—i.e , the oncentration which the standard explants are just able to withstand for 48 hours without undergoing changes which are irreversible by further cultivation For penicillin this concentration is well below 1/1200 and rather higher than 1/1600 Explants re-cultivated after 48 hours' subjection to 1/1600 penicillin are in fact capable of resuming normal growth and activity after 3 or 4 additional passages in a normal medium

It is interesting to contrast these two figures for penicillin—1/800 and 1/1600 for threshold point and minimum lethal concentration respectively—with those for proflavine under similar conditions The corresponding values are 1/120,000 and 1/250,000

The action of penicillin on epithelial tissues (10-day chick embryo intestine and lung, late rat-embryo kidney) can be investigated by growing small fragments on the surfaces of a series of coagula containing falling concentrations of the drug Epithelial tissues proliferate freely for 48 hours on the surface of coagula containing 1/2000 penicillin. Degenerate growth with maceration of epithelial sheets can be obtained in concentrations as high as 1/1000 Penicillin has no power of differential inhibition for fibroblasts and epithelia , from a specified source fibroblasts and epithelia either grow together under the influence of the drug, or neither grow

TABLE II—EFFECTS OF PENICILLIN ON HEN S BLOOD MACROPHAGES IN VITRO DURING A SINGLE GROWTH CYCLE

Final conc. of penicillin	Latent period	Mitotic activity	Cell morphology	Remarks
1/10,000 1/2000	Slightly prolonged	Strong	Unchanged	No after effects
1/500	Prolonged	Reduced	Little change slight tendency to round off	Quick recovery in fresh serum
1/200		Complete inhibition (time of observation 42 hours)	Cells grow smaller rounding off clumping	Morphological recovery in fresh serum is rapid mitotic activity also resumed but not immediately

The tests described were designed only to indicate the order of magnitude of the concentrations of penicillin which are significantly toxic to various types of living cell. These concentrations may be said to be not less than 1/5000 Significance can be attached to tissue-culture experiments with drugs only when they exert no secondary action, such as reaction with serum, high osmotic pressure or surface activity, which obscure an estimate of their specific toxicity Penicillin exerts no appreciable secondary reaction of this kind The preparations used in the experiments were therapeutic penicillin " and also an even more highly purified sample

Their actions in vitro proved to be identical and the figures quoted may be taken to refer to either

Dr F Jacoby, of the physiology department Birmingham University, has tested the effects of penicillin on hen's macrophages cultivated in vitro His results are presented in table II and fig 4

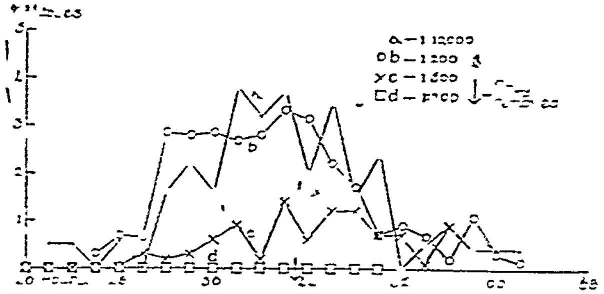


FIG 4—Effect of penicillin in various dilutions on hen s macrophages cultivated in vitro

It thus appears that penicillin is even less toxic to hen s macrophages than to fibroblasts and epithelium.

LOCAL APPLICATION

The effect of local application has been tried on the relatively delicate tissue of the central nervous system In two rabbits under Nembutal anæsthesia a needle was inserted into the cisternal space and when a few drops of clear cerebrospinal fluid had escaped a burette containing 1/1000 penicillin in normal saline was attached to the needle A slow intravenous injection of 11 c cm of 25% sodium chloride was then made, which caused rapid absorption of cerebrospinal fluid into the blood-stream with consequent indrawing of fluid from the burette into the cisternal space Weed (1922) showed that under the influence of this powerful osmosis the fluid introduced passed along the perivascular sheaths and even into the perineuronal spaces of the cerebral cortex In this instance 2 c cm of penicillin solution was drawn into the space in 23 minutes in one rabbit and 1 5 c cm. in 32 minutes in the other After the cisternal needle had been withdrawn and the anæsthetic had passed off neither rabbit showed the slightest functional disturbance Both were killed 6 days later, when histological examination of the brain by Dr Dorothy Russell showed that there was no meningitis or damage to the marginal glia and that the choroid plexuses and ependyma were everywhere normal Dr Russell investigated the effect on the brain in 3 other rabbits by methods she had previously described (Russell and Falconer 1941) and again no lesions attributable to the penicillin were discovered These results, taken in conjunction with those on leucocytes and on tissue cultures, strongly support the view that local application of quite strong solutions should prove innocuous to tissue cells

ABSORPTION AND EXCRETION OF PENICILLIN

It has previously been shown that penicillin is absorbed after subcutaneous injection in mice, and from the intestine in rats and that antibacterial activity appears in the urine secreted subsequently. Absorption and excretion have now been further investigated on rabbits, cats and man, always using the sodium salt of penicillin. The blood and urine levels have been compared after intravenous, subcutaneous and intestinal administration, often on the same animal As the substance loses activity quickly in acid solution it was not considered worth while at this stage to study the results of direct administration into the stomach except for two tentative observations on normal subjects and in Case 6 Absorption from the gastro-intestinal tract has mainly been studied by the direct introduction of penicillin into the duodenum through a small fistula In man a duodenal tube was used. The standard dose in all experiments on the rabbit and cat was 400 units Unless otherwise stated the urine was collected by catheter the bladder was washed out and the washings were added to the urine for assay When necessary a short ether anæsthetic was given to facilitate the injection and the collection of the urine

In rabbits—Rabbit 1 received two doses by each route After duodenal administration no detectable activity was large numbers of colonies on subculture The only trace of lethal effect that we observed was an acceleration of the death-rate of small numbers of streptococci in Ringer's fluid containing 1/50,000 penicillin, compared with the rate in pure Ringer's fluid

In its mode of action, penicillin resembles the bacteriostatic sulphonamide drugs, but on comparing their actions one becomes aware of the following important and significant differences

1 The bacteriostatic power of penicillin against streptococci and staphylococci is much greater than that of the sulphonamides, even when these substances are tested under optimal conditions (small inoculum, peptone-free media &c) Saturated watery solutions of sulphapyridine and sulphathiazole show no complete inhibition on an assay plate, whereas penicillin at 1/500 000 gives an appreciable clear zone

2 The action of penicillin on streptococci and staphylococci unlike that of the sulphonamides, is only influenced to a minor extent by the number of bacteria to be inhibited Even when the culture media are inoculated with several millions of staphylococci or streptococci per c cm of medium, the multiplication of these organisms may be completely inhibited by penicillin in a concentration as low as 1/1,000,000 With smaller inocula the inhibition will occur in even higher dilutions This property of penicillin is of great importance for the treatment of heavily infected wounds, on which the sulphonamide drugs seem to have but little beneficial action

3 The bacteriostatic power of penicillin against streptococci and staphylococci is not antagonised to any appreciable degree by hydrolytic protein breakdown products or products of tissue autolysis or pus, substances which annul completely the bacteriostatic action in vitro of the sulphonamide drugs This is again of great importance in the treatment of suppurating wounds and makes possible the successful treatment of infections in which abundant production of pus takes place

EFFECT OF PENICILLIN ON CELLS

LEUCOCYTES

There is little doubt that substances which are not bactericidal but only bacteriostatic depend to a considerable extent for their curative properties on the activity of the leucocytes which deal with the organisms while the latter are prevented from multiplying In tests on leucocytes "therapeutic penicillin" has been compared with some other bacteriostatic substances which are at present engaging attention both for general and local use

Technique —We are indebted to Dr C G Paine of The Jessop Hospital, Sheffield, for sending details of his technique for examining leucocytes His solution has been used, though his method for examining the leucocytes has been altered

Human leucocytes survive well in a solution containing urea 0 3 g , glucose 1 g , $NaHCO_3$ 1 61 g , NaH_2PO_4 H_2O 0 425 g , NaCl 4 95 g , KCl 0 625 g , $MgCl_2$ 0 24 g , $CaCl_2$ 0 31 g in a litre of distilled water, with 10% of serum added at the time of the experiment The test substance was dissolved in the salt solution and diluted serially, each dilution allowing for the addition of the serum The control consisted of salt solution and serum The leucocytes came from the same donor as the serum A drop of blood was allowed to clot on a coverslip and the coverslip incubated at 37° C for about 30 min in a Petri dish containing moist blotting paper The clot was picked off, the red blood cells washed away with warm salt solution and the coverslip reversed over a well-slide containing the test solution Many leucocytes stuck to the coverslip and could be examined under all powers of the microscope The slide and microscope stage were kept at 36°–37° C in a thermostatically controlled box

Penicillin, the flavines and the sulphonamides were obtained as dry powders and dissolved in the salt solution Hypochlorite was obtained as the concentrated stock solution of "electrolytic sodium hypochlorite " dispensed for clinical use, which contains 1% NaOCl Dilutions are given in terms of this solution, not of hypochlorite Albucid was provided as a 30% solution of the sodium salt (solvent not stated), this solution was diluted as usual, and the concentrations given are those of the pure substance To make concentrated solutions of sulphapyridine and sulphathiazole the substance was shaken with the salt solution for 2 or 3 hours at 37° C and the excess centrifuged off

The pH of the salt solution and of the final checked with brom-thymol-blue Albucid was found slightly acid even when buffered by serum Each was tested more than once , the results were always sistent A wide range of dilutions was used in most ments but only the significant results are reported

Results —Penicillin at a dilution of 1/100 leucocytes immediately , at 1/250 more than 50% for 4 hours—the longest time for which they watched—but the survivors were sluggish towards th The preparation at 1/500 was indistinguishable control

Proflavine (2 8-diaminoacridine hemisulphate) killed immediately at 1/20,000 and within 2 hours at 1/50,0 In 1/100,000 the leucocytes were sluggish after 2 hours but in 1/200,000 they were active for at least the same length of time In the lower dilutions the leucocytes became stained yellow immediately, at 1/100,000 by th end of an hour and at 1/200,000 by the end of 2 hours Leucocytes were killed immediately by 2 7 diamino-acridine monohydrochloride at 1/10,000 but at 1/20,00 they were active Albert, Francis, Garrod and Linnell (1938) found leucocytes fully active in both these substances at 1/8400 after 1 hour They mixed whole blood with the test solution on the coverslip and lowered a slide over to form a thin film Though the method was not the same as ours it is difficult to see where the discrepancy arises, unless the large amount of serum present inactivated the proflavine

The stock solution of hypochlorite diluted to 1/100 killed immediately After 2 hours the leucocytes in 1/500 were motile but sluggish compared with 1/1000 which equalled the control in activity

In 1/500 sulphanilamide after 2 hours, leucocytes showed only feeble pseudopod formation and no movement At 1/1000 their activity was less than the control a though all were alive Albucid gave a similar result a 1/500 and 1/1000 , 1/100 killed immediately and a 1/10,000 the leucocytes remained active for 2½ hours, th longest time for which they were watched Sulpha pyridine and sulphathiazole, being relatively insoluble were used in saturated solution At dilutions of 1/1 and 1/2 of the saturated solution neither inhibite immediately After 2 hours some of the leucocyte were dead in both the sulphapyridine preparations, the sulphathiazole preparations all were alive thoug some were inactive at 1/1 1

It appears therefore that the flavines are more toxi than was previously supposed (this finding is in agreement with recent tissue-culture studies) and are no suitable for repeated use in high concentration on suc lesions as burns The hypochlorite solution, which being used in 5% strength for washing burns, is al very lethal to leucocytes, though it may possibly b inactivated at the surface of the tissue The sulphonamides in general have little inhibitory effect on th leucocytes, which strengthens their value for loc application Penicillin is less toxic to leucocytes in vit than the sulphonamides and should make an admirabl local application for infected tissue surfaces Its gre solubility might lead to rapid removal by the blood stream, but only further tests can show whether this is Continuous irrigation or repeated application would any case overcome the difficulty

The fact that penicillin at 1/500 does not appear t embarrass leucocyte activity in vitro contrasts with i complete bacteriostatic effect on staphylococci an streptococci in vitro at dilutions of at least 1/1,000,00 It is clear that leucocytes will remain completely active any concentration of penicillin likely to be reached aft intravenous injection

TISSUE CULTURE

Complementary to these experiments on leucocytes a those done on tissue cultures by Dr P B Medawar of t Zoology Department, who has kindly allowed us include his results here

Technique —The method employed had been devised for t determination of the inhibitory power of drugs (Medaw 1940, Jacoby, Medawar and Willmer 1941) It takes advanta of the fact that tissues freshly explanted into a medium blood plasma diluted with saline when incubated at body te perature show a characteristic power of resistance to grow inhibition which depends on the source and cellular composit ivated in the body, it was clear that frequent doses ld be necessary At the outset it was felt that rmittent administration might give the best diffu- into the tissues as a result of the repeated tem- ry raising of the concentration of the drug in the d above the highest level that could be attained by tinuous administration of the same total quantity facilitate frequent injections a cannula was tied or a dle inserted into a vein and connected to a slow drip paratus (Marriott and Kekwick 1940) which delivered teady flow of 500 c cm of 1 05% sodium citrate 0 8% sodium chloride in 24 hr Each dose of icillin was dissolved in about 2 c cm of non-pyrogenic ter, injected into the rubber tubing of the drip paratus and flushed in with a little of the citrate-saline lution This method is admittedly inconvenient owing the well-known difficulties of maintaining an intravenous infusion for ore than two or ree days, but it as thought that the therapeutic fficacy of penicillin could be stablished by this method other ways of giving the drug could then be explored

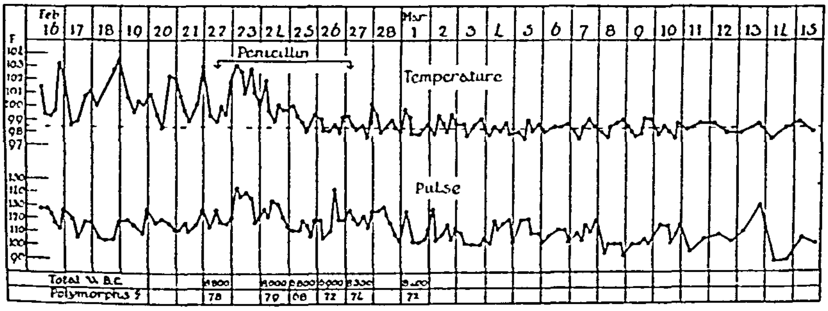


FIG 5—Chart and white cell counts in case 2

In case 5 the effect of running in a continuous supply of penicillin solution was tried At first a dilution of 1/1000 in normal saline was used, and as this was found to be no more harmful to the vein than normal saline alone the concentration was raised to 1/500 The vein tolerated this concentration well Higher concentrations have not been tried It is probable that this method of intravenous medication is the simplest and most useful

Administration by the mouth is complicated by the fact that penicillin is rapidly destroyed by acid and therefore serious losses are to be expected in the stomach It may however be possible to carry the penicillin through the stomach by raising the pH of the gastric contents Experiments with such substances as magnesium trisilicate or the recently described aluminium phosphate (Fauley et al 1941) are clearly required In case 6 a strongly antibacterial concentration of the drug was maintained in the urine for 7 days by giving it by mouth together with sodium bicarbonate In this case however we were aiming at keeping up an antibacterial concentration only in the urinary tract, and not in the blood The possibility of administration in capsules which will pass through the stomach has not been overlooked, but some tentative experiments with salol-coated capsules were discouraging Moreover, Cook and LaWall (1936) stated that only 10% of such capsules passed through the stomach satisfactorily ; we have therefore not thought it worth while to entrust a scarce and valuable substance to such unreliable vehicles Rectal administration was tried in one subject, but very little active substance was recovered in the urine and it was afterwards found that fæces inactivate penicillin, probably by bacterial action It was thought undesirable to introduce very strong solutions of penicillin subcutaneously or intramuscularly owing to uncertainty about the local effects More dilute solutions, for example 1 in 500, which have been shown to be innocuous to leucocytes, would involve the use of excessive amounts of fluid In case 1 the injection of 100 mg in 2 c cm of water intramuscularly caused some tenderness, though this cleared up quickly

INTRAVENOUS ADMINISTRATION IN STAPHYLOCOCCAL AND STREPTOCOCCAL INFECTIONS

CASE 1 —Policeman, aged 43 Admitted Oct 12, 1940 Suppuration of face, scalp and both orbits, starting from a sore at the corner of the mouth a month earlier Primary infection *Staph aureus*, secondary, *Strep pyogenes* Sulphapyridine 19 g given from Dec 12 to 19, no improvement, drug rash Jan 19 incision of multiple abscesses on face and scalp Osteomyelitis of right humeral head, proved by X rays, showed on Jan 31, 1941, after 3 weeks of pain, a resulting arm abscess, incised, gave *Staph aureus* pus General infection of left eye, cornea perforated Jan 21 Eye eviscerated Feb 3 Blood-transfusion 2 pints Feb 9 Fever intermittent all this time, 98°–101° F Very ill and emaciated, tongue heavily furred Feb 11 right eye bulging and conjunctival chemosis, orbit incised, pus gave *Staph aureus* and *Strep pyogenes*

Feb 12 all incisions suppurating, in scalp, face, both orbits, and right arm Lungs involved, with purulent expectoration containing both the pyogenic cocci Hb 36%, red cells 1,800,000 Blood culture sterile Penicillin 200 mg given intravenously, then 100 mg 3 hourly, intravenous except for two intramuscular doses Slight rigor after first dose, otherwise no reactions Striking improvement after total of 800 mg penicillin in 24 hours Cessation of scalp-discharge, diminution of right eye suppuration and conjunctivitis Arm discharge seemed less Blood tests just before injections for penicillin 7 30 A M faint trace, 11 30 A M none Feb 13 penicillin 100 mg intravenously 4-hourly Feb 14 condition much the same Blood-transfusion 3 pints Penicillin 100 mg 2 hourly by injection into transfusion tube, total 1 g in 24 hours Feb 15 1 pint blood transfused and penicillin 100 mg given 3-hourly, most of which had been recovered from previous urine Feb 16 much improvement, Hb 74% Right eye almost normal Some discharge still from left eye and arm Shortage of penicillin interrupted treatment from noon to 6 P M, then drip infusion of sodium chloride and citrate, penicillin 200 mg being injected into drip, then 100 mg 3 hourly, no reaction Feb 17 penicillin supply exhausted Total administered, 4 4 g in 5 days Patient felt much improved, no fever, appetite much better, resolution of infections in face, scalp and right orbit, still coughing, sputum contained *Strep pyogenes* and *N catarrhalis* Left orbit and right humerus still suppurating Blood urea 30 mg per 100 c cm, urine normal Condition stationary for 10 days, then deteriorated, especially lungs March 15 died Autopsy showed typical picture of staphylococcal pyæmia with multiple abscesses

White counts—Feb 12, 20,000 (polymorphs 88%), 13th, 19,000, 14th, 11,200, 15th, 16,800, 18th, 8400, 19th, 7600, 20th, 7600 (polymorphs 84%), 25th, 8000, March 5, 11,000 (polymorphs 88%)

The attempt to treat this forlorn case was chiefly valuable in that it showed that penicillin could be given over a period of 5 days without significant toxic effect There was a fall in the total white count, but both granular and agranular cells were equally affected Apart from this effect, which has not been seen in subsequent cases, and the slight rigor due to a pyrogenic impurity in the penicillin, no contra-indications to its use were observed Assessment of its effect was difficult since a blood-transfusion was given at the same time, and later experience showed that the dose of penicillin employed was too small, and the period of administration too short None the less the superficial sepsis responded well, and did not relapse after the penicillin was stopped

CASE 2 —Boy, aged 15 Admitted Dec 29, 1940, for slipped right femoral epiphysis Open reduction with insertion of Smith-Petersen pin Jan 24, 1941 Severe post-operative hæmorrhage followed by infection of wound with hæmolytic streptococcus (group A, type 13), positive blood-culture Wound reopened and patient given Proseptasine from Jan 25 to Feb 3, two courses of 5 g sulphapyridine soluble intravenously in 30 hours on Feb 7th and 9th, and two blood-transfusions, but swinging temperature (99°–103° F) continued (see fig 5)

Feb 22 looked ill, pale and wasted, two granulating areas over right hip, discharging sero-pus Hb 62%, red cells 3,000,000, white cells 8800 (polymorphs 78%) Blood-culture sterile Blood urea 32 mg per 100 c cm Urine normal At noon 100 mg penicillin injected into intravenous drip infusion of citrate saline, repeated 2 hourly for 8 hours After interval of 3 hours given another 100 mg producing observed in the blood after ½ hr (one experiment) or 1 hr (2 experiments), 14% and 5 3% respectively of the active substance were excreted in the urine Similarly after intravenous injection there was no activity in the blood at 1 hr 20 min and 1 hr 50 min in one experiment, or at ½ hr, 1 hr and 1½ hr in another, the yields in the urine were greater, however, being 44% and 24% Subcutaneous injection produced a trace of activity in the blood in the two samples taken—at ½ hr in one experiment and 1 hr in the other, 40% and 14 5% were recovered from the urine

One rabbit after a duodenal injection showed no activity in the blood at 1 and 2 hr and none in the urine, but since the urine was passed naturally in a metabolism cage during the night activity may have been lost by bacterial action, in spite of the presence of chloroform

In a third rabbit the standard dose was injected into the intestine in an acute experiment On the supposition that penicillin might be absorbed from the gut and then inactivated in the liver, samples were drawn from the portal vein and the vena cava at 10, and later 20, minute intervals for 1½ hr In no blood sample could activity be detected, but the urine at the end of 2½ hr contained 12% of the injected penicillin Bile from a cannula in the common duct (the cystic duct having been tied) consistently showed a trace of activity up to 2½ hr, the end of the experiment In a fourth rabbit, also under nembutal, the penicillin was injected intravenously and blood taken from the ear vein There was no activity in 4 half hourly blood samples and a trace in the first bile sample only, but the urine samples were active A repetition of this experiment on a fifth rabbit gave essentially the same result The rabbit, therefore, gives a good return in the urine after intravenous injection (20–50%), but a return of less than 20% after administration into the intestine Penicillin can almost never be detected in the blood at ½ hr by whatever route it is given There is some excretion in the bile Because activity cannot be shown in the blood these experiments do nothing to decide whether the greater "loss" which appears to be associated with intestinal administration occurs before, during or after absorption

Cats—Cat 1 was equivalent to rabbit 1, receiving the standard dose of penicillin by three routes After intestinal injection a trace was detectable in the blood at ½ and 1 hr (2 experiments) and at 1½ hr (1 experiment) and the urine contained 60% of the active substance (1 experiment) Similarly after intravenous and subcutaneous injection activity was observed in the blood at ½ and 1½ hr, and the urine showed 33% and 52% of the activity respectively In the blood of cat 2, taken half hourly for 3 hours after a duodenal injection, activity could not be detected in the first sample but was seen in all the rest, rising to the end of the second hour and then falling again

Cat 3 was anæsthetised with nembutal and the bile duct cannulated, the cystic duct having been tied Penicillin was injected into the duodenum Activity could just be detected in the portal and vena caval blood in samples taken every 15 min for ¾ hr The bile had no activity in the first 15 min, a little in the second and a high titre was maintained during the second hour, at the end of which the experiment was stopped A similar experiment on cat 4 showed activity in the systemic blood for 3¼ hr, with a trace until 4½ hr, and in the bile and urine throughout the 6 hours of the experiment Excretion in the bile reached its peak at 3½ hr and then fell away, in the urine it showed a small decline after the 4th hour

Cat 5 was decerebrated and prepared in a similar way and here the injection was given intravenously Penicillin was excreted by the liver for the whole 6 hours of the experiment (only a trace in the last hour) but since little bile was secreted the total amount was small Half of the active substance was excreted in the urine in the 6 hours In cat 6, anæsthetised with chloralose, the investigation was extended by producing a flow of saliva and tears with pilocarpine, and of pancreatic juice with secretin Penicillin given intravenously was excreted in high concentration in the bile for the first three hours, slightly in the fourth hour and not at all in the fifth It was secreted also in the saliva, but here the concentration was lower than in blood collected at the same time It was present in the blood for 1½ hr Tears and pancreatic juice showed no activity Half of the penicillin was excreted in the urine in the 5 hours of the experiment Cat 7 prepared in the same way gave a similar result, but the experiment was stopped at the end of an hour to collect the cerebrospinal fluid, which proved to be inactive Controls showed that bile alone was inactive on the assay plate and that pancreatic juice did not destroy penicillin activity

These experiments show that the cat differs from the in maintaining an antibacterial concentration of the blood for at least 1½ hr after subcutaneous or injection and at least 3 hr after intestinal administration differs also—and the two facts are no doubt connec excreting in the urine about 50% of the penicillin, even injected by the intestinal route

In man—Subcutaneous injection has not been used in but from preliminary observations and from the treated a good deal has been learned about the blood level urinary excretion reached after both intravenous and in testinal administration Trials with ascending doses of "therapeutic penicillin" showed that a single intravenous injection of 200 mg could be given without ill effect This is the largest single dose which has been given The inhibitory power of the blood was followed in one subject at frequent intervals from 5 min until 2 hr 5 min after the injection The high initial value gradually fell to a just discernible trace in the last sample Urinary excretion was still occurring at 6 hr 15 min and there was a trace of inhibition in a sample of urine collected from the 6th to the 14th hour After a dose of 100 mg inhibition was just detectable in the blood at the end of an hour After repeated 100 mg doses a trace of inhibition was similarly found in the blood one hour after an injection (case 3, who had had five initial hourly doses of 200 mg) The best experiments from the point of view of estimating the urinary recovery after intravenous injection were those on patients No 3 and 5, whose urine output was accurately measured during the course of treatment In case 3 about 50% of the total active substance injected was present in the urine and 30% was actually recovered in purified form (the rest being lost in the re-extraction process) In case 5, in which penicillin dissolved in saline was administered continuously, 68% of the antibacterial activity reappeared in the urine and 54% was recovered for further use

For duodenal administration a tube was passed and its location in the duodenum confirmed by fluoroscopy Sixteen thousand units (about 400 mg of the solid material) dissolved in 25 c cm of water were injected down the tube, followed by 60 c cm more of water After this injection the blood inhibited bacterial growth for 3 hr and urinary excretion continued for 6 hr The inhibitory level in the blood was steadier and persisted for a longer time than after intravenous injection The dose was twice the maximum so far given intravenously and it is quite possible that larger doses will always be needed for treatment by the intestinal route Nevertheless the indications are that this is a possible way of administering penicillin

A contrast thus emerges between the behaviour towards penicillin of the rabbit on the one hand and of the cat and man on the other After giving 400 units intravenously to a rabbit no activity could be detected in the blood at the end of half an hour, while in the cat after the same dose the blood was active for at least 1½ hr Similarly after duodenal introduction, there was no activity in the blood and little in the urine of the rabbit, whereas in the cat activity could be detected in the blood and there was a considerable excretion in the urine Man appears to be in both instances more like the cat than the rabbit Apparently the rabbit has a more effective mechanism for the inactivation of penicillin than either of the other two species

By whatever route penicillin is administered not all the active substance appears in the urine Where this "loss" occurs is not yet clear Incubation for 3 hr at 37° C of penicillin with blood and with slices of liver, kidney, spleen, brain, muscle, lymph-gland, lung and intestine from the rabbit caused no detectable destruction Nor was there any diminution of activity after incubation with rabbit-bile, though there was perhaps a slight fall with cat-bile It is impossible to say whether the material recovered from the urine has been changed in any way during its passage through the body It has a high antibacterial titre and has been used again for injection into patients without ill effect It is of interest to note that material partially purified but containing pyrogen is freed from that impurity by passage through the body

THERAPEUTIC TRIAL OF PENICILLIN

Methods of administration—To avoid the uncertainties of intestinal absorption, the first cases were treated by penicillin given intravenously Since it is rapidly eliminated by the kidneys and probably partially cyte , this tissue is well vascularised and there is some blastic proliferation, greatest in the periphery In the mous region some of the veins contain organising throm- , the left carotid and vertebral arteries show organising mbi which do not appear to be infected, but as there are e breaks in the media and elastica of the walls of both these els it must be presumed that they are the late results of an te arteritis probably of bacterial origin The other organs w no significant change

he autopsy showed that the infection in the cavernous as, orbits and in the lungs had been almost entirely rcome, and that healing processes were well advanced ath was due to the ruptured mycotic aneurysm and to a recrudescence of the infection Before this scular accident the patient had been restored from a mbund condition to apparent convalescence No ic effects from the penicillin were noticed

CASE 5 —Boy, aged 14½ Admitted May 6, 1941 Staphylo ccal septicæmia with early osteomyelitis of left femur llowing fall 6 days before Blood culture grew *Staph reus* Given sulphathiazole 64 g between May 7 and 12 ith little benefit May 17 left hip joint explored, no bscess found, joint contained little sterile fluid with polymorphs in it May 22 blood and albumin in urine Embolic ustular rash Extension by skin traction applied to left leg ay 30 X rays showed osteitis left femoral neck with nvolvement of joint and destruction of alveolar walls Dis charge from wound grew *Staph aureus*

June 6 still extremely ill, with temperature rising to 101° F , much pain in left hip and thigh , urine still contained blood and albumin Hb 74% , red cells 4,290,000 Blood urea 23 mg per 100 c cm Intravenous infusion of 500 mg

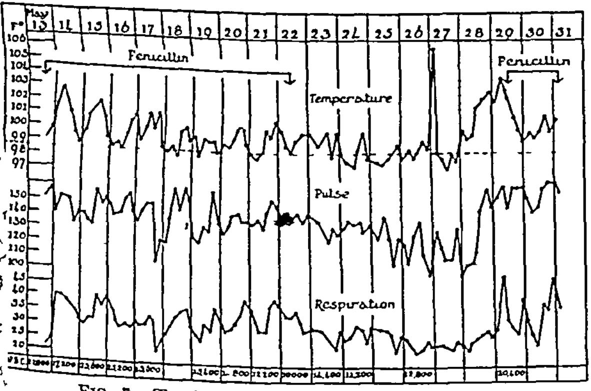


FIG 7—Chart and white cell counts in case 4

enicillin in 540 c cm normal saline started at 45 c cm an our Infusion continued for 90 hours during which time 5 g penicillin given No reaction Daily tests showed onstant bacteriostatic concentration in blood General ondition much improved By June 10 had lost almost all ain and tenderness Cannula transferred to another vein nd infusion continued at half rate with double strength of enicillin (1 g in 500 c cm) On June 11 and 13 sudden rises f temperature without apparent cause , traced to use of enicillin prepared 2 months previously and containing yrogenic impurity June 14 cannula transferred to nother vein and penicillin recovered from boy's urine used o further rise of temperature Steady improvement On une 16 continuous administration stopped Given another 0 mg 3 hourly for 12 doses and then 4 hourly for 12 more oses Stopped June 20 , total dosage 17 2 g Urine then ormal Blood urea 29 mg per 100 c cm June 21 Hb 64%, ed cells 3,750,000 June 23 radiograms of hip showed no xtension of destructive process , boy felt quite well July 9 xtension removed July 11 had been afebrile for 3½ weeks o pain in leg Passive hip movements, flexion 80° Other ovements almost full

White counts —June 6, 9400 , 8th, 9700 , 9th, 11,800 , 0th, 13,800 , 11th, 11,400 , 12th, 7500 , 13th, 9400 , 14th 6,400 , 15th, 10,400 , 16th, 8400 , 17th, 7600 , 18th, 6200 , 0th, 11,800 , 21st, 12,400

This was a case of staphylococcal septicæmia, localising the left hip-joint, which had been uninfluenced by rge doses of sulphathiazole in the early stages When nicillin was started the boy was extremely ill, in great ain, and had an active nephritis. As in the other cases ere was a striking improvement in the general condition during the period of therapy All pain in the region of the left hip disappeared, the nephritis cleared and his temperature fell to normal At the time of writing it had remained normal for 3½ weeks and there was good function in the hip

ORAL ADMINISTRATION IN URINARY INFECTION

CASE 6 —Boy, aged 6 months Admitted April 8, 1941 Ill a fortnight with diarrhœa and vomiting, melæna and general ised convulsions Dehydrated, few petechiæ in skin Red cells 1,560,000 , white cells 28,000 (atypical lymphocytes 50%, many primitive cells) Blood urea 60 mg per 100 c cm Urine contained albumin and pus , grew *Staph aureus* and *Bact coli* Sulphapyridine tried but stopped because polymorphs fell to 400 per c mm After fortnight's course of ammonium mandelate urinary infection remained June 3 urine grew pure *Staph aureus* Hb 62% , red cells 3,200,000, white cells 5000 (polymorphs 600) Blood urea 66 mg per 100 c cm June 5 attempts to pass duodenal tube failed, so penicillin given by mouth , 20 mg with 2 g sodium bicarbonate given hourly for 3 doses and then 3 hourly No toxic signs Vomited once, which was not unusual All specimens of urine contained strongly bacteriostatic concentration of penicillin June 7 urine contained no pus cells , penicillin reduced to 10 mg 3 hourly Vomited 2–3 times daily Steady general improvement June 9 polymorphs up to 1000 per c mm , blood-urea 46 mg per 100 c cm June 12 penicillin stopped June 17 blood urea 39 mg per 100 c cm , Hb 70% , white cells 4000 (polymorphs 440) June 19 urine sterile though still containing heavy cloud of albumin and occasional casts and red cells General condition continued to improve June 26 urine still free from *Staph aureus*

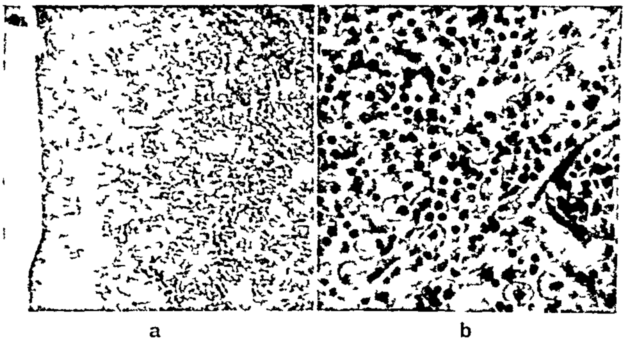


FIG 8—(*a*) Low power view (×40) Wall of " abscess cavity in the lung showing the œdema fluid rich in lipoid containing histiocytes and the wall made up of a vascular granulation tissue in which there are large numbers of lipoid containing histiocytes, lymphocytes and plasma cells and only a few neutrophil leucocytes At the extreme right of the section the normal lung parenchyma can be seen

(*b*) High power view (× 180) Granulation tissue from the left orbital region showing the characteristics of the cellular reaction a mixture of lipoid containing histiocytes lymphocytes and plasma-cells, and a moderate fibroblastic proliferation

This case demonstrates that it is possible to maintain a bacteriostatic concentration of penicillin in the urine with small doses given by mouth Although the diagnosis was obscure there was no doubt of the urinary infection by *Staph aureus*, and the administration of penicillin overcame this infection

LOCAL APPLICATION TO THE EYE

In case 4 a 1/5000 solution of penicillin in normal saline was applied to a corneal ulcer It caused no irritation and the condition of the eye improved The local application of penicillin in other eye infections was therefore tried on patients in the Oxford Eye Hospital

CASE 7 —Married woman, aged 32 Had a corneal ulcer of the left eye 4 months previously, treated successively by instillation of Collosal Argentum, boracic lotion and mercurochrome, and ultraviolet light In 6 weeks ulcer resolved completely, but 3 weeks later similar ulcer developed in right eye Treated on similar lines, for 6 weeks as outpatient and then for fortnight as inpatient, but without improvement May 26, 1941 infiltrating ulcers in inner and upper quadrants of limbus, gross injection of conjunctiva and considerable corneal opacity Swab from eye grew *Staph aureus*

May 30 treatment with penicillin begun , 1/5000 solution in normal saline dropped into eye hourly by day and 2 hourly slight rigor, then 75 mg 3 hourly Feb 24 general condition better, discharge less By 9 P M had received 1 4 g penicillin, dose raised to 100 mg 3 hourly, using a purer penicillin, no reaction Feb 27 penicillin stopped, total 3 4 g Three blood examinations just before injections had only once shown slight antibacterial activity Feeling better, local condition unchanged Blood urea 29 mg per 100 c cm Urine normal White cells 8300 (polymorphs 74%) Feb 25 blood transfusion 2 pints Feb 26 plaster spica applied After 3–4 weeks of almost normal temperature pin removed Again developed swinging temperature as before penicillin treatment

Several different samples of penicillin were used in this case The first five doses had been recovered from the urine of case 1 and caused no reaction The next samples, which caused some shivers, were "third fraction," and although they had been passed through an absorption column again they still contained the pyrogen The later doses were "second fraction" (our present "therapeutic penicillin") Here there was a local infection by a hæmolytic streptococcus which had proved resistant to sulphanilamide in large doses and to moderate doses of sulphapyridine Penicillin therapy was followed by a great improvement in the patient's general condition, in spite of the dose being insufficient to maintain a detectable concentration of penicillin continuously in the blood

CASE 3—Labourer, aged 48, of poor physique Admitted May 2, 1941 Carbuncle 4 in across over left scapula for 5 days, now discharging, pus grew pure *Staph aureus* History of chronic bronchial and nasal catarrh for 4 months Left axillary adenitis Hb 106%, red cells 4,970,000, white cells 23,000 Blood urea 31 mg per 100 c cm Urine normal

May 3 penicillin 200 mg hourly for 5 doses by injection into intravenous drip as in case 2, then 100 mg hourly No reaction Antibacterial activity continuously maintained in blood May 7 carbuncle much improved, slight tenderness, only slight serous discharge Dose dropped to 100 mg 2 hourly and then 3 hourly May 10 carbuncle almost completely resolved, no axillary adenitis, bronchial and nasal catarrh cleared, 100 mg penicillin 6 hourly for 4 doses and then stopped May 11 Hb 90%, red cells 4,970,000, white cells 15,800 Blood urea 37 mg per 100 c cm Urine normal Temperature, which had been swinging 97°–101° F now normal and remained so Local treatment had consisted in kaolin poultice for first 48 hours, sodium sulphate dressing for next 48 hours and subsequently dry dressing May 15 discharged Seen as outpatient on May 19 when skin over carbuncle almost normal and patient generally well, right ulnar neuritis which cleared quickly, possibly from splinting arm for several days during infusion

White counts—May 3, 23,000 (polymorphs 87%), 5th, 16,400, 6th, 15,200, 7th, 7800, 8th, 9200, 9th, 19,200, 10th, 19,800, 11th, 15,800

In this case the supply of penicillin was sufficient to enable a detectable concentration of penicillin to be maintained continuously in the blood for the first 4 days There was no toxic effect from the larger dosage The result was a rapid resolution of the carbuncle without its discharging and without scar formation In addition the chronic nasal and bronchial catarrh were cleared The white count was temporarily depressed on the 4th and 5th days but rose again in spite of the drug being continued

CASE 4—Boy, aged 4½ years Admitted May 13, 1941 Cavernous sinus thrombosis from septic spots on left eyelid and face following measles 5 weeks before Had received 30 g sulphapyridine in 14 days before admission Semicomatose, incontinent of urine and fæces Gross œdema both eyelids (fig 6a), especially left, with bilateral proptosis Complete bilateral external ophthalmoplegia and 2 dioptres of papillœdema, neck rigidity, bilateral Kernig's sign and extensor plantar responses Moist sounds both bases Liver edge two finger breadths below costal margin Blood culture sterile Lumbar puncture gave a faintly yellow cloudy fluid under high pressure (see table III)

May 13 intravenous infusion of citrate saline at 10 c cm an hour (rate maintained with slight variations for 9 days, the site of infusion being changed 4 times) Penicillin injected into infusion, dose 100 mg hourly for two doses, 50 mg hourly for four doses, then 25 mg hourly May 14 pus from incision made into left eyelid and swab from nose grew *Staph aureus* X ray opacity of left antrum, ethmoid clear May 15 blood sample an hour after dose of penicillin showed no antibacterial activity, dose increased to 50 mg hourly General improvement May 16 obviously better swelling of eyelids largely subsided Blood taken just before injection showed trace of antibacterial activity May 19 general and local condition vastly improved (see fig 6b), bilateral 6th nerve palsy and extensor plantar responses remained Penicillin reduced to 50 mg 3 hourly Small corneal ulcer left eye treated with penicillin 1 in 5000, which caused no discomfort May 22 improvement maintained, patient talking and playing with toys *Chest clinically* normal Slight pyrexia still thought to be due to pyrogen in penicillin or to reaction from thromboses in veins used for injections (see fig 7) Penicillin stopped May 26 progress good Temperature normal General condition excellent Eye movements returning X ray of sinuses only slight clouding left antrum, chest, patch of consolidation left apex and small ring shadow right mid zone These thought to be embolic signs but general condition so good that no further penicillin needed May 27 1 A M vomited and had general convulsions Lumbar puncture gave uniformly blood stained fluid under high pressure Became comatose with neck rigidity, positive Kernig's sign and spastic limbs May 28 temperature began to rise again May 29 appearance much as on admission Penicillin 2 g given in next 36 hours, but died May 31

TABLE III—CEREBROSPINAL FLUID OF CASE 4

Date	Pressure	Protein (mg per 100c cm)	Red cells per c mm	White cells per c mm	Culture
May 13*	Raised	110	v few	109	*Staph aureus*
,, 14	Normal	100	v few	372	*Staph aureus*
,, 19	Normal	60	v few	110	*Staph aur* and *alb*
,, 22	Normal	95	v few	45	Sterile
,, 27*	Raised	120	14,600	56	Sterile
,, 28	Raised	140	21,800	276	Sterile
,, 29	Raised	95	12,500	920	Sterile
,, 30	Raised	90	840	2120	Sterile

* Cell count done after fluid had stood for several hours

Autopsy (Dr A H T Robb Smith)—Brain showed no thrombosis of main venous sinuses, adhesions and old hæmorrhage in hypophysial region Considerable old and recent hæmorrhage in region of pons and cerebellum due to rupture of aneurysm on left vertebral artery Cavernous sinus region and left orbit occupied by œdematous granulation tissue, left carotid artery partially occluded by thrombus in its cavernous course and completely occluded in its bony course Both lungs showed scattered abscess cavities, larger ones being air containing cysts lined by yellowish membrane, smaller ones containing yellowish material not exactly resembling pus Other organ not remarkable

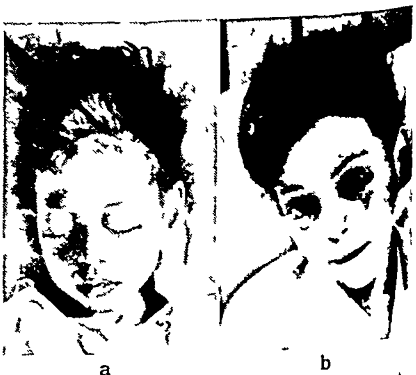


FIG 6—Case 4 (*a*) at beginning of treatment, (*b*) on 11th day of treatment

Histologically granulation tissue is essentially similar whether in lung abscesses, orbital tissues or cavernous region (fig 8) There is a small central area of necrosis sometimes containing a few gram positive cocci, around this is an œdematous exudate with lipoid containing histiocytes, surrounding this is a granulation tissue formed largely of histiocytes containing lipoid and blood pigment, lymphocytes and plasma cells with a very occasional neutrophil ucocyte, this tissue is well vascularised and there is some roblastic proliferation, greatest in the periphery In the vernous region some of the veins contain organising throm is, the left carotid and vertebral arteries show organising rombi which do not appear to be infected, but as there are rge breaks in the media and elastica of the walls of both these essels it must be presumed that they are the late results of an cute arteritis probably of bacterial origin The other organs ow no significant change

The autopsy showed that the infection in the cavernous inus, orbits and in the lungs had been almost entirely vercome, and that healing processes were well advanced eath was due to the ruptured mycotic aneurysm and ot to a recrudescence of the infection Before this ascular accident the patient had been restored from a oribund condition to apparent convalescence No oxic effects from the penicillin were noticed

CASE 5—Boy, aged 14½ Admitted May 6, 1941 Staphylococcal septicæmia with early osteomyelitis of left femur following fall 6 days before Blood-culture grew *Staph aureus* Given sulphathiazole 64 g between May 7 and 12 with little benefit May 17 left hip-joint explored, no abscess found, joint contained little sterile fluid with polymorphs in it May 22 blood and albumin in urine Embolic pustular rash Extension by skin traction applied to left leg May 30 X rays showed osteitis left femoral neck with involvement of joint and destruction of alveolar walls Discharge from wound grew *Staph aureus*

June 6 still extremely ill, with temperature rising to 101° F, much pain in left hip and thigh, urine still contained blood and albumin Hb 74%, red cells 4,290,000 Blood-urea 23 mg per 100 c cm Intravenous infusion of 500 mg penicillin in 540 c cm normal saline started at 45 c cm an hour Infusion continued for 90 hours during which time 3 5 g penicillin given No reaction Daily tests showed constant bacteriostatic concentration in blood General condition much improved By June 10 had lost almost all pain and tenderness Cannula transferred to another vein and infusion continued at half rate with double strength of penicillin (1 g in 500 c cm) On June 11 and 13 sudden rises of temperature without apparent cause, traced to use of penicillin prepared 2 months previously and containing pyrogenic impurity June 14 cannula transferred to another vein and penicillin recovered from boy's urine used No further rise of temperature Steady improvement On June 16 continuous administration stopped Given another 50 mg 3 hourly for 12 doses and then 4-hourly for 12 more doses Stopped June 20, total dosage 17 2 g Urine then normal Blood urea 29 mg per 100 c cm June 21 Hb 64% red cells 3,750,000 June 23 radiograms of hip showed no extension of destructive process, boy felt quite well July 9 extension removed July 11 had been afebrile for 3½ weeks No pain in leg Passive hip movements, flexion 80° Other movements almost full

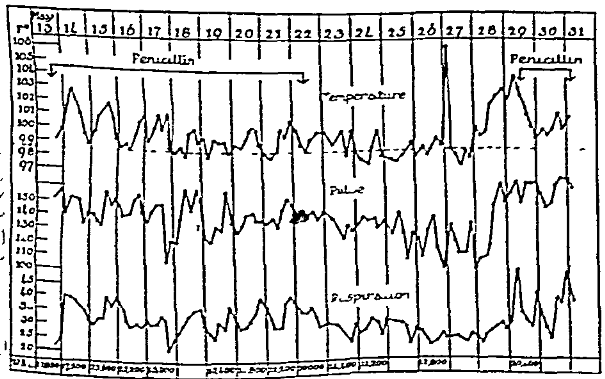


FIG 7—Chart and white-cell counts in case 4

White counts—June 6, 9400, 8th, 9700, 9th, 11,800, 10th, 13,800 11th 11 400, 12th, 7500, 13th, 9400, 14th 16,400 15th, 10 400, 16th, 8400, 17th, 7600, 18th, 6200, 20th, 11,800, 21st, 12,400

This was a case of staphylococcal septicæmia, localising in the left hip-joint, which had been uninfluenced by large doses of sulphathiazole in the early stages When penicillin was started the boy was extremely ill, in great pain, and had an active nephritis. As in the other cases there [illegible]king improvement in the general condition during the period of therapy All pain in the region of the left hip disappeared the nephritis cleared and his temperature fell to normal At the time of writing it had remained normal for 3½ weeks and there was good function in the hip

ORAL ADMINISTRATION IN URINARY INFECTION

CASE 6—Boy, aged 6 months Admitted April 8, 1941 Ill a fortnight with diarrhœa and vomiting, melæna and generalised convulsions Dehydrated, few petechiæ in skin Red cells 1,560,000, white cells 28,000 (atypical lymphocytes 50% many primitive cells) Blood urea 60 mg per 100 c cm Urine contained albumin and pus, grew *Staph aureus* and *Bact coli* Sulphapyridine tried but stopped because polymorphs fell to 400 per c mm After fortnight's course of ammonium mandelate urinary infection remained June 3 urine grew pure *Staph aureus* Hb 62%, red cells 3,200,000, white cells 5000 (polymorphs 600) Blood urea 66 mg per 100 c cm June 5 attempts to pass duodenal tube failed, so penicillin given by mouth, 20 mg with 2 g sodium bicarbonate given hourly for 3 doses and then 3 hourly No toxic signs Vomited once, which was not unusual All specimens of urine contained strongly bacteriostatic concentration of penicillin June 7 urine contained no pus cells, penicillin reduced to 10 mg 3 hourly Vomited 2–3 times daily Steady general improvement June 9 polymorphs up to 1000 per c mm, blood urea 46 mg per 100 c cm June 12 penicillin stopped June 17 blood-urea 39 mg per 100 c cm, Hb 70%, white cells 4000 (polymorphs 440) June 19 urine sterile though still containing heavy cloud of albumin and occasional casts and red cells General condition continued to improve June 26 urine still free from *Staph aureus*

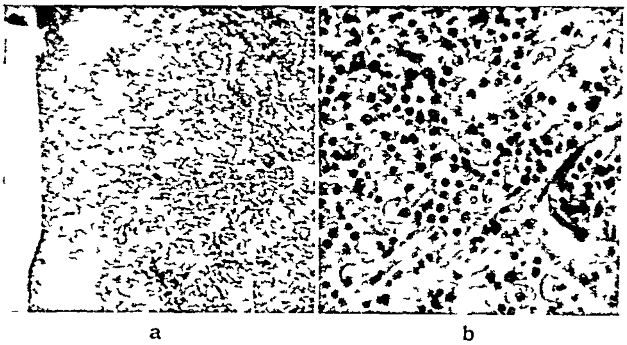


FIG 8—(*a*) Low power view (×40) Wall of "abscess cavity" in the lung showing the œdema fluid rich in lipoid containing histiocytes and the wall made up of a vascular granulation tissue in which there are large numbers of lipoid-containing histiocytes lymphocytes and plasma-cells and only a few neutrophil leucocytes At the extreme right of the section the normal lung parenchyma can be seen

(*b*) High power view (× 180) Granulation tissue from the left orbital region showing the characteristics of the cellular reaction a mixture of lipoid containing histiocytes lymphocytes and plasma-cells, and a moderate fibroblastic proliferation

This case demonstrates that it is possible to maintain a bacteriostatic concentration of penicillin in the urine with small doses given by mouth Although the diagnosis was obscure there was no doubt of the urinary infection by *Staph aureus*, and the administration of penicillin overcame this infection

LOCAL APPLICATION TO THE EYE

In case 4 a 1/5000 solution of penicillin in normal saline was applied to a corneal ulcer It caused no irritation and the condition of the eye improved The local application of penicillin in other eye infections was therefore tried on patients in the Oxford Eye Hospital

CASE 7—Married woman, aged 32 Had a corneal ulcer of the left eye 4 months previously, treated successively by instillation of Collosal Argentum, boracic lotion and mercurochrome, and ultraviolet light In 6 weeks ulcer resolved completely, but 3 weeks later similar ulcer developed in right eye Treated on similar lines, for 6 weeks as outpatient and then for fortnight as inpatient, but without improvement May 26 1941 infiltrating ulcers in inner and upper quadrants of limbus, gross injection of conjunctiva and considerable corneal opacity Swab from eye grew *Staph aureus*

May 30 treatment with penicillin begun, 1/5000 solution in normal saline dropped into eye hourly by day and 2 hourly slight rigor , then 75 mg 3 hourly Feb 24 general condition better, discharge less By 9 P M had received 1 4 g penicillin , dose raised to 100 mg 3 hourly, using a purer penicillin , no reaction Feb 27 penicillin stopped , total 3 4 g Three blood examinations just before injections had only once shown slight antibacterial activity Feeling better , local condition unchanged Blood urea 29 mg per 100 c cm Urine normal White cells 8300 (polymorphs 74%) Feb 25 blood transfusion 2 pints Feb 26 plaster spica applied After 3–4 weeks of almost normal temperature pin removed Again developed swinging temperature as before penicillin treatment

Several different samples of penicillin were used in this case The first five doses had been recovered from the urine of case 1 and caused no reaction The next samples, which caused some shivers, were " third fraction," and although they had been passed through an absorption column again they still contained the pyrogen The later doses were " second fraction " (our present " therapeutic penicillin ") Here there was a local infection by a hæmolytic streptococcus which had proved resistant to sulphanilamide in large doses and to moderate doses of sulphapyridine Penicillin therapy was followed by a great improvement in the patient's general condition, in spite of the dose being insufficient to maintain a detectable concentration of penicillin continuously in the blood

CASE 3 —Labourer, aged 48, of poor physique Admitted May 2, 1941 Carbuncle 4 in across over left scapula for 5 days , now discharging , pus grew pure *Staph aureus* History of chronic bronchial and nasal catarrh for 4 months Left axillary adenitis Hb 106% , red cells 4,970,000 , white cells 23,000 Blood urea 31 mg per 100 c cm Urine normal

May 3 penicillin 200 mg hourly for 5 doses by injection into intravenous drip as in case 2 , then 100 mg hourly No reaction Antibacterial activity continuously maintained in blood May 7 carbuncle much improved , slight tenderness, only slight serous discharge Dose dropped to 100 mg 2 hourly and then 3 hourly May 10 carbuncle almost completely resolved , no axillary adenitis , bronchial and nasal catarrh cleared , 100 mg penicillin 6 hourly for 4 doses and then stopped May 11 Hb 90% , red cells 4,970,000 , white cells 15,800 Blood urea 37 mg per 100 c cm Urine normal Temperature, which had been swinging 97°–101° F now normal and remained so Local treatment had consisted in kaolin poultice for first 48 hours, sodium sulphate dressing for next 48 hours and subsequently dry dressing May 15 discharged Seen as outpatient on May 19 when skin over carbuncle almost normal and patient generally well , right ulnar neuritis which cleared quickly, possibly from splinting arm for several days during infusion

White counts —May 3, 23,000 (polymorphs 87%) , 5th, 16,400 , 6th, 15,200 , 7th, 7800 , 8th, 9200 , 9th, 19,200 , 10th, 19,800 , 11th, 15,800

In this case the supply of penicillin was sufficient to enable a detectable concentration of penicillin to be maintained continuously in the blood for the first 4 days There was no toxic effect from the larger dosage The result was a rapid resolution of the carbuncle without its discharging and without scar formation In addition the chronic nasal and bronchial catarrh were cleared The white count was temporarily depressed on the 4th and 5th days but rose again in spite of the drug being continued

CASE 4 —Boy, aged 4½ years Admitted May 13, 1941 Cavernous sinus thrombosis from septic spots on left eyelid and face following measles 5 weeks before Had received 30 g sulphapyridine in 14 days before admission Semicomatose, incontinent of urine and fæces Gross œdema both eyelids (fig 6a), especially left, with bilateral proptosis Complete bilateral external ophthalmoplegia and 2 dioptres of papillœdema , neck rigidity , bilateral Kernig's sign and extensor plantar responses Moist sounds both bases Liver edge two finger breadths below costal margin Blood culture sterile Lumbar puncture gave a faintly yellow cloudy fluid under high pressure (see table III)

May 13 intravenous infusion of citrate saline at 10 c cm an hour (rate maintained with slight variations for 9 days, the site of infusion being changed 4 times) Penicillin injected into infusion , dose 100 mg hourly for two doses, 50 mg hourly for four doses, then 25 mg hourly May 14 pus from incision made into left eyelid and swab from nose grew *Staph aureus* X ray opacity of left antrum, ethmo clear May 15 blood sample an hour after dose of penicill showed no antibacterial activity , dose increased to 50 m hourly General improvement May 16 obviously bette swelling of eyelids largely subsided Blood taken just befo injection showed trace of antibacterial activity May 1 general and local condition vastly improved (see fig 6b) bilateral 6th nerve palsy and extensor plantar respons remained Penicillin reduced to 50 mg 3 hourly Sma corneal ulcer left eye treated with penicillin 1 in 5000, whic caused no discomfort May 22 improvement maintaine patient talking and playing with toys Chest clinicall normal Slight pyrexia still thought to be due to pyrogen i penicillin or to reaction from thromboses in veins used fo injections (see fig 7) Penicillin stopped May 26 progres good Temperature normal General condition excellen Eye movements returning X ray of sinuses only sligl clouding left antrum , chest , patch of consolidation left ape and small ring shadow right mid zone These thought to b embolic signs but general condition so good that no furth penicillin needed May 27 1 A M vomited and had gener convulsions Lumbar puncture gave uniformly blood stainc fluid under high pressure Became comatose with nec rigidity, positive Kernig's sign and spastic limbs May 28 temperature began to rise again May 29 appearance muc as on admission Penicillin 2 g given in next 36 hours, bu died May 31

TABLE III—CEREBROSPINAL FLUID OF CASE 4

Date	Pressure	Protein (mg per 100c cm)	Red cells per c mm	White cells per c mm	Culture
May 13*	Raised	110	v few	109	*Staph aureu*
,, 14	Normal	100	v few	372	*Staph aureu*
,, 19	Normal	60	v few	110	*Staph aur* ar *alb*
,, 22	Normal	95	v few	45	Sterile
,, 27*	Raised	120	14,600	56	Sterile
,, 28	Raised	140	21,800	276	Sterile
,, 29	Raised	95	12,500	920	Sterile
,, 30	Raised	90	840	2120	Sterile

* Cell count done after fluid had stood for several hours

Autopsy (Dr A H T Robb Smith) —Brain showed n thrombosis of main venous sinuses , adhesions and ol hæmorrhage in hypophysial region Considerable old an recent hæmorrhage in region of pons and cerebellum due t rupture of aneurysm on left vertebral artery Cavernou sinus region and left orbit occupied by œdematous granulatio tissue , left carotid artery partially occluded by thrombus in its cavernous course and completely occluded in its bony course Both lungs showed scattered abscess cavities, larger ones being air containing cysts lined by yellowish membrane, smaller ones containing yellowish material not exactly resembling pus Other orgar not remarkable

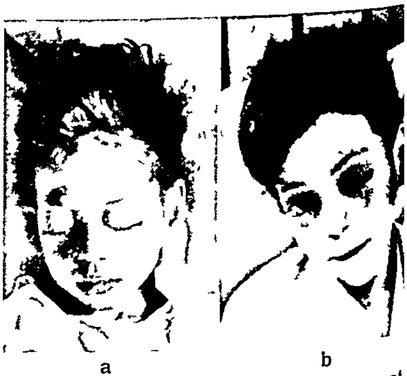


FIG 6—Case 4 (*a*) at beginning of treatment (*b*) on 11th day of treatment

Histologically granulation tissue is essentially simil whether in lung abscesses, orbital tissues or cavernous regior (fig 8) There is a small central area of necrosis sometim containing a few gram positive cocci , around this is a œdematous exudate with lipoid containing histiocytes surrounding this is a granulation tissue formed largely (histiocytes containing lipoid and blood pigment, lymph cytes and plasma cells with a very occasional neutroph

DRY AFTER-TREATMENT OF INFECTED HANDS

HAMILTON BAILEY, F R C S
SURGEON TO THE ROYAL NORTHERN HOSPITAL

To soak infected hands in hot baths and apply mentations " as hot as can be borne " are methods of eoperative and postoperative treatment which are so grained in the medical and nursing professions that it ll take time for them to be supplanted Let us review e disadvantages of the " wet " method —

(*a*) It is extremely painful I still remember dreading e time coming round for my own fomentations, which ere applied at two-hourly intervals by a conscientious ster who believed in fomentations being really hot

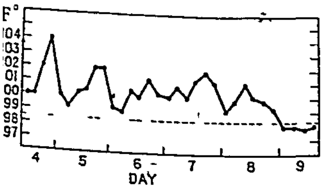
(*b*) General swelling and tenderness of the hand, due) the hot applications, mask localised swelling and enderness due to extension of the infected process, onsequently the accurate diagnosis of the location of us is often delayed

(*c*) The hot-water treatment produces scalding, which, i addition to causing pain, predisposes to superficial nflammation and even paronychia of uninfected digits[1]

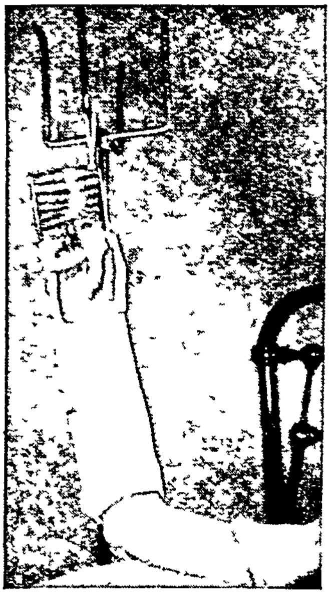
(*d*) Sodden, swollen tissues tend to narrow exits hrough which pus can escape

TECHNIQUE OF THE DRY METHOD

During the past three or four years I have been increasngly impressed by the manifold advantages of the dry ethod of treating seriously infected hands The best ay of expounding its principles will be to quote the case f a surgical staff-nurse with suppurative tenosynovitis f the index finger As I have suffered from suppurative enosynovitis myself, and as this patient was a trained bserver, it was possible to contrast and compare the vet and dry treatments with more than ordinary nlightenment



I was called to see the nurse four days after the symptoms nd signs had begun She had scratched the back of her ndex finger while doing a dressing, the facts that the original lesion was on the dorsum of the finger and that the patient could flex the finger without much pain had been the cause of diagnostic difficulty to several observers (How often the all-important diagnosis of suppurative tenosyno-itis is not made because a patient can flex the finger, it is far ore significant if the infected digit cannot be completely xtended by voluntary effort) By the time I saw this atient she was gravely ill She had received sulphonamide herapy and the usual baths and fomentations, but the temerature had continued to rise, and the toxic symptoms were o great that septicæmia was feared Her temperature was 04° F and pulse rate 140 By palpation with a burnt atch stalk the point of maximal tenderness could be defined learly over the flexor surface of the head of the second metacarpal Under Evipan anæsthesia the tendon sheath and the corresponding lumbrical space, both of which were found to be distended with pus, were drained, and a wisp of Vaseline gauze was tucked into the proximal end of the sheath A piece of Gamgee tissue was wrapped round the forearm, and a length of Cramer wire was bandaged firmly to the dorsal aspect of the forearm A suitable piece of Sorbo sponge was placed between the Cramer wire and the dorsum of the hand and fingers, and the incised index finger was encased in a Viscopaste bandage which did not fix it to the splint except at the base of the finger, where it was carried round the splint and the palm The sound fingers were bandaged lightly to the splint, in order to extend them The patient having been transferred to bed, the arm was elevated by suspending the end of the Cramer wire from an irrigator stand The nurses were instructed that if the patient was comfortable and the temperature falling the dressing should not be disturbed, neither should the position of the arm be altered for 48 hours On the third day she complained of aching in the shoulder, this was eased somewhat by adjusting the pillows, but she asked to have the arm lowered This was done, and the dressing was changed and the viscopaste bandage reapplied After about an hour the hand began to throb, and the patient was glad to have it elevated again, for in the raised position the pain and throbbing vanished The report on the pus was now to hand, it was a pure growth of *Staphylococcus aureus* Each day the flexed, uninfected fingers were bandaged back a little more to the Cramer wire, until they were extended completely The patient, whose general condition had improved greatly by the ninth day, was encouraged to move the fingers frequently under the turn of bandage



While this treatment is essentially dry, dryness is not a fetish About the fourth day the vaseline gauze drain is removed and the hand is put into an antiseptic bath for five minutes and washed If there are any sloughs the wound is irrigated, the hand is then dried and the splint reapplied Whether the vaseline gauze drain is replaced or not depends on circumstances, in this case it was removed, and the arm was kept elevated for 20 days For 1½ hours each day it was lowered, and during this period the bandage was undone and the patient performed finger exercises under infrared rays On the 21st day she was allowed up The wound had healed and movement of all the uninfected fingers and the thumb was perfect

In nearly all the cases in which I have employed dry after-treatment for seriously infected hands the infecting organism has been a streptococcus As sulphonamide therapy came into general use about the same time that I changed from the wet to the dry treatment, it might be argued that it was the sulphonamide which was playing the major part in the improved results I have no wish to detract from the great benefits which have accrued from sulphonamide therapy in this branch of surgery, but the case reported here demonstrates that, with adequate drainage, dry after-treatment and elevation are in themselves an advance, I think it unlikely that in this instance sulphonamide therapy played any part

In my experience, the dry after-treatment has proved uniformly satisfactory T B Mouat, whose experience is greater than mine, informs me that both he and Sister Wray, of Sheffield Royal Infirmary, find that in a small percentage of cases progress is unsatisfactory In such cases Sister Wray changes to what are known as " rotation " dressings for about 48 hours The hand remains immobilised, but every 4 hours the following moist dressings are applied in turn eusol, normal strength,

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by night After 2 days little progress had been made and continuous application considered necessary Modification of Bunyan Stannard bag (Bunyan 1940) made to fit eye and 1/5000 solution penicillin run into it New bag applied each day, and remained full for about 8 hours, after which began to leak and needed refilling occasionally After one day of continuous application less injection of conjunctiva and patient free from pain for first time Treatment given for 4 days, on second day concentration of penicillin raised to 1/1000 but this caused slight irritation and for last 2 days solution of 1/2500 used By end of fourth day eye greatly improved, conjunctiva only slightly injected and corneal opacity almost disappeared, deeper ulcer remained, but considerably smaller Treatment continued with hourly drops of 1/2500 penicillin and after one day strength increased to 1/500 "therapeutic penicillin," which caused no discomfort June 9 (8 days after bath had first been applied) ulcer no longer stained with fluorescein, but still slight injection Treatment continued with drops of 1/500 penicillin, 2 hourly by day, 4 hourly by night, but further improvement slow June 20 patient discharged, ulcer healed, leaving only slight residual infiltration of conjunctiva, which had cleared a week later

CASE 8—Girl, aged 19 Burnt her face with cigarette end 6 weeks before admission, burn became infected and from this a septic rash spread over face Week before admission left eye became red, swollen and painful On admission on June 9, 1941, many small crusted impetigo like spots on both sides of face Left conjunctiva inflamed and showed thick mesh of fine vessels, cornea clear, lids slightly swollen Eye-bath as in case 7 applied and filled with 1/2500 penicillin Next day less injection and eye not painful After 3 days eye almost normal, treatment continued with drops of 1/500 penicillin 2 hourly by day and 4 hourly by night June 13 eye normal On and after June 10 ointment consisting of 1/500 penicillin in hydrated lanoline applied to rash on face twice daily When patient was discharged on June 15 rash had healed completely with only slight residual erythema

While the treatment of these 2 cases was in progress, some 1/2500 penicillin solution was given to 2 outpatients who were told to apply drops of the solution hourly by day

CASE 9—Man, aged 24 Foreign body in left eye May 28, 1941, developed acute conjunctivitis treated with boracic acid and zinc lotion, collosol argentum, and painting lids with silver nitrate Only slight improvement by June 7, when given penicillin drops, in next 2 days rapid improvement, with complete relief of pain Slight residual conjunctival infiltration, so treatment continued until June 19, when healing complete

CASE 10—Woman, aged 20 Developed acute muco purulent conjunctivitis on June 5, 1941, treated for 2 days with boracic acid and zinc lotion and by painting lids with silver nitrate Penicillin drops given on June 7, and 5 days later the eye was almost normal

In these 4 eye cases, 2 of which had proved resistant to routine therapeutic measures, penicillin application resulted in rapid relief from pain and resolution of the inflammation In none was there any ill effect

Discussion

From experiments in vivo and in vitro much evidence has now been assembled that penicillin combines to a striking degree two most desirable qualities of a chemotherapeutic agent—low toxicity to tissue cells and powerful bacteriostatic action Its capacity to prevent multiplication covers a wide range of bacterial species, including some of the most common and destructive organisms with which man may be infected, and this bacteriostatic action is in no way interfered with by body fluids or pus, and only to a limited extent by very large numbers of organisms

The crucial test, however, of the efficacy of any chemotherapeutic agent is whether it can favourably influence a natural infection In spite of the difficulties of large-scale production in the laboratory, we have collected enough material to try penicillin in a few cases Cases 1, 2, 4, 5 and 6 had previously been treated with various forms of chemotherapy and some also by surgery They were, in fact, patients for whom no further treatment likely to be of benefit could be proposed Case 3 had had no previous treatment In all patients the temperature fell and the general and local condition improved Where there was a recrudescence of infection it could in each case be attributed to insufficient administrati penicillin The only toxic effect of any importance seen was due to a pyrogenic impurity, which could removed, and it is worth noting that an impro in the spirits and appetite of the patient during was remarked on in all the cases Where local applicat has been tried, it has given equally promising results

Methods of administration and dosage have ne been tentative, but the many points which still investigation await an adequate supply of p Enough evidence, we consider, has now been to show that penicillin is a new and effective type chemotherapeutic agent, and possesses some properties known in any antibacterial substance hitherto described

Summary

A description is given of the cultural and other con ditions required for the effective production of penicilli by *Penicillium notatum*, and of methods of small scal mass production and assay of material suitable for thera peutic use in man

Observations on the absorption and excretion of th drug have been made on the rabbit, the cat and man The material is excreted in high concentration in the urine of all three species There is a high concentration in cats' and less in rabbits' bile (that of man has not yet been investigated)

Evidence is produced of the low toxicity of the sub-stance when applied directly to body tissues

No toxic effects attributable to "therapeutic peni-cillin" injected intravenously have so far been observed, though crude penicillin products contain a pyrogeni substance which can be removed by suitable treatment

It is shown that the growth in vitro of many pathogenic bacteria is prevented by purified penicillin at a dilution of one in a million or more, and that others possess diminish ing degrees of sensitiveness, some being quite resistant

Proof is given of the inability of blood, pus and tissue derivatives to prevent the action of penicillin

Adaptation of *Staph aureus* to high concentrations of the substance has been demonstrated, and this has been shown not to be due to the development of a penicillin destroying enzyme

A comparison is made between the antibacterial activity of penicillin and the sulphonamides, and reason are adduced why penicillin can be expected to operate when the sulphonamides are ineffective

During the course of some therapeutic trials in human infections it has proved possible to secure and maintain a bacteriostatic concentration of penicillin in the blood without causing any toxic symptoms After intravenou administration a large proportion of the active substance can be recovered from the urine and used again

Pencillin was given intravenously to five patients with staphylococcal and streptococcal infections and by mouth to one baby with a persistent staphylococcal urinary infection It was also applied locally to four cases of eye infection In all these cases a favourabl therapeutic response was obtained

The work was planned and started by E Chain and H W Florey The chemical and biochemical part of the work was carried out in the main by E Chain and E P Abraham N G Heatley devised the assay method and developed and supervised the production of penicillin M A Jennings and H W Florey have conducted the biological tests except those especially mentioned in the text A D Gardner has con ducted the bacteriological investigations and made some special observations on the growth of the mould C M Fletcher (of the Nuffield Department of Medicine) has been in charge of the administration to man The successful conduct of the work to its present stage has only been made possible by the closest collaboration of all concerned We wish to thank the physicians and surgeons who placed their cases at o disposal

We wish also to acknowledge the work of the followi technicians, without whose efforts adequate supplies o penicillin could not have been produced D Callow, P Callow, E Cooke, S A Cresswell, G Glister, C Inayat, J Ken M Lancaster, P McKegney, E Vincent

We are indebted to the Medical Research Council for a gran towards the expenses of large scale production, and to th Rockefeller Foundation for providing for technical assistanc and expenses

References at foot of opposite page

THE LANCET

LONDON SATURDAY, AUGUST 16, 1941

CARE FOR HOME GUARD CASUALTIES

THE collection evacuation and hospital treatment Home Guard casualties is the duty of the local R P authorities and of the hospitals of the Emer- ncy Medical Service They owe a similar duty wards civilian casualties, but whereas A R P nbulances will proceed right up to the spots at which vilians have been injured and will send out first-aid arties to collect those outside the reach of ambu- nces they are not allowed to extend these particular acilities to Home Guard casualties Their ambulances nd first-aid parties are forbidden to go further forward han casualty collecting posts which must be estab- ished by the Home Guard, and to which the Home Guard must carry their own casualties They must also be responsible for the care of these casualties until they are actually placed in ambulances These arrangements have made it necessary for Home Guard medical authorities to consider how long the arrival of ambulances may be delayed The air attack on Crete went on for several days and presumably—though there is no precise information—any urban hospitals there were out of action long before active invasion ceased One of the chief aims of parachute troops, or of other invaders from the air is to obtain motor transport and the ambulance offers ideal camouflage for an enemy A further difficulty to be anticipated is the breakdown, partial or complete of telephone services To get a wounded Home Guard removed by ambulance at least three telephone calls must be made from the place of wounding to the local control office, thence to the hospital to see what wounded can be accepted, and from the hospital to the ambulance centre with instructions for the journey In some circumstances ambulances might not be available for days rather than hours Some are prepared to write off the resulting death-roll and suffering as one of the incidental risks of war which cannot be avoided, but medical officers cannot accept this view as long as it is within their power to plan the care of H G casualties and incidentally of civilian wounded, who could hardly be excluded from H G posts when no other help was available

It is impossible to set up complicated posts like the first-aid posts of local authorities but, as Dr GORDON WARD has shown,[1] it is possible to arrange, on a voluntary basis, for protection from the weather, warmth, rest on beds, palliasses or cushions, simple cooking (soups and hot drinks), and such skilled care as may be possible (in many cases a doctor will be available, in others a trained nurse or V A D, in others simple home nursing) The Government provides for each post 52 pad and bandage dressings, 2 small tubes of tannic-acid jelly, 2 triangular bandages and a set of splints of which the longest measures 17½ in This supply is intended only for the most elementary first-aid treatment and was not intended for use during a period when ambulance traffic might be indefinitely suspended There are other sources from which further supplies may be obtained—from doctors' surgeries, chemists' shops and private houses where the supplies are much larger than is generally appreciated, and from the Red Cross societies From these each county could equip enough casualty collecting posts for its needs Mr A L ABEL tells us on another page that in his area the difficulty has been completely overcome through the generosity of the Canadian Red Cross, but in general the H G medical officer can only tap these supplies if he first collects funds, and this is a duty which may well fall to his lot Supplies are also being held in reserve by military and E M S hospitals and a portion of this stock might be dispersed among casualty collecting posts, where it would be ready for an immediate emergency rather than concentrated in vulnerable centres Official authority would have to be given by the Minister of Health before this could be done

The number of posts to be established must be decided The officially recognised plan is to site such posts within reasonable distance of strong points which may be held by the Home Guard The difficulty is that such posts are necessarily static and cannot be moved about if a Home Guard unit proceeds from one position to another The alternative is to dot the posts about the country or town in such a way that wherever a Home Guard may be wounded he will find assistance within the distance *it is practicable to convey him by stretcher* To carry a man on a stretcher as much as a mile is a serious task but it is scarcely possible to fix up the posts closer than this Even if every sort of hospital and civilian aid-post is counted as an already established casualty collecting post many more will have to be set up before such a network is established' but the task has already been accomplished in at least one county

PENICILLIN IN ACTION

SINCE it was first described by FLEMING in 1929 penicillin, an active principle of the mould *Penicillium notatum*, has been used in some bacteriological laboratories for the isolation of Pfeiffer's bacillus and *Bacillus pertussis* because of its rather selective bacteriostatic action on gram-positive organisms Last year a stable product, obtainable in liquid or powder form was shown by a team of workers[1] in the department of pathology at Oxford to have high claims as a chemotherapeutic agent if only it could be produced in quantity The Oxford workers have now shown that large-scale production and purification is a practical possibility By a fine piece of concerted work they have prepared a substance which seems to have unique properties even in an age which will go down in history as the second chemotherapeutic era, although neither in their first nor present report is there any clue to the chemical formula of penicillin

The optimum conditions—temperature, gaseous environment, pH, substrate, adjuvant and inhibitory factors—for a good yield of penicillin were first determined Once the surface felt of the mould was well formed over a shallow layer of fluid medium, several batches of penicillin could be prepared by withdrawing the underlying fluid and adding fresh medium, but strict sterility was essential because penicillin is destroyed by certain bacteria It is also destroyed hydrogen peroxide, 10%, magnesium sulphate, 5%, normal saline Dry treatment is then recommenced

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[1] *Lancet* May 31 1941 p 708

[1] Chain, E Florey H W Gardner A D, Heatley N G Jennings M A Orr Ewing J and Sanders A G *Lancet* 1940, 2, 226

I would still be following the traditional path of baths and fomentations in these cases were it not for the stimulus of my friends Mr Robert Kennon, who exhorted me to stop scalding infected hands, Dr A Tudor Hart, who asked me to try elevation, and Mr T B Mouat,[2] who allowed me to draw on his great experience and knowledge of the literature

PLASMA UTILISATION IN SERUM PROCESSING

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IN transfusion laboratories where serum is filtered, and in regions where citrated rather than defibrinated blood[3] is used for whole-blood transfusions, the relatively small volume of citrated plasma accruing from the blood bank, if not wasted, has either to be stored unfiltered or filtered separately This note describes a simple method by which plasma from "time-expired" citrated blood can be processed with serum, thus avoiding waste and saving time and labour in the filtration process

The method is based on the fact that fresh serum clots citrated plasma, and consists essentially in the conversion of plasma into serum by means of a "natural" coagulant—serum itself Into the types of clot formed and the time relations of their formation over the whole range of mixtures of serum and plasma studied it is not proposed to enter here Of practical importance was the observation that the fibrin gel formed in mixtures of serum and plasma in certain proportions, while exhibiting but slight spontaneous contraction at room temperature, can be reduced to a compact fibrillar mass by shaking vigorously for a few minutes This is possible even in gels which have remained undisturbed for several months

In fixing the proportion of serum to plasma to be adopted for routine plasma utilisation, the end sought has been the conversion of fibrinogen into fibrin as completely and rapidly as possible by the addition of the smallest possible volume of serum It has been found that the fibrinogen of relatively fresh plasma—that is, plasma separated from citrated whole blood (120 c cm of 2 5% sodium citrate to 420 c cm of blood) from 7 to 10 days old—can be converted into fibrin by mixing one part of plasma with five parts of serum If 80 oz screw-capped Winchesters are used, convenient volumes are 1500 c cm serum and 300 c cm plasma With a larger total volume and hence a smaller air-space the mechanical disturbance produced by shaking is inadequate for good contraction of the gel The serum used is separated from clotted blood in the manner described by Harrison and myself[4] and is not more than 6 days old from the time of bleeding Its clotting powers diminish slowly with age and are appreciably reduced by filtration The fluids are withdrawn from their respective pooling bottles (recently taken from the refrigerator at a temperature of 2–4° C) and mixed, under strictly aseptic conditions The mixture is allowed to stand for 24 hours at room temperature, or may be warmed to 37° C and kept at this temperature for 2 hours Each Winchester is then shaken vigorously for 1 or 2 minutes and returned to the refrigerator for a day or so Before filtration the greater part of the fluid is strained, without further manipulation, through a funnel lined with several thicknesses of gauze to remove small clots Any large fragments of the gel passing into the funnel can be induced to contract by stirring with a glass rod If now the Winchester is shaken briskly the remainder of the gel contracts still further, and the rest of the serum can be strained off The serum is now ready for filtration On 1800 c cm of the mixture the loss entailed by this method of plasma utilisation is 5–10 c cm

Provided the volume of plasma from time-expired citrated blood in hand does not exceed a fifth of the volume of serum to be separated, it can be clotted in the way described here and processed as serum This does not involve any delay in processing, since it is unnecessary to wait for all the corpuscles to settle before using the serum to clot plasma The few corpuscles remaining in suspension after the separated serum has stood for days at 2–4° C are removed in the contracting fibrin network

If it is not essential that fibrinogen should be rapidly converted into fibrin, a much smaller proportion of serum may be used Thus at room temperature the fibrinogen of samples of plasma mixed with a fifth of the volume of serum is completely converted into fibrin in 3 months At the end of this period, provided the mixture is sterile, it can be filtered and stored as dilute serum

The times and quantities given here have been worked out for serum separated in one particular way[4] Since such factors as degree of hæmolysis[5] and age influence the clotting powers of serum, it will be necessary to determine by experiment what proportion of serum to plasma to adopt under any given set of working conditions In assessing the completeness of fibrin precipitation in the mixture, it is important to note that a concentration of fibrinogen too small to be detected by heating at 56° C may in time give rise to a precipitate of fibrin The filtered product is stored at room temperature for a month before issue If a precipitate does not form within a month of the date of filtration the bottles can safely be issued If a precipitate should form, the bottles affected are allowed to stand for a further week or so until precipitation has ceased, and are then refiltered

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[2] Surgery of Modern Warfare, Edinburgh 1941 Part III, p 443
[3] Harrison G A and Picken, *Lancet*, 1941, 1, 405, *Ibid*, p 585
[4] *Ibid*, p 536

Reviews of Books

Science and Seizures

New Light on Epilepsy and Migraine By WILLIAM G LENNOX, M D, Sc D, assistant professor of neurology, Harvard University, visiting neurologist, Boston City Hospital London Harper and Brothers $2 Pp 258

IN this simple little book Dr Lennox has set out the modern conception of the convulsive states, in the broadest sense, for the benefit of the intelligent and interested layman The book is far too elementary for the well-informed practitioner, who would have to pick his way through many popular similes and naively expressed generalisations to reach a synopsis of recent knowledge or rational treatment It has been written for the public who have a personal or philanthropic interest in epilepsy and migraine, in an attempt to throw aside the veils of superstition and ignorance which shut off epilepsy from other equally respectable organic diseases This public is less dynamic in England than in the United States where they have formed themselves into a "Laymen's League against Epilepsy," which is largely responsible for the present publication Dr Lennox has done well to express his vast knowledge of epilepsy, much of it gained by his own research, in such simple and short chapters That he has perhaps over-emphasised the electroencephalographic aspect of epilepsy is shown by the bibliography Despite this, many practitioners will be glad to know that such a simple exposition is available for their epileptic patients or families

Textbook of Clinical Pathology

(2nd ed) By ROY R KRACKE and FRANCIS P PARKE Emory University, Georgia London Bailliere Tind and Cox Pp 780 33*s*

THIS edition has been thoroughly revised by fourteen contributors and includes a chapter on t determination of vitamins and hormones, methods f estimating amylase in blood, and sulphanilamide, sulph pyridine and sulphathiazole in blood and urin absorption tests for infective mononucleosis, vitamin with determination of prothrombin, in blood, and chapter on the diagnosis of venereal lesions T authors explain in the preface that the book is design primarily "for accurate and comprehensive teaching this important subject to students of medicine, and t interpretation of laboratory findings for the practition of medicine" A wide field is covered, including hæmat logy, biochemistry, immunology and bacteriology T reader will find the descriptions of methods detailed a the photographs and diagrams useful of opinion in this country to the effect that in the run it would prove to be a major economy to ect all Army recruits to miniature radiography, a view to keeping sufferers from tuberculosis out of Army It may be that Lord HORDER's committee right in deciding that mass radiography is at ent impossible for the Army, though some records apidly developing invalidity among soldiers give se for anxiety on that score There can be no ibt whatever that in these times of increasing erculosis prevalence and risk it is essential to make mediately available for known cases such measures have been proved to be of value in influencing ourably the clinical course of the disease and in ntrolling its infectivity There are not available roughout the country sufficient beds for the treatent of cases of tuberculosis that urgently require natorium care Some of these beds were diverted the early stages of the war to casualty reception hough this state of affairs has now been largely ectified), but surely there can be no excuse in these ays for leaving infective cases under bad home conditions, where spread is almost inevitable and where here is no prospect of securing for the patient that pecialised care which is so important from every point of view Difficulty has been experienced in securing sanatorium treatment for patients boarded out of the Army Too often these patients have to be allowed to return to their homes in an infective condition, sometimes after many weeks of waiting have failed to secure for them the necessary sanatorium accommodation With the improved results obtainable from modern methods of treatment the need for anatorium provision for these cases is greater than ver such treatment is, indeed, an absolute necessity f one very obvious method of influencing the incidence f tuberculosis in time of war is not to be neglected

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[5] Crosbie, A and Scarborough H *Brit med J* 1941, 1, 263

CANCER AND ULTRAVIOLET LIGHT

DURING the past twenty years two lines of work ave chiefly engaged the attention of those interested n experimental cancer research On the one hand he production of cancer by means of pure chemicals as shown that neoplasms may be produced by substances closely related to and in some cases identical with compounds formed by the bodily metabolism On the other hand certain viruses have been found to be closely related to the genesis of malignant tumours Less attention has been given to physical means of producing cancer, although in addition to radium and X rays it is now known that ultraviolet light is carcinogenic Ever since Unna[1] described, under the name of *Seemanshaut*, certain precancerous changes in the skin of sailors, it has been realised that wherever, as in Australia, the southern United States or the Argentine, people of European extraction live in a semitropical environment an excessive amount of cancer of the skin of the face and hands results The incidence in such countries s always greatest among farmers and others who are most exposed to the weather, while the minimum time of exposure necessary to ensure the development f cancer is in the neighbourhood of fifteen years

Nothing was known of the exact cause of this high susceptibility to skin cancer except that it was due to xposure to wind and weather In 1928 however, indlay[2, 3] showed that exposure of mice to a mercury-*vapour lamp was capable of producing* cancer on the backs and ears of the mice the effects not being due to the heat but to the light emitted by the lamp Subsequently Findlay[4] produced skin papillomata in the rat, the time necessary for the appearance of the tumours being longer than in the mice These results were confirmed both in rats[5] and mice [6] Later Huldschinsky[7] produced sarcoma in the corneas of rats by prolonged exposure to ultraviolet light, while Roffo[8] found that exposure of rats to direct sunlight also caused carcinomata and sarcomata These results were also confirmed [9] More recent experiments have revealed the part of the spectrum which is actively carcinogenic Roffo[10] concluded that the active portion lay between 2900 and 3500A, although his experiments did not exclude wave-lengths below 2900A More definite results have been obtained by Rusch Kline and Baumann,[11] who found that carcinogenic action lay in the wave-lengths between 2900 and 3341A , wave-lengths of 2537 and 3341A and above were non-carcinogenic The carcinogenic wave lengths thus coincide in part with those most potent in the production of erythema although 2537A causes erythema without inducing tumours Little radiant energy is needed to initiate the changes which culminate in tumour formation 63 to 84 × 10^7 ergs per sq cm of effective mid-ultraviolet ' radiation being adequate when given over a period of three months The effect of certain conditions on the rapidity of development of ultraviolet light cancer has also been studied Findlay[2] found that cancer development in tarred mice was accelerated by coincident exposure to ultraviolet light, Bungeler[12] reporting a similar effect due to sunlight

Kohn-Speyer,[13] it is true, failed to find any synergic action between tar painting and exposure to ultraviolet light but since she failed to produce tumours with ultraviolet light alone her experimental conditions were unsatisfactory Taussig, Cooper and Seebig [14] however, found that ultraviolet light did not stimulate cancer production in mice painted with benzpyrene an effect which Dobriner and Mottram[15] regard as probably due to the extensive dermatitis set up by the combined action of benzpyrene painting and ultraviolet light Rusch and his colleagues[16] likewise found that 1 2 5 6 dibenzanthracene added to ultraviolet light did not accelerate cancer production on the other hand local applications of mineral oil did cause an acceleration of ultraviolet light carcinogenesis , cotton-seed oil, olive oil and wheat-germ oil caused slight acceleration while linseed oil retarded development Cholesterol in oil caused much acceleration when locally applied but when fed to mice exposed to ultraviolet light both Wahlgren[17] and Baumann and Rusch[18] found no acceleration of carcinogenesis though a high fat diet increased the rate of production of tumours These results are interesting in view of the theories which Roffo[19] has put forward in a long series of papers He believes that when skin is exposed to light the cholesterol content of the skin is increased and that cholesterol, or some derivative of it induced by exposure to ultraviolet light, is responsible for the production of carcinomata So far as the increased cholesterol content of skin exposed to ultraviolet light is concerned experiments show that it is true of the rat but not of the mouse or guineapig In view of the by exposure to highly acid or alkaline reactions, and occasionally, for no obvious reason little or no penicillin was obtained from a particular batch From the crude penicillin containing fluid, the active principle was extracted in an organic solvent—amyl acetate was used—from which the penicillin was re-extracted by shaking with phosphate-buffer or water at a pH of 6–7 Evidence of the presence of a pyrogenic substance at this stage meant treatment with charcoal, re-extraction with ether, absorption by alumina, and further extractions until an aqueous solution—the non-pyrogenic or therapeutic penicillin—was obtained as a deep reddish-orange fluid This substance saturated with ether, is stable, and can be stored as such in the refrigerator, or dried and left in the desiccator since the powder is hygroscopic For dispensing, the ether-containing solution would be used after removal of the ether by suction The whole process is complicated and would have to be carried out with great care but large scale production should be well within the compass of a biological institute engaged in the preparation of bacterial toxins and antisera About 100 litres of medium are required to produce 1 g of therapeutic penicillin, which represents about a third of the total substance in the crude liquid Obviously penicillin cannot yet be easily produced on a large scale like the sulphonamides, or at a cost which would allow it to be freely used, even though the dosage for generalised infections is no more than 1 g per day As with other biological products, a stable standard and a reliable method of assay are required, the Oxford workers' method is to test the bacteriostatic activity of penicillin by adding the fluid to an open cylindrical tube set in a plate of agar-medium seeded with *Staphylococcus aureus*, and measure the diameter of the inhibitory zone after incubation This technique is also used for determining the presence of penicillin in the blood or urine of treated patients

In-vitro tests of the bacteriostatic activity of penicillin on a wide variety of bacterial pathogens brought out two remarkable features—(1) its selective action on certain gram-positive organisms, so that the amazingly low concentration of 1 in 1–2-million could prevent growth of the staphylococcus, *Streptococcus pyogenes*, and the anthrax and Welch bacilli, and (2) the lack of any interference with its bacteriostatic action by pus, serum or protein autolysates In this latter property penicillin has a great advantage over sulphonamides, as it also has power to inhibit the growth of relatively large inocula of organisms in any nutrient medium Thus, penicillin should act beneficially in heavily infected wounds and where there is much purulent discharge Because it is bacteriostatic and not bactericidal—thus resembling the sulphonamides but differing from gramacidin—penicillin requires the active help of phagocytic cells in dealing with an infective process It was therefore essential to find out if it had any toxic effect on leucocytes or other tissue cells Tests carried out with great thoroughness showed that penicillin was devoid of toxic action on living cells and delicate tissues in concentrations of 1 in 500–1000, which is considerably greater than the effective therapeutic strength Here again penicillin proved superior to the sulphonamides and to proflavine, which is probably the least toxic of the useful antiseptics For therapeutic use in systemic infections an immediate difficulty was the susceptibility of penicillin to acid, so that administration by seemed to be ruled out if a high concentration in tissues was desired Absorption from the int the cat and of man (given by stomach tube) moderately good, and means of avoiding destruct of the active principle by gastric juice can no do be devised In one of the Oxford cases a bac concentration was in fact maintained in a child's by giving the penicillin by mouth with bicarbonate Given intravenously to man, an injecti of 200 mg produced no obvious toxic effect blood samples still had slight bacteriostatic action aft 2 hours and urinary excretion continued for at lea 6 hours Half or more of the total dosage given to two patients was excreted in the urine and part of th substance was recovered for future use.

Unless chemical synthesis becomes possible, th difficulties and cost of production of penicillin will probably limit supplies If so its use should be largely confined to infections not likely to benefit from sul phonamide therapy Chief among these are infection with local thrombus-formation and metastatic lesion, such as acute and subacute staphylococcal pyæmia, bacterial endocarditis and the septic thrombophlebitis produced by anaerobic streptococci and *Bacterium necrophorum* The efficiency of a chemotherapeutic agent in these infections depends not only on its potency against the infecting organism but also on its diffusibility into infected and dead tissue Experiments to test this property should be carried out with penicillin as HAWKING[2] has recently done with the sulphonamides, meanwhile the post mortem findings in a case of staphylococcal pyæmia with cavernous-sinus thrombosis suggest that penicillin has this power of diffusion A substance that can produce so remarkable an amelioration of symptom in three classical cases of acute staphylococcal pyæmia must be ranked high among chemotherapeutic drug, for despite the claims on behalf of sulphathiazole, staphylococcal antitoxin and bacteriophage, there i as yet no sovereign remedy for generalised staph coccal infection The excretion of penicillin in c bile may be an indication for trying its effect typhoid fever and typhoid carriers In their liminary report, the Oxford workers described benefit obtained in animals infected with staph coccus, streptococcus and *Clostridium septi* it seems a promising step to extend this of the investigation to animal infections which si late the sulphonamide-refractory infections of ma

THE THREAT OF TUBERCULOSIS

EXPERIENCE shows that war-time conditions fav an increase in the incidence of tuberculosis D A HART's figures demonstrated such a rise during period 1914–18, and it has recently been elicite reply to Parliamentary questions that already trend of tuberculosis incidence has again tu upwards Doubtless many factors contribute increased tuberculosis prevalence in time of war, it may be that some of the responsible factors unavoidable It is not easy to influence the str that necessarily emerge from the complex tissu war environment, and it becomes increasi important on that account to control so far as pos the factor of infectivity There is still a consider

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[2] Hawking, F *Ibid* 1941, 1 786

URKING-PLACE OF THE HEAD LOUSE

CUATION revealed that large numbers of received n were lousy This led to much acrimonious sion between officers of evacuating and receiving nties and to a piece of research work,[1] fostered by inistry of Health and the Board of Education, contradicts the experience of thirty years' school al practice Kenneth Mellanby approached the ment of lousiness from a new direction He used ecords made of new admissions to 32 English tals, and he suggests that since each hospital patient pected on several occasions these records are likely e more accurate than figures drawn from school inations made hurriedly and at infrequent intervals e says, the hospital nurse becomes highly expert in ting vermin, and their detection and removal is ed on as of great importance in a hospital His stigation included 7 large cities, 5 smaller county ughs, 2 other boroughs and rural areas in 6 counties, ging in a total of 60,000 observations In some ntals a division is made between live lice and nits, Mellanby does not consider this worth making The ntals covered were mostly fever hospitals, and this hted the sample slightly but not seriously in the ction of poorer and younger patients The main ings were as follows —

Age (years)	TEN INDUSTRIAL CITIES		FOUR RURAL COUNTIES *	
	Infested (%)		Infested (%)	
	Male	Female	Male	Female
Under 1	11	12	0	0
1	36	39	8	8
2– 4	42	50	8	5
5– 8	33	50	5	9
9–13	27	50	4	6
14–18	12	27	0	6
19–30	1	9	0	0
31–70	1	8	0	0
70 upwards	1	6	0	0

These figures are taken from Mellanby's graph and are oximate only

the evacuating cities, Birmingham was second to don in the amount of censure it received for sending y children into the reception areas, so it is not rising that Dr H P Newsholme, who with justice roud of his welfare services, took up the challenge of official research in opening a discussion at the ference of public health nurses at Birmingham on e 21 Dr Newsholme makes the rates of lousiness nfants less than 1%, in preschool children 3 5%, and chool children 11 8% These smaller figures are not removed from those found by most child-welfare and ol medical officers at the outbreak of war, and Dr sholme is clearly satisfied that they give a fairer ure than Mellanby's hospital records However may be, on reception the lousiness of the received dren was considerably greater than that of the resident dren The difference was, no doubt, exaggerated in many reception areas no consideration was given what should have been expected Tempers were t at the time and some sharp things were said, but the uee children who remained in the country were soon factorily cleansed Mellanby thinks the difference een town and country mainly arises from a difference utlook—parents in the country consider it a disgrace heir children to be verminous, whereas town parents k less of it He urges more thorough examination hool-children, with efforts to educate both children parents in cleanliness By unremitting labour it ld be possible to reduce the infestation-rate of school-tren in school term to 10% everywhere, to 5% in y areas and to zero in a few schools in specially ured districts Relapse is invariable if, or when, control is slackened, for we are unable to attack the main reservoirs now remaining—a few hopeless families and the heads of girls who have left school The Board of Education and the Ministry of Health are reluctant to take efficient action, for it would be both unpleasant and unpopular But the reservoirs have got to be tackled seriously some day It has been suggested that the present fashion of hair dressing favours lousiness in young women, because they like to leave their waves and curls undisturbed Lousiness is certainly widespread in girls seeking employment after leaving school, though judging from the few districts where reliable information is obtainable it is less than it was In districts where employers will not take girls unless their heads are scrupulously clean the amount of lousiness in the population is low In most districts and most industries little attention is paid to heads, and a nurse at the Birmingham meeting reported that of 58 people found infested by a works doctor 28 preferred to give notice rather than go to a cleansing station Nevertheless, tobacco and sweet factories have demonstrated that the difficulties can be overcome

SIDEROCYTES AND THE IRON CYCLE

IN a letter last week appealing for blood-films from human embryos or premature babies, H Grüneberg reported finding red blood-cells in which "free" iron could be detected by the Prussian Blue test—he called them "siderocytes"[1] They occurred in newborn mice of a special variety having a recessive gene for 'flexed-tail and belly-spot"—a condition associated with a severe but temporary anæmia, siderocytes were also found in small numbers among the red cells of normal newborn mice and rats during the first week of life Does this free iron of the siderocyte represent a portion of the original iron ration of the cell that has failed to be combined in hæmoglobin, or is it a product of premature breakdown of hæmoglobin? Even though this may be a peculiarity of rats and mice only, it is interesting because it raises the question of the source and fate of iron in the red blood-cell, a subject reviewed by Schultze[2] Hæmoglobin is formed in the early nucleated stages of the red blood-cells which in the adult are found only in the bone-marrow, for its synthesis iron, protoporphyrin and globin are provided The protoporphyrin is a cyclical compound of four pyrrol rings which can be detected in immature red cells and is thought by Watson to be the substance producing the reticulocyte appearance with brilliant cresyl blue It is not certain whether protoporphyrin combines with iron to form protohæmatin which reduced to protohæm unites with globin to form hæmoglobin, or whether a protoporphyrin-globin compound is first formed which then incorporates ferrous iron to give hæmoglobin, in either case once the iron becomes attached to the protoporphyrin molecule it is no longer "free" The site of this process is probably the bone-marrow because mature erythrocytes cannot in vitro be made to take up iron, the process is rapid since experiments with radioactive iron have shown that it is only a matter of hours before ingested iron appears in the red cells in the blood When the erythrocyte wears out, the hæmoglobin is liberated into the plasma and is broken down, but the path is different from that of synthesis The final product is bilirubin, but if hæmatin is injected intravenously a corresponding amount of bilirubin is not formed, whereas it is formed if hæmoglobin is injected Apparently the scission of the porphyrin nucleus occurs while it is still attached to the globin, one of the connecting -CH- groups is oxidised and the porphyrin ring is broken giving a formula which can be represented as a straight chain of four pyrrol rings The globin and the iron split off leaving biliverdin which finally changes into bilirubin The iron—free once more—is released known carcinogenic action of certain sterols further work is required to determine whether carcinogenic substances are produced by the action of ultraviolet light on naturally occurring sterols Certain other experimental lines of investigation are also suggested by the cancer-producing action of ultraviolet light Ultraviolet light, together with X rays and radium, both of which are carcinogenic, is one of the most commonly used methods of inducing mutations in the chromosomes of the germ cells Recently Mackenzie and Muller[20] have shown that the wave-lengths producing such mutations in drosophila lie between 3000 and 3200A and do not appear to injure the chromosomes Does ultraviolet light function in a similar manner in inducing skin cancer or is it necessary to confine the term mutation to hereditary changes confined to the chromosomes ? In viruses such as those of tobacco mosaic, yellow fever and the rabbit fibroma hereditary variations in every way analogous to true mutations have been described, although at the level of organisation of the viruses chromosomes are unknown (cf Findlay[21]) In the case of the tobacco mosaic virus, Stanley[22] has shown that different strains of the virus protein differ in their chemical properties, while Knight and Stanley[23] have recently obtained definite information concerning some of the structural differences that exist between variant strains of the tobacco mosaic virus It is therefore not too much to hope that before long it will be possible to produce a true mutation by chemical manipulation of the tobacco mosaic virus molecule Finally, ultraviolet light cancer suggests a third possibility Is the action of ultraviolet light on the skin merely one of bringing to light and localising an "indigenous" virus ? Lambeau,[24] for instance, has shown that a latent zoster virus may be activated and localised by treatment with ultraviolet light Suggestive evidence of an "indigenous" cancer virus has lately been brought forward by Bittner[25] who has found that a "factor" present in spontaneous mouse cancer, as well as in mouse spleen and milk, can be frozen and dried When fed to mice of a low cancer-producing strain the incidence of mammary cancer is greatly reduced There is much to be done, as a modern poet has said, in "the gradual exploring of all the octaves of radiation"

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[1] Mellanby K *Med Offr* Feb 1 1941 p 39

[1] More fully reported in *Nature* July 26, 1941, p 114

[2] Schultze M O *Physiol Rev* 1940, 20 37

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1 Unna, P G Histopathology of diseases of the Skin, Edinburgh, 1896, p 719 —2 Findlay, G M *Lancet*, 1928, **2**, 1070 —3 *Ibid*, p 1263 —4 *Ibid*, 1930, **1**, 1229 —5 Putschar, W and Holtz, F *Z Krebsforsch* 1930 **33**, 219 —6 Herlitz C W, Jundell I and Wahlgren, F *Acta paediatr Stockh* 1931, **10**, 321, Wahlgren, *Acta path microbiol scand* 1932 suppl 11, p 166 —7 Huldschinsky, K *Dtsch med Wschr* 1933, **59**, 530 —8 Roffo, A H *Bol Inst Med exp Cancer, B Aires*, 1933, **7**, 22, *Zbl allg Path path Anat* 1935, **62**, 324 —9 Beard, H, Boggess, T S and von Haam, E *Amer J Cancer*, 1936 **27**, 257 —10 *Strahlentherapie*, 1939, **66**, 329 —11 Rusch H P Kline, B E and Baumann, C A *Arch Path* 1941, **31** 135 —12 Bungeler, W *Z Krebsforsch* 1937 **46**, 130 —13 Kohn Speyer, A C *Lancet*, 1929, **2** 1305 —14 Taussig J, Cooper, Z K and Seebig, M G *Surg Gynec Obstet* 1938, **66** 989 —15 Doniach, I and Mottram, J C *Amer J Cancer*, 1940, **39**, 234 —16 *Proc Soc exp Biol N Y* 1939, **42**, 508 —17 *Verh dtsch path Ges* 1934 **27**, 102 —18 *Amer J Cancer* 1939, **35** 213 —19 *Bol Inst Med exp Cancer, B Ayres*, 1935, **12** 529, 583 —20 Mackenzie, K and Muller, H J *Proc Roy Soc Lond* 1940 Series B, **129**, 491 —21 Doerr and Hallauer s Handbuch der Virusforschung, 1939 Vienna vol ii, p 861 —22 Stanley, W M *J biol Chem* 1937, **117**, 325 —23 Knight, C A and Stanley *J biol Chem* 1941, No 139 lxx —24 Lambeau P *Ann Méd phys* 1939, **32**, 52 —25 Bittner, J J *Science*, 1941, **93**, 527

THE death is announced on Aug 10 of SIR ALFRED RICE-OXLEY, late physician in ordinary to Princess Beatrice and medical director of the Princess Beatrice Hospital for Officers He was 85

Annotations

SURGICAL IMPORTANCE OF PLASMA PROT

THE extraordinary slowness with which p follows knowledge in medicine is nowhere more e than in the study of the body proteins In a discussing the replacement of plasma protein lo t burns, Elman[1] points out that dehydration and h concentration in severe burns had already been rec nised in 1855 by Buhl, and in 1881 Tappeiner had suggested the transfusion of serous fluid for the treatme of these cases Our knowledge of the functions of th plasma proteins in maintaining the fluid in the vesse was given a scientific basis by Starling in 1896 Now, after nearly 100 years of haphazard research, mo th uncoordinated, we have at last reached an era where the body proteins are receiving some recognition, surely a powerful argument for some responsible body to correlate, verify and pass into practice as rapidly as possible the results of individual researches Judging by the va t literature which has accumulated on the subject durin the last few years, much energy, time and paper would have been saved by such coordination The work done from the surgical aspect has been excellently summari ed by Ravdin,[2] who discusses the various effects of hypo proteinæmia This condition alone can slow down intestinal movements and delay the emptying of the stomach After intestinal operations, the tendency to œdema all over the body consequent on the reduction of plasma protein becomes intensified at the site of opera tion, causing swelling at the suture line even to the extent of physical obstruction of the bowel Further, the actual healing of wounds depends on adequate protein reserve, for a lowered plasma protein prevents normal fibroblastic proliferation, thus causing sutured tissues to fall apart when the stitches are absorbed—an accident w known to all abdominal surgeons The effect carbohydrate feeding in preventing damage to the li due to some anæsthetics is possibly due to the prote sparing action of carbohydrate, and liver protect could as well be brought about by adequate prot feeding The pernicious practice of starving patie before (and after) operations must, in the light of t knowledge, have been the cause of much unneces mortality and morbidity A rather more subtle po emerges If, as Ravdin points out, it is possible damage the liver by protein starvation, and if, as see likely, the liver is chiefly concerned with prot metabolism and regeneration,[3] might not a vicious cy be started by the initial protein depletion ? And what extent may this cycle be broken by plas transfusion ? It is clear that some rapid and accur method suitable for universal use is required for estimation of the plasma-protein percentage and amount of the total circulating protein The latter is more important because in the presence of uncorrec anhydræmia (as in burns) the plasma protein percent may be normal though the total plasma protein may greatly reduced along with the reduction of plas volume

One danger remains to be remembered during intravenous infusion of plasma The method present much used for the production of plasma by citrate method causes a serious dilution of the plasma the citrate solution, with the result that the final conc tration of protein may be halved This citrated plas if run too quickly into a vein, may cause pulmon œdema If the danger of reactions can be remo from serum, this substance, which is undiluted, shoul preferred

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1 Elman, R J *Amer med Ass* Jan 18 1941, p 213
2 Ravdin, I S *Ann Surg* 1940, **112** 576
3 Loeb R F *New Engl J Med* June 5, 1941, p 980

Special Articles

FERENTIAL DIAGNOSIS OF LUNG INJURIES

DISCUSSION AT PORTON

a conference held lately at the Experimental at Porton Sir JOSEPH BARCROFT who was in the uggested that a town might be attacked in a r of different ways at the same time A mixed casualties might occur, some gas (more perhaps ney guessed) some blast and so on The question om the point of view of the lung how to sort out the ties which might be due to the various causes He be- that nothing of this sort had been attempted before

ACTION OF POISON GAS

f G R CAMERON divided gases into those absorbed gh the lungs with little local effects and those which holly or mainly on the lungs producing bronchial ge and bronchopneumonia or alveolar damage and pulmonary œdema Arsine is an example of the group, particulates, chlorine hydrogen selenide, gene, nitrous fumes, mustard gas and lewisite ur belong to the second Bronchial damage results ronchial spasm and destruction of bronchial epithe- It may be caused either by the irritant gas acting he lining epithelium with liberation of histamine-like tances, or through irritation of nerve-endings ous glands are stimulated, with often a considerable pouring of mucus which tends to plug the bronchial ities and cause collapse Bronchopneumonia may ow such blockage when infection occurs Four views ve been held concerning pulmonary œdema

1 The gas may act directly on the alveolar capillaries, ering their permeability so that plasma exudes out into the spaces

The gas may liberate H substances from damaged lining olar cells

Œdema may be secondary to cardiac failure

Lung lymphatics may become blocked, with lymph stasis overflow into the alveoli.

le gases act on the capillaries—e g lewisite and tard Although there is little histological evidence phosgene alters permeability of capillaries, there is y reason to believe this to be the case The second is debatable since much uncertainty exists as to the ure of the alveolar lining Cardiac failure is most n a secondary feature of œdema and not the direct se No information exists about lymphatic blockage, ed, the function of lymphatics in the lung is obscure ain risks arise from these lung changes Bronchial m resulting from high concentrations of gas may to acute asphyxia and interstitial emphysema nchial destruction is more important because of the ger of bronchopneumonia or bronchiectasis, but mately these complications are not common monary œdema if acute may lead to cyanosis and th from asphyxia If not so acute, there is incapaci- on and liability to cardiac failure or infection of the Hæmoconcentration may also add considerably to risks of circulatory failure In the dog exposed to gene, hæmoconcentration is well marked, but it kly passes off Nevertheless, the œdema persists the animal may die days after from pure pulmonary ma In rabbits hæmoconcentration is rarely seen phosgene though œdema is well marked What efore is the significance of hæmoconcentration t significance, too, is to be attached to mild pulmonary ma? How quickly is œdema fluid absorbed from ? How much œdema is necessary to produce pacitation of the patient? These questions, which are eat practical importance still remain to be answered

EFFECTS OF HIGH EXPLOSIVES

of GEOFFREY HADFIELD confined his remarks to aid casualties presenting severe respiratory symptoms out obvious surgical injury Such cases included those suffering from "pulmonary concussion" with- damage to the thoracic cage, (2) those suffering asphyxia, and (3) those whose symptoms are the lt of pulmonary fat-embolism Pulmonary concus- is characterised by multiple pulmonary hæmorrhages of considerable size throughout both lungs, usually deep in the lung substance but with no constant relation to the ribs or ramifications of the bronchial tree Rib-markings can be identified only in lungs from infants or young children, suggesting that the elasticity of the thorax predisposes to their production Naked-eye laceration of the lung or irregular tracking of blood through the lung substance are exceptional, and often no blood is present in the pleural cavities The size of the hæmorrhage is clearly related to the survival period, reaching a maximum in about 4 hours In cases surviving for 36–48 hours, hæmorrhagic areas are on the whole no larger than in those surviving 4–8 hours only Capillary bleeding seems to be responsible for the hæmorrhage A fibrin network forms in the alveoli and a mononuclear cell exudate appears, so that in 36–48 hours the histological picture is strikingly reminiscent of lobar pneumonia in the red hepatisation stage ('pseudo-pneumonia") Asphyxia may be presumed to have been a major cause of death when the air-passages are found to be obstructed by powdered plaster brick dust, &c It may also be the cause of death when the thorax has been compressed by a heavy mass of wood stone or metal Inhalation asphyxial lungs often show hæmorrhages, other cases show collapse and œdema which is often much better marked in one lung than the other with the usual post-mortem signs of asphyxia Carbon-monoxide poisoning probably the result of bursting of gas mains, is a frequent complication of pulmonary concussion and asphyxia The proportion of cases in which fat-embolism can be deemed to have caused death is uncertain Small quantities of fat in the pulmonary capillaries are found in a high percentage of deaths from trauma of any kind Only when the quantity of fat is large and there is embolism of the glomerular capillaries can much importance be attached to this condition There is usually a latent period between the incident and the development of dyspnœa A gross traumatic lesion of subcutaneous fat with a collection of autolysing fat and blood-clot is usually found at autopsy Professor Hadfield then outlined the clinical manifestations of pulmonary concussion, emphasising the rapid development of shock with a quick, thready pulse accompanied by severe expiratory dyspnœa Severe pain and tenderness of the trunk rapidly develop in the most severe cases, probably as the result of intramuscular hæmorrhage Dyspnœa may be due to hæmorrhage into the respiratory muscles Restlessness, which is prominent may be the result of subarachnoid bleeding Hæmoptysis is common within an hour or so of the incident and tends to be repeated Dyspnœa becomes greatly accentuated in cases dying after 36–48 hours, and there is hæmoconcentration with rise in venous blood-pressure A large venesection may relieve these features In pulmonary concussion the hæmorrhages are progressive, and one of the main principles of treatment must be to immobilise the patient as soon as possible and to disturb him as little as possible for several days

LUNG IRRITANTS

Prof J SHAW DUNN stressed the importance of dosage of gas in the evolution of symptoms High concentrations of phosgene elicit violent respiratory disturbance with œdema and over-distension of the lungs ending fatally in a few hours, lower concentrations cause early dyspnœa and steadily progressive œdema which may be fatal but is susceptible to treatment by venesection and oxygen Bronchial spasm is an early feature and contributes to the sensation of tightness in the chest and difficulty of drawing breath Bronchopneumonia is a serious though later addition, and may occur more readily in man than in animals owing to auto-infection or droplet infection in wards It adds considerably to the risk of fatality and also where recovery takes place to the likelihood of permanent damage to the lungs Pulmonary œdema is the most fundamental problem in poisoning by lung irritants Capillaries in the juxta-bronchiolar alveoli show dilatation and engorgement with thrombosis in some and œdema fluid comes from those capillaries through which blood continues to flow The more severe the dosage of gas the greater the dilatation and engorgement of capillaries and cardio-respiratory embarrassment is more severe though œdema is less in bulk In discussing the part played by altered capillary into the plasma to be used again in the synthesis of fresh hæmoglobin , the bilirubin is partly excreted as urobilin and urobilinogen in the fæces and urine and partly reabsorbed, being presumably available again for resynthesis into protoporphyrin, though the intermediate stages are not clear All this is the background for Gruneberg's view that his siderocytes indicate some disturbance of hæmoglobin synthesis It is certainly possible that derangement of this iron cycle may occur in disease Clinical and cytological differentiation of anæmias takes us only part of the way , there is an important group in which the cytologist can only say that the bone-marrow shows red cells being formed normally but rather less or more actively than usual, as the case may be, without giving any indication of the cause of the anæmia Dreyfus[3] thinks with some reason that understanding and application of our increasing knowledge of the chemistry of hæmoglobin is one of the most promising means of learning more about this inadequately differentiated group

NON-SPECIFIC ULCERATION OF THE COLON

Barlow[4] has drawn attention to a little recognised form of acute abdomen, in which early operation is the only means of saving life, but which seems to baffle diagnosis It is caused by the acute perforation of a non malignant, non-specific ulcer of the colon In many cases the ulcer is in the cæcum, so that the clinical picture may suggest appendicitis in over a third of the reported cases in the cæcum and ascending colon this was the preoperative diagnosis Evidence may however be detected of free gas in the peritoneal cavity The pathological findings suggest that the condition is one of chronic ulceration with acute exacerbation leading to perforation, and it is possible for symptoms to be sufficient to call for laparotomy before actual perforation occurs The ulcer is funnel-shaped, thus differing from gastric and duodenal ulceration, which it otherwise resembles Barlow analyses 52 cases of simple ulcer of the cæcum and ascending colon, including 2 which he is personally reporting Although these are the common sites, the sigmoid colon and other parts may be affected, including the rectum Barlow suggests that the relative stasis determines the incidence in different sites in the colon The edge of the ulcer is hard, and the base at the end of the funnel shows active inflammation and is the position of perforation Pain in the chronic stage, before perforation, is far less severe than in gastric or duodenal ulceration , in fact, 66% of ulcers on the right side of the abdomen, and 81% of those on the left, were already perforated when first seen by a doctor Before perforation vague pains may suggest investigation of the intestinal tract, and a diagnosis such as carcinoma of the colon lead to laparotomy Once perforation has happened the urgency of operation seems as a rule to have been obvious That some cases died without operation Barlow attributes to the fact that the records go back more than thirty years The two facts that stand out most clearly from the records is that no case was correctly diagnosed prior to operation , and that no case not operated on survived Where the condition is suspected before the ulcer perforates the abdomen should be opened, because of the great risk of perforation Simple drainage has been uniformly unsuccessful Barlow advises resection and lateral anastomosis as the operation of choice in the absence of perforation After perforation one can choose between oversewing the ulcer and draining the pelvis, and exteriorising the bowel with or without a cæcostomy Barlow carried out resection, as for carcinoma of the cæcum—which indeed he suspected at operation—in his first case The second had several ulcers of the cæcum with acute inflammation of the cæcal wall Two of the ulcers had perforated He therefore closed the perforations and cæcum and ascending colon, suturing the bowel to Next day he opened the cæcum by diathermy Bo tions were successful He suggests that barium trast radiography might help in the preoperative di

POSTURAL DRAINAGE IN CHILDREN WITH BRONCHIECTASIS

In the conservative treatment of bro children postural drainage is often made difficult patient's lack of cooperation, or fails because remain undrained through the improper use of "Nelson bed" or similar tipping devices B Bonham-Carter[1] claim that more detailed anatomical diagnosis and the maintenance of the posture by a special device makes postural more worth while, whether used to effect a cure on own or as a preoperative procedure As regards nosis they set out the method used at the Hosp Sick Children, Great Ormond Street, for obt bronchograms, based on G S Erwin's work at Brompton Hospital[2] The patient is prepared for a by 18 hours' postural drainage daily to empty affected portion of lung General anæsthesia is emplo for children under ten years (ethyl chloride followed ether) and local anæsthesia to the larynx for o children After being tested for cocaine sensitivity child sucks a Decicain sweet Then, using a s with 1½ in of 1/10 in bore rubber tubing attached, p through the nose, 2–3 c cm of a 1% cocaine solution is in The oil used for the bronchogram is oleum iodis B P run in cold, one side only being done at one sit the volume required varying with the age of the ch If the tongue is pulled well forward by tongue forcep oil passes through the catheter and drops into the lary The position of the child depends on the part of the l which it is desired to fill, and Barsby and Bonham C set out some detailed anatomical considerations should be closely studied by anyone attempting method With carefully obtained taken as stereoscopic X-ray views, the physician a position to apply postural drainage intelligently affections of the upper lobes drainage is best effected allowing the children to run about For drainage of middle, ventral and anterior basic bronchi the should be on its back on a flat bed with the chest by a special wedge under the affected side The foot the bed should be raised eighteen inches to two feet the child's feet must be tied loosely to the foot of bed by straps attached to anklets of soft material draining the axillary basic, posterior basic and do bronchi the child should be placed on its face ove tipping device with the trunk at right angles to the l The special wedge is placed under the affected side the child is secured by attaching the feet to the foot of bed, with a strap like a martingale passing from the ce of the chest or back to the head of the bed Thi st can be conveniently attached to an ordinary strap jac commonly used for keeping children in bed In jacket two oblong pockets are made, front and back, into these a wedge made of firm sponge rubber is inse according to the position in which the child is to be l Eighteen hours a day in hospital or the entire night w at home are necessary to secure adequate drainage w is helped by the administration of a liquefying expec ant mixture

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ADDRESS UNKNOWN—The editor of the Me Directory asks us to remind certain of our readers these words will appear after their names in the directory unless they provide an alternative wit delay The offices of the directory are at Gloucester Place London W 1

Dreyfus, C *Schweiz med Wschr* May 31, 1941, p 682

[4] Barlow, D *Brit J Surg* April, 1941, p 575

[1] Barsby, B Bonham Carter R E *Arch Dis Childh* 1941, 1

[2] *Lancet*, 1936, i 1236

n pulmonary compression symptoms develop almost hately after the accident. Through it is difficult ess the importance of pulmonary fat-embolism, that the symptoms might closely resemble those osgene gassing, for they come on about the same and are characterised by severe pulmonary œdema, mia and right heart failure. The treatment, ver is similar for both. He advocated a critical of the pathogenesis of pulmonary œdema in abolism, since it might give some indication of the of phosgene œdema. In fat-embolism the fat is rritative and the changes are consequent on ilar occlusion and local anoxæmia, factors which ld be considered in phosgene poisoning. He had often ntered hæmoconcentration in the pulmonary lation in cases of pulmonary œdema, despite the nce of gross change in the peripheral circulation. uggested that hæmatocrit analysis of the blood in two circulations might be profitable. He, like Dr. orn had seen cases of so-called neurogenic pulmonary ma, and said the condition has been produced erimentally in America by Farber.

GENERAL DISCUSSION

urgeon Rear-Admiral C P. G **WAKELEY** said he l met with a rather different type of lung injury, in ich the damage was certainly inflicted from without ese men had been in the water near the place where pth charges were going off and said that when the arge went off they could feel the "kick" from it. me of them were brought in dead others died afterards They showed as a rule no extreme damage of e chest They often complained of abdominal pain, d often had hæmoptysis, hæmatemesis and diarrhœa t autopsy they showed the appearance of blast injuries f the lungs They also had other injuries, such as iptured liver and other abdominal traumata.

Surgeon Lieut-Commander G L. **FOSS** said he had rried out some experiments on the effect of adrenal rtical hormone in lewisite poisoning but he had not amined the medulla of the suprarenals.

Prof **SHAW DUNN** pointed out that the pressure in the od-vessels is not the only factor concerned in œdema, e rate of flow also plays an important part He was pressed with the importance of alternation in capillary atation. He understood that in the denervated lung alternation in capillaries can be observed This of urse might be explained by the total blood-supply to e lungs being much greater than in an intact lung suggested that if the alternation in bronchial activity s present in the human lung it should be observed by hiologists during screening, he had not heard of any ch alteration being observed in the human lung

Prof J H **GADDUM** said there is evidence that various ms of lung injury do liberate histamine and that it uld be interesting to know whether phosgene does s Laqueur and Magnus observed a primary fall of od pressure after phosgene, which may be due to eration of histamine

Dr **JOAN ROSS** dealt in detail with carbon-monoxide soning and the secondary pneumonia following blast jury of the lung In compression the hæmorrhages ay be bilateral and symmetrical, these are usually bpleural, and rib markings are usually seen, there is neral congestion of the lungs and often œdema, rdieu's spots are often seen, and there may be thrombsis of vessels In concussion, on the other hand, the morrhages are always bilateral and symmetrical and y subpleural hæmorrhage is present as an extension m deeper areas, there is general congestion of the ngs, but Tardieu's spots and thrombosis of vessels are t found Dr Ross had not seen the massive hilar morrhages described by Dr Osborn In the typical se of blast injury of the lung there are free red cells in e alveoli, but the alveolar walls are normal and there no œdema These are the changes found at the early ges In cases which survive longer the secondary anges which supervene are very like those seen in an dinary lobar pneumonia In the alveoli are red lls, fibrin and mononuclear cells It is difficult to say hat degree of fat-embolism will prove fatal Certainly t-embolism will not account for the hæmorrhages — lonel L E H **WHITBY** asked what she considered the urce c the fat was in the cases which showed fat in t capillaries.—Dr. Ross replied that in many such cases there were no fractures and the fat was only found in the pulmonary capillaries and not elsewhere in the body, its origin was unknown

Surgeon Lieutenant R. M. **CALDER** considered the mechanism for the absorption of fluid from the alveoli That such a mechanism exists in a normal lung is an old observation He had injected as much as 30 c cm of serum into a rabbit's trachea without killing it. After 3 hours about 30% of the injected fluid had disappeared, and 70% was away by 18 hours It was hoped to measure the absorption of fluid after phosgene in a similar way, but unfortunately most animals die after quite small injections when they have been previously exposed to phosgene. Another difficulty is that one does not know how much fluid is lost by evaporation Sir Joseph Barcroft calculated that on theoretical grounds a rabbit could evaporate as much as 25 c cm of water in a day. The main histological feature of such lungs is the intensity and speed of the phagocytic response Within 30 min the alveoli and septa contain large numbers of mononuclear cells where Trypan Blue has been added to the fluid these cells will nearly all contain granules of the dye. There is no dilatation of the lymphatics. This picture is in striking contrast to what is seen after phosgene where the alveoli are practically free of cells in the stage of œdema and the lymphatics are widely dilated The normal animal can remove from its lungs quantities of fluid larger than those found in animals dying from phosgene poisoning, this strongly suggests that after phosgene there must be some interference with the normal absorptive mechanism

A Note on Technique

In a short paper on technical methods in the study of the lung-irritant gases, Captain R H D **SHORT** said it may not be easy to distinguish between desquamation of the mucous membrane of bronchioles and spasm of bronchioles since both may exist at the same time The nuclei in desquamated epithelium will be pyknotic In the experimental animal which has received Trypan Blue intravenously the mucous membrane will show diffuse cytoplasmic staining In a series of rabbits exposed to 1 15,000 phosgene for 15 min and killed at varying times afterwards pulmonary collapse is a characteristic finding during the first 6 hours Its distribution is lobular The cavity of many alveoli is completely obliterated in others it is reduced by more than 50% It must therefore be decided whether this collapse is real or is due to faulty technique In rabbits in which the lungs have been removed without tying the trachea such a degree of collapse is not found and it is therefore probably not the result of faulty technique There are two possible causes for the collapse—spasm of the bronchioles and obstruction of the bronchiolar lumen by desquamated epithelium In rabbits and guineapigs which were given histamine intravenously, examination of the lungs showed a considerable degree of bronchiolar spasm There was practically no collapse It is probable that the alveolar collapse after exposure to phosgene is the result of a complete obstruction by desquamated epithelium of a bronchial lumen already reduced by spasm It has been found that alveolar exudate stains in a different manner according to the stage at which the animal has been killed after exposure Before 3–6 hours the exudate stains blue with Orange G and Aniline Blue, at about 6 hours it stains in alternating bands of yellow and blue, and when fully developed, from 12 hours onwards it stains yellow That this is not due to thickness of the section has been shown by staining sections 5 μ and 20 μ thick, which stain in the same way Protein films dried on slides and stained show that solutions containing under 0 5% protein will stain blue, those between 0 5% and 1% will show alternating bands of blue and yellow and those over 1% will stain yellow Solutions of the three plasma proteins show the same phenomenon, and films prepared from samples removed at intervals from plasma digested with a solution of trypsin behaved in the same way as a similar series where boiled trypsin solution was used The staining reaction is not due to breaking down of r [illegible] Though the basis of this staining reaction is appears to provide a semi quantitative method ing p [illegible] an exudates permeability in the production of pulmonary œdema Prof Shaw Dunn said that the amount of damage, though sufficient to determine abnormal escape of fluid for many hours, yet permits continued blood-flow There is no evidence that permanent structural change occurs in the alveolar walls The most prominent histological evidence of capillary damage is dilatation and congestion At any moment the total pulmonary blood-flow is being transmitted through only a proportion of the capillaries and not through the whole network Pulmonary capillaries in the gas lesion may thus be visualised as having

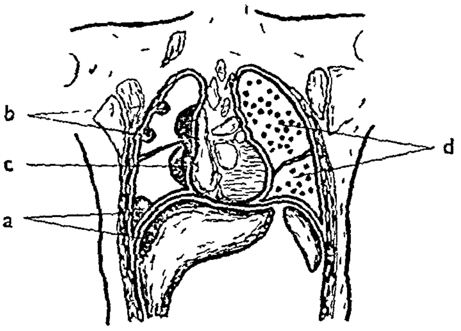
(1) a slower blood flow ,

(2) an increased blood content applied to a greatly increased filtering surface ,

(3) a higher lateral blood pressure, since capillary diameter is enlarged ,

(4) walls thinner than normally, due to the distension

These factors appear adequate to account for the leakage of fluid from the capillaries Escape of this plasma fluid into the air spaces is contributory to hæmoconcentration, and the increased viscosity of the blood which results doubtless accounts for embarrassment of the pulmonary circulation Another contributory factor is the greater pressure exerted on pulmonary capillaries by the fluid in the alveoli than by air Well-timed venesection, which is so valuable in the treatment of blue cyanosis in gassing, depends not only on alleviation of cardiac embarrassment by removal of blood from an overloaded venous system but also on the reduction of blood-volume which will favour return of fluid to the circulating blood, even from the lungs In the stage of grey cyanosis, however, peripheral circulatory collapse has set in and venesection is unlikely to be helpful Prof Shaw Dunn thought it unlikely that confusion might arise between the initial concussed state of blast patients and any stage of gas poisoning He agreed that the clinical conditions would become much more complex if the effects of poisonous gases were added to those of ordinary trauma, as might easily be the case in air attacks



Main Types of Hæmorrhagic Concussion of Lungs —The three primary lesions are shown on the right side (a) Phrenico costal sinus contusion with related liver damage (b) Two " rib markings " are shown in the upper lobe , these extend to a variable depth and tend to become confluent posteriorly where they may merge into (c) Massive hilar contusions The hilar lesion is most massive posteriorly The secondary lesion (d) is shown in the left lung, this is innumerable hæmorrhagic spots due to inhaled blood varying in size from about a pin's head to a silver threepence Their distribution is fairly uniform over one lobe, one lung or both lungs The variations evidently depend on the amount of blood entering the bronchi and the posture of the patient while the blood is in the bronchi

BLAST LESIONS OF THE LUNGS

Dr G R OSBORN outlined his experience of primary, secondary and reactionary lung lesions resulting from a bomb explosion (see figure) Primary features are (1) rib markings, best seen in infants, ill-defined in adults, single or multiple , with a location suggesting that they were inflicted with the lungs in the inspiratory position, (2) contusion of the phrenicocostal sinus , and (3) massive hilar contusion The last is of obscure origin and may possibly be explained by the penny experiment (if a penny is knocked against a row of pennies the end one only flies off , see Sutherland, G A *Lancet*, 1940, 2, 641) With a large compressing force, the alveoli with air locked in them behave like the pennies, and the force is transmitted to the deep parts of the lung in the region of the hilus In the larger primary lesions alveoli are packed with red corpuscles which without doubt have come from the alveolar capillaries, although the latter are so compressed that the holes through which they have escaped cannot be seen Inhalation of blood is a secondary lesion and results in scattering of blood throughout the lungs as small red spots R lesions are principally acute pulmonary œdema, ' pneumonia " and true pneumonia Œdema on and prove fatal within an hour, or it may not for several days Dr Osborn divided cases of pulmonary œdema into 3 groups (1) those to brain lesions, (2) those due to left ver and (3) those due to pulmonary causes Left failure is not a satisfactory explanation for all cases described lung œdema in a man of 29 with rupture aneurysm of the middle cerebral artery who organs were normal, and who had sustained no It is often possible to detect a nervous factor in which are apparently due to left ventricular pulmonary lesions Morphia is the only drug have an effect on the condition

PHOSGENE POISONING

Surgeon Commander ARCHIBALD FAIRLEY de an unusual case of human phosgene poisoning patient was an Oxford student, who was one of a pa round which a tube of phosgene was passed at a demo stration She was the first person to smell the pho A capillary tube of phosgene was simply cracked in glass bottle, and she then took a good sniff from t bottle and at once coughed She had no immedi symptoms, but later in the day began to cough and ha all the symptoms of acute asthma It is of course known what actual dose of phosgene she inhaled Sh then became acutely ill, breathing very rapidly, mak wheezing noises but showing no cyanosis She was ill that she had to be taken to a nursing home, where sh was given continuous oxygen for a week It is po that there was a neurotic element in her case Co mander Fairley carried out some experiments on goa to try to imitate the conditions under which the pati had inhaled phosgene The goats were fitted with rub respirators which were connected to bottles in wh similar capillary tubes of phosgene were brok Phosgene could be smelt in the air expired by the go Similar symptoms were produced to those found in th girl The goats began to breathe very quickly and we obviously ill and restless Blood-counts revealed n change The goats were killed later, and at autop showed no pulmonary œdema, except a very sli degree in one goat Then the experiment was repeat but the phosgene was first put in a Douglas bag, so th the dilution was much greater , this caused no symptom The capsules contained 30 mg of phosgene, which woul liberate 8 c cm of gas This is theoretically a fatal dos but of course we do not know whether the girl actual inhaled that amount The striking thing about th human case was the acute asthmatic attack, resemblin ordinary asthma

DIFFERENTIAL DIAGNOSIS

Prof J A RYLE said that those who had had clini experience of gas casualties should not find the differenti diagnosis of blast injuries and gas poisoning difficu The likelihood of meeting a combination of gas and bl effects was probably small The differential diagno would clearly be assisted by the history of the incide A case of blast is obviously ill from the start He w complain of pain and be breathless, and may ha hæmoptysis The symptoms of gas poisoning, on t other hand, are of later onset and will be unlikely include hæmoptysis or pain and in most cases of pho poisoning there will be a clear history of gas having be used As regards treatment, rest is the first esse for both types of case It is not known whether oxy is beneficial in blast injuries of the lung The clin appearance of cases suggests that they should be t with oxygen He had seen the B L B mask poo tolerated and wondered whether the old-fashioned n tube might be better in some cases He favoured S Dunn's view that the primary mechanism in pulmon œdema was capillary damage He did not think that œdema was due to heart failure The differen diagnosis of pulmonary concussion and phosgene poi ing should rest on (1) history, (2) the appearance of patient, and (3) symptoms and signs

Dr A H T ROBB SMITH agreed with Prof Hadfield about the findings in cases of blast injury o lungs He thought that, on the whole, sympt would not be confused with those of phosgene poiso

In England Now

nning Commentary by Peripatetic Correspondents

two outstanding memories of what the *Times* has to christen the Four Years War are my mother entiously following up the writing of a letter by ig the letter to which she had just replied into and going every Sunday morning to the post office id the war bulletin posted on the door Sunday papers were unheard of in our house though my r used to admit that there was much in his sister's ntion that it was a Monday morning paper which ight not to buy, because it had been printed on the ath All this seems absurdly remote from these , but it came back when I read Sir Kenneth Murchi i memoirs The generation which has grown up een the wars must sometimes wonder how that war arranged without the wireless The answer was—he public speech Murchison records how in 1918 sed to speak on behalf of the National War Savings mittee Among the points he was expected to ke were do not use tablecloths or buy new clothes id travel, *use less fuel, give up tobacco and use* ls instead of matches (sound familiar don't they?) describes how, in an interlude at a cinema, a pretty l performed tortuous dances and he gave a six-minute lress on the need for saving The B B C has abolished this and I can't see a modern cinema audience, lated with personal appeals from cabinet ministers, perial prime ministers and distinguished soldiers and ilors, welcoming another dose in the interval sandiched between two tunes on the organ

* * *

There are many pests about a hospital of all sorts, izes shapes and political creeds Even in the narrower ense of vermin there are several varieties to be encounered in and around the best of hospitals There are, course, the insect pests commonly associated with my life Their eradication is often difficult enough, it it is as nothing to the difficulties that meet our tempts to control the rabbits and rats Rabbits are erywhere and at this time of year particularly it is arcely possible to avoid tramping on them They ve voracious appetites, and the head gardener never ases to lament the damage they do to our crops ter the fashion of the times we have taken to growing tatoes, and even the shaws of these in their early days em to offer tempting bait to our bunny family Various perts have counselled different methods of approach me want to line our entire five-acre potato patch with shed wire, which would apparently make our already pensive crop wholly prohibitive in cost, apart altother from using wire that can probably be put to better rpose elsewhere Some think the rabbits should be ot, a time-consuming process not altogether free from nger in view of the uncertain marksmanship of our staff hers explain airily that the rabbits should be trapped This question of the trapping of vermin is one that we ve always approached with distrust Trapping, in y case, seems a puny weapon in a countryside so full of bbits as ours, though we have embarked on a course rabbit ensnarement that may ultimately save a few our potatoes and provide some protein to go with em Our rabbit traps have emanated from some ficial source and are presumably as effective as rabbit aps can be, but we encountered some weird and onderful traps in our earlier efforts to dispose of rats me of these are issued with codes of instructions that ould put to shame the prolix official pronouncements e receive from other sources There are instructions r unpacking the constituent parts of the traps, for ting the wire grids and the run-boards for the treatment the pivoted floor, which appears to be the crux of the echanism The floor is held firmly in the set position suction produced by boracic ointment applied to the ood strip on which the floor rests The success of the ap depends mainly on the delaying action of the ointent for without it the floor would begin to tilt slowly e a rat was fully over the pivot and the rat would cape It is naïvely explained that "Ointment of the lk of a large pea suffices to delay action of the floor til a full grown rat of about 18 ounces passes cometely over the pivot to the bait side in fact, half a inute may elapse ere the floor gives way suddenly and throws the rat into the tank in the interval of delay the rat will nibble at the bait and may be joined by another rat thus speeding the capture of both' On the subject of baiting the instructions are precise The trap may *be baited with a lump of brown bread or with oatmeal* for which a sprinkler container is provided Brown bread, it appears differs from the food usually accessible to rats in bulk form it cannot be carried away and this tends to the congregation of a number of rats at the bait until their combined weight causes the floor to give way When brown bread is not available, or fails to attract a red herring or kipper should be fixed on the spikes after rubbing it on the run-boards This all sounds straightforward and the story draws to a triumphal close To remove the rats the bottom of the tank should be raked slowly from side to side with a small planting fork or the like, all small rats being collected and the bodies disposed of in a furnace if possible"

Doubtless some elaborate mechanism for the mass execution of rats is necessary, since we are credibly informed that one good-going pair can be responsible for the production of something like 850 others in the course of a year The only trouble about our traps is that they do not work, possibly on account of some inherent defect in the trap or its setting, or from some superlative acumen or dexterity of our rodent population

* * *

Mrs Endhouse wife of a farm labourer lives about six miles from anywhere and is nearing the end of her third pregnancy Yesterday she wrote to say that her face was puffy and her legs swollen and could we do anything about it? Two of us answered the call prepared to give an anæsthetic and perform a surgical induction if necessary summoning the district nurse, who had to come six miles from another direction to help Mrs Endhouse proved hysterical and negative, she had albuminuria and a rising blood-pressure but she weren t goin' to 'ave nothin' done In that case we retorted she must go into hospital, but this also she flatly refused to do In vain we explained, entreated, implored and threatened Her husband and a neighbour had no better fortune and at the end of an hour and three-quarters of solid spadework she grudgingly conceded that she would have an enema if we liked We did not like but returned to the attack At the end of two hours we were exactly where we started and went home to think out the next move If we wash our hands of her, some other poor doctor will be obliged to take over and go through it all again If we leave her alone she may develop eclampsia and die quite unnecessarily What would you do chums?

* * *

As is perhaps natural my goats Sirene and All-Cleara are proving capricious They are tethered within comfortable reach of their sleeping quarters, an outsize dog-kennel formerly the abode of a quasi-mastiff now long since gathered Since we cannot offer them separate bedrooms both goats have to be tethered to one post by separate ropes so that either may turn in when she wants to without the other necessarily having to accompany her No fishing cast in the hands of the veriest *tyro could* rival the tangles my goats produce in their tethering ropes A fly on the end of a cast is a passive thing which permits itself to be slipped in and out of loops but not so a goat Just when you have reached a critical point in the process of disentanglement your goat gives an almighty heave, sits back on her haunches and pulls the whole thing tight again The only alternative is to detach the goat from the distal end and hold her between your knees while you get on with the rope, while you are doing this the other goat comes up and playfully butts you and/or her girl-friend to ensure that a difficult time is had by all As soon as you have got the lines clear both goats gallop joyfully to and fro repeatedly crossing in front of each other, and whenever possible incorporating any other obstacle within reach so that they are soon lying cheek by jowl in enforced intimacy and imminent danger of strangulation Another playful habit indulged in freely by both is to take flying leaps at and strive to obtain a foothold on top of the dog-kennel, knocking it over and inflicting further material damage on its already crazy roof Since this bulletin started the housemaid has reported that All-Cleara has broken loose I, for one, shall not care if she fails to return to her base

MAXILLO-FACIAL WOUNDS

WAR OFFICE MEMO

THE following memo on the preliminary treatment of maxillo-facial wounds has lately been circulated by the War Office

Only first-aid treatment is practicable until the patients arrive at the main dressing station, which may be some hours after the receipt of the wound Early treatment is directed to saving life, the two main aims being to prevent suffocation and control hæmorrhage General treatment to prevent shock is given by rest, warmth and sedatives

Respiratory obstruction—Loss of control of the tongue displacement of bony tissue or both may be sufficient to produce obstruction of the air-passages Attention should be paid to the possible presence of foreign bodies—e g , fragments of teeth or dentures—which should be carefully removed Posture is of vital importance and the patient should be placed on the stretcher in the prone or semi-prone position to prevent the tongue falling back If he is sitting up, or is able to walk the wounded man should do so with his head bent forward and downwards Stretcher bearers must be trained in the transportation of men in the prone or semi-prone position

Hæmorrhage—Correct posture will help to control hæmorrhage by keeping the tongue forward Ligature of visible bleeding vessels may be practicable at the advanced dressing station

Bandaging—The ordinary four-tailed bandage should never be used unless applied under the chin, as it is likely to increase the displacement of the fragments by backward pressure The "Barrel" and "Hamilton" types are very suitable and are easily and rapidly applied A useful external support is Elastoplast—a good grip can be obtained in the shaved temporal areas and the scalp left free In all cases the bandage should be applied under the chin in such a way as to give gentle upward support

Preliminary operative treatment—The main dressing station or the casualty clearing station is the first place where a dental officer will be available and his cooperation will be sought in every case After due attention has been given to shock, hæmorrhage and respiration, X-ray examination (both lateral and antero-posterior) should be made at the earliest opportunity

Preliminary operative treatment should be carried out as a rule under general anæsthesia, the surgeon and the dental surgeon working together The throat should be packed with one piece of 6 in roll gauze during intratracheal anæsthesia until the jaws are ready for intermaxillary wiring, when the packing should be removed A long stout stitch may usefully be passed through the dorsum of the tongue and the ends secured This stitch must not be removed until the reflexes have fully returned after the operation Owing to mobility of the fragments great care is necessary when manipulating any form of gag Debridement should be more conservative than in the limbs and trunk, and is seldom necessary

INJURIES TO HARD TISSUES

Without loss of tissue—As far as possible, accurate apposition of fragments should be carried out A tooth in the actual line of fracture should be extracted (except when there is only one tooth on the distal fragment and its retention might temporarily assist in control) Fragments carrying teeth should be immobilised by interdental wiring with malleable stainless steel wire When, in cases of fracture of the mandible, intermaxillary interdental wiring is impossible (e g , where the superior maxilla is edentulous) the principle of maxillary wiring may be adopted One or more thin stainless steel wires are passed through the alveolar process and looped to furnish fixed points to which the interdentally wired fragments of the mandible can be attached to reduce and immobilise the central fragment

When teeth in the mandible are absent or have been destroyed it may be possible to modify the patient's denture or to use impression composition or gutta percha moulded inside the mouth, or in a Kingsley splint, to control the fragments

With loss of tissue—Only the smallest bony fragments which are completely separated from periosteal attachments should be removed The main fragments be fixed in normal occlusion with the opposing jaw their ends are exposed they should be covered mucous membrane by the suturing of mucous to mucous membrane or skin If necessary, any ends of exposed bone may be removed to relieve Even if the whole mental region is lost the ments should be held in normal occlusion Never bone fragments (with intervening loss) to fall to or great deformity and loss of function will Surgical wiring of bone fragments is absolutely indicated in all compound fractures of the mandible

INJURIES TO SOFT TISSUES

When there is no loss of tissue make a careful prima suture with accurate apposition of skin edges, using stitches placed as close to the edge of the wound possible When there is loss of tissue only such prima suture of the wound as can be done without any or closure of the mouth should be undertaken, thu loss of a third of the upper or lower lip, without su jacent fracture, may safely be sutured without detrime to subsequent treatment Suture of a lip, when there a compound fracture of the mandible should not attempted until complete control and repositioning the fragments have been obtained As a result of t neglect of this rule many cases have been admitted special centres with an encroachment on the oral open rendering subsequent repositioning of the bony fragme extremely difficult It is far better in these cases to all attention to repositioning the bone fragments and leave suturing soft tissue and plastic treatment for lat Suture of skin to mucous membrane around the mar of the defect is a valuable procedure in prevent infection and contraction of the soft tissues, either which will vitiate both hard and soft tissue replaceme

There is a high incidence of abscess formation after inju of the lower jaw and the advisability of providing subma bular drainage at the outset by the insertion of one or m tubes at likely sites should be considered The drink cup with about 3 in of free rubber tubing is a suitable met of presenting fluid diet well back in the throat A solutio sodium bicarbonate is especially recommended as a mo wash or for purposes of irrigation in addition to the ordin antiseptics The mouth should be irrigated after feeds means of a Higginson syringe Owing to the con dribbling of saliva in maxillo facial wounds the dressings rapidly soaked and frequent changing is necessary A jaconet or other waterproof bib should be worn to pro the clothing

At the first opportunity the patient should be evacu to a special maxillo-facial hospital or other hos where the services of a maxillo-facial team are availa

TUBERCULOSIS IN WALES

AT its annual meeting on Aug 1 Lord Davies, the presid urged the Welsh National Memorial Association to try o system of mass radiography He suggested that at first should concentrate on young people in the vulnerable groups—such as children leaving secondary schools students—and on contacts To examine the whole of W simultaneously twenty five units would probably be ne and he thought they might start with one radiological which would examine 100,000 cases in a year Dr D Powell, principal medical officer, pointed out that at many new cases would be discovered and reminded meeting that there was already a deficiency of 400 beds in W But he agreed that the ultimate advantage of the experi would be the early control of infection The preparation plan for the scheme was referred to the committee

The meeting also decided to send a resolution to Minister of Pensions asking that when men are discharged the services immediate steps should be taken so that the given proper treatment and that everything should be to alleviate suffering of dependants The association attention to their difficulty in finding nursing and dom staff for their hospitals If something were not done work would come to a standstill

Sully hospital has now been made a thoracic centr South Wales and arrangements are being made for tuberc officers to be called by E M S officers as consultants in of non tuberculous diseases of the [illegible] be su for admission to the hospitals verbrook for the bombed out Colonel Walter T said the waiting-list was a humanitarian, social onomic scandal which was not present in anything he same intensity in England save in the North oought the figures given by Mr Johnston were of the strain and stress on the national health ngitis was due to overcrowding paratyphoid to sanitation and tuberculosis was the danger signal alnutrition The Minister of Labour had said he d sooner have 10 000 extra rations than 10,000 workers, yet there were only 2 canteens at Scottish But feeding on the spot is a sure method of giving lementary rations to those who really need them r K Lindsay asked if something like a welfare rtment could not be set up in the Scottish education rtment He would like to see the whole of proba- included under education Dr H B Morgan lored the organisation of fracture treatment in Scot- l which he said was far below the standard set up the Delevingne committee He had yet to hear of a abilitation centre in Scotland Mr G Buchanan ed the hurried debate with a protest that there had not n time to say a word on perhaps the gravest matter Scotland—juvenile crime

QUESTION TIME

Milk for Next Winter

Major G Lloyd George replying to a question said btantial quantities of condensed milk have been manu- tured in this country during the summer and large quantities e being supplied from overseas There is therefore no ason to expect that anyone will be short of milk during the ming winter, but individuals may have to consume rather ore condensed milk and rather less liquid milk than they ave been accustomed to do In view of the perishable ature of milk and the paramount importance of avoiding aste we are satisfied that a formal rationing scheme is ndesirable One pint of liquid milk per day will continue to available to all expectant mothers and infants up to five ars of age under the provisions of the present National ilk Scheme Supplies of half a pint per day will also be ailable for children and adolescents up to the end of their venteenth year on payment of the full current prices To able liquid milk to be provided for those priority classes id to assist in the distribution of liquid milk to the remainder the population, all members of the public will be required register for milk. The cheese ration will be increased to 3 oz. r head for the ordinary consumer as from Aug 25 The t on of 8 oz. for the priority classes will remain unchanged

National Wheatmeal Loaf

Miss E. Rathbone asked whether Major Lloyd George s aware that a large proportion of the bread shops in ondon were refusing to stock the national wheatmeal loaf, d in view of the large public expenditure in advertisements ging the public to buy this loaf, will he consider making its pply compulsory —Major Lloyd George replied The wer to the first and last part of the question is no More an 3000 bakers and bread shops as well as the majority of wholesalers and coöperative societies are already coöperat- g with my department in popularising the sale of national eatmeal bread in London.

Pharmacy and Medicines Bill

Sir E. Graham-Little asked the Minister of Health if he ould now name the bodies who were parties to the agreement rived at, after long consultation, before the Pharmacy and edicines Bill reached the House, and if he was aware that e agreement was accepted by all the parties concerned only h regard to the original clause 7, and that the other clauses re negotiated separately by different interests —Mr E own replied According to my information the following ties signified their agreement with the proposals which m the basis of clause 9 of the bill (clause 7 in the bill as troduced) Proprietary Association of Great Britain, harmaceutical Society, National Pharmaceutical Union, ottish Pharmaceutical Federation, Company Chemists sociation, Wholesale Drug Trade Association, National ederation of Grocers and Provision Dealers Associations, arliamentary Committee of the Coöperative Congress, and e Association of Wholesale Druggists and Manufacturers of edicinal Preparations The remaining clauses of the bill were ot the subject of a general agreement of this kind but in ertain instances the parties most closely concerned have been onsulted

Cost of National Health Insurance

During the year ended Dec 31 1940, £17,948,000 was expended in Great Britain on sickness and disablement benefits under the National Health Insurance Acts

There are in England and Wales 17 290 doctors under contract with insurance committees In 1940 they were paid £7,674 127 for treatment, £251,938 for drugs, and £256 767 for mileage, making a total of £8,182,832 (Mr Brown replying to Mr W Thorne)

Medical Examination of Recruits

Mr Rhys Davies asked the Minister of Labour whether, in order to assist medical boards in testing men for service in the Army, he would request approved societies to supply the boards with the medical history of each case so as to avoid as far as possible passing those whose medical history made it obvious that they were physically incapable of making efficient soldiers —Mr Bevin replied The investigation of previous medical history forms an important part of the medical examination, which includes careful questioning on this matter by the examining doctors In addition, every man is informed, when called for medical examination, that the medical board will be prepared to give careful consideration to medical evidence regarding any serious illnesses or disabilities from which he has suffered, and he is also asked to complete a questionnaire designed to elicit information as to certain aspects of his previous medical history I have given careful consideration to the suggestion but I am advised that it would not supplement the information already obtained to an extent sufficient to counterbalance the administrative difficulties in the way of its adoption.

Mr James Griffiths asked the Minister what steps were taken by the medical boards, Armed Forces Act, to prevent men with tendencies to tuberculosis being recruited into the forces, and if it was proposed to improve the system of examination in view of the number of men discharged from the forces on account of tuberculosis —Mr Bevin replied Arrangements have been made for notification to the medical boards of particulars of every man of military age whose name appears on the tuberculosis register kept under the Public Health (Tuberculosis) Regulations, 1930 In addition, every man examined is asked to state if he has ever suffered from tuberculosis or received treatment for tuberculosis or suspected tuberculosis, and careful attention is given to any medical certificates which may be produced. It is generally recognised that incipient or latent pulmonary tuberculosis cannot usually be diagnosed by ordinary clinical examination, but wherever there is reason to suspect tuberculosis the board refers the man for radiological or other special examination by the tuberculosis officer of the local authority of the area in which he lives A suggestion that the chest of every recruit should be radiologically examined was fully considered last year by the medical advisory committee under the chairmanship of Lord Horder, and the committee decided that its adoption was impracticable

Tuberculous Ex-Service Men in Wales

Mr Griffiths asked the Minister of Pensions if his attention had been called to the resolution passed by the Welsh National Memorial Association, urging him to make provision for men discharged from the forces suffering from tuberculosis[1], what provisions existed to provide such treatment, and what further steps he was taking in the matter —Sir W Womersley replied I have not received a copy of the resolution Residential treatment for tuberculosis in ex-Service men falls to be provided by the local health authorities under their general tuberculosis scheme, and where such treatment is provided for a man whose need for treatment is due to war service the local authority is entitled to submit to the ministry a claim for reimbursement of the cost of the treatment These arrangements have worked and are working satisfactorily In Wales the arrangements for residential treatment of ex Service men are made through the Welsh National Memorial Association and so far as I am aware there has been no difficulty in arranging any residential treatment required by our pensioners

Mr Griffiths asked the Minister of Health if his attention had been called to the report of the Welsh National Memorial Association, indicating a deficiency of 400 beds for waiting tuberculosis cases, and what steps were being taken to provide additional accommodation.—Mr Brown replied I have seen a press report that a statement was made at a recent meeting of the association to the effect indicated. The question of

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[1] See p 200

Parliament

The New Pharmacy Act

SINCE the second reading of the Pharmacy and Medicines Bill in the Lords a conference has taken place between the Government and Viscount PLUMER and those for whom he was acting, and most of their difficulties have been removed On Aug 5 Viscount SIMON intimated that the amendments which he would move on behalf of the Government fell into two classes Some technical amendments relating to clause 1 of the bill were the result of careful revision by the Home Office Amendments had also been devised to meet difficulties in the minds of those interested in herbal remedies Clause 8, as the bill was originally drafted provided that the medicine must have a label affixed which must show "the appropriate designation of the substance so recommended or of each of the active constituents thereof" It had been feared that this might be understood to mean that it was necessary to state what were the chemical constituents, notwithstanding that there might be chemical changes after the contents had been put together It was proposed to amend the clause so that it would be enough to say that the contents, for example, had been made of dandelion root Viscount PLUMER pointed out that the "drying, crushing or comminuting" named in subsection 4 of the clause were all dry processes The herbalists therefore desired an amendment inserting the words "macerating, infusing, boiling, decocting, distilling, pressing and expressing" and a further amendment inserting the words "with or without the addition as preservatives of glycerin, alcohol, esters of parahydroxy-benzoic acid, or such other preservative as the Minister of Health may sanction" Lord SIMON resisted the first amendment, and Lord HORDER said he must also strongly contest it He was sympathetic to those who wished to take their medicines from a complicated mixture of ingredients prepared in a complicated fashion The herbalists had been given a certain amount of what they asked for by the insertion of the phrase "or of each of the ingredients of which it is compounded" But now they were asking that processes should be permissible in preparing those ingredients which were calculated to so change and confuse the ingredients as to make it impossible to state what they finally were The action of these preservatives on the questionable derivatives remaining after macerating, infusing, boiling and so on would render the principle of the bill which called for disclosure of no effect The first amendment was withdrawn and the second was negatived

The bill received the Royal Assent on Aug 7

Need for Organised Fracture Service

In the House of Commons on Aug 7, Dr H B Morgan amplified the plea he had made in the debate on the Scottish estimate for a bigger and better fracture service A B M A committee in 1935 had stated that there was inadequate organisation of fracture treatment, imperfect surgical treatment even in the best hospitals, and failure in giving proper functional activity to prevent the injured parts from becoming stiff This chaos was not due to lack of surgical technique or prowess, but to lack of organisation The committee recommended segregation of fracture cases in one department, aftercare, the keeping of perfect records, and the establishment of rehabilitation centres As a result of this report the Delevingne committee was appointed by the Government and after a thorough inquiry they confirmed the B M A committee's recommendations The Delevingne committee classified hospitals in six grades, and only in grade-1 hospitals were the principles of treatment recommended by the committee followed There were then only three hospitals in Wales where adequate treatment could be obtained and in Scotland there was only one grade-1 hospital Recently the Secretary of State for Scotland stated that there were six new orthopædic hospitals in Scotland, but he did not say whether they were up to grade-1 standard In England only 74 hospitals were in grade 1 out of a total of 1100 Dr Morgan thought the present Minister of Health and the Parliamentary Secretary had tried hard to improve things, but they had been hampered by the conditions in the voluntary hospitals and by lack of
Even the Voluntary Hospitals Association were satisfied with the position, but they had not the
for the necessary extensions The rapid recovery
injured workers was vital and Dr Morgan urged
Government to show what progress had been made
regard to grade-1 hospitals Other grades were
portant The supplementation of orthopædic
was not enough, more organisation was needed
the Minister of Health and his advisers accept
reserve the recommendations of the B M A
committee, and was it the policy of the
implement those recommendations as soon as possible
especially those of the Delevingne committee with regard to hospital grading? Dr Morgan finished his speech with a volley of questions as to the working of what he called this Peter Pan service

Miss F HORSBRUGH wished Dr Morgan would put some of these anxieties out of his mind and tell the ministry which were the hospitals where he alleged the treatment was not what it ought to be She thought the Emergency Hospital Service had been one of the marvels of our war organisation Orthopædic centres had not been graded according to the report of the Delevingne committee because they were now working under war-time conditions and the ministry did not want to rely on hospitals in vulnerable areas for long term work The work had been divided up into orthopædic centres and into A and B fracture departments The B centres were short-term ones because they were generally in vulnerable areas Apart from the ministry's consultant advisers they had regional consultants to see that this type of treatment should be organised and the patients properly segregated In the orthopædic centres there were about 5000 beds and in the fracture A departments 5000 beds, which would give many thousands of people a chance to get this up-to-date and carefully arranged treatment Miss Horsbrugh expressed her pride in the 10,000 new beds though Dr Morgan still thought it was a tortoise pace

Scottish Health

Scots M P s regarded the meagre ration of six hours allotted on July 30 to the debates on the health, education and agriculture of their native land as an example of Sassenach parsimony In the absence of reports for 1940 and 1941 they were resentful that Mr T JOHNSTON should have to introduce the estimates with a survey lasting only fifteen minutes But in a year full of the restrictions and disabilities of war he was satisfied that an efficient public-health service had saved the country a major epidemic Tuberculosis figures were increasing diphtheria figures were higher than before, and paratyphoid, cerebrospinal fever and influenza were slightly up, but scarlet fever, measles and whooping-cough were decreasing During the year 500,000 children, about half of the total, had already been immunised for diphtheria, and local authorities during the school holidays were concentrating on the pre-school children Under the E M S, beds had been reserved for possible and unknown war casualties but Mr Johnston agreed that a much larger proportion of these beds ought to be made available for the civilian patients who were on the waiting-lists of other hospitals Scotland now had seven new first-class hospitals and twenty new annexes to existing hospitals Many thousands of beds were available and doctors and hospital authorities in Scotland had been notified that these beds were open to the patients on their waiting-lists He hoped these new hospitals would be the nucleus of a great organisation for a united attack upon physical suffering

Turning to housing he said that in the Clyde four hostel camps are being provided, each accommodating 480 people and capable of being converted into 2-3 roomed houses after the war There were a hundred hostels for children in use and another fifty ready During the year 14,206 new houses had been completed Evacuees included 40,000 pre-school and 80,000 school children Out of the total school population of 743,80 only 3600 were receiving no education, but there were 160,200 half-timers

Mr H MCNEILL in an eloquent maiden speech said that our treatment of the homeless might mean the difference between defeat and victory, and appealed fo

ORIGINAL ARTICLES

ORBID RED-CELL DEVELOPMENT AND THE TREATMENT OF ANÆMIA

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> 'The scientific journey has no end It has only halting ices—points at which the traveller can look round and vey"—SHERRINGTON

IN the last ten years there has been much progress in ematology and much re-appraisal of former ideas so at a survey now seems timely. A useful sample of the ews of a decade ago is provided by Witts's Goulstonian ctures to the Royal College of Physicians in 1932 [30] Witts represented red blood-cell development as a series f successive stages represented by the scheme

$$\text{Reticulo-endothelial cell} \xrightarrow{1} \text{megaloblast} \xrightarrow{2} \text{normoblast} \xrightarrow{3} \text{erythrocyte}$$

An important group of anæmias was shown to be due to defective development of erythrocytes, and the pathology of this group was simply conceived of as a failure of maturation at the various stages failure of stage 1 caused aplastic anæmia, failure of stage 2 produced pernicious anæmia, when stage 3 failed anæmia typified by the microcytic iron-deficiency anæmias occurred Anæmia of increasing severity might start with stage 3 defective and later involve stage 2 or even 1—a species of "shift to the left" Therapy was equally simply indicated so it is not surprising that this pathological scheme was widely utilised and is, in fact, still reproduced in most English textbooks

A considerable volume of clinical and pathological work, especially that correlated with studies of bone-marrow obtained by sternal biopsy, has now shown that this simple scheme is inadequate and it is interesting that this further work had tended to confirm the observations of earlier workers on the development of the erythrocyte, observations that were passed over by Doan and co-workers,[7] on whose results Witts based his ideas The more complex developmental schemes now put forward [2 12 23] are a return towards those of hæmatological pioneers like Naegeli and Ferrata This return has brought with it a recrudescence of the confusion in cell nomenclature which was the bane of the days of the "peripheral hæmatologists," and this in itself has tended to obscure the value of these advances and prevent their adequate application by clinical workers In spite of differences in nomenclature, a scheme of red blood-cell development similar in outline to that given below is at present accepted by a majority of hæmatologists

Technical methods are important in hæmatology since different methods produce different microscopical appearances There are two groups of methods—the normal histological technique of wet fixation and preparation of smears or sections, and the dry-smear method exemplified by the usual way of preparing blood films The pros and cons of the methods were thoroughly discussed by Downey,[5] and briefly it may be said that sections are necessary for comparing changes in the arrangement of the marrow cells whereas dry smears are best for showing cellular detail and differentiating between the various cell types The cell types mentioned here in the description of blood cell development have been defined by the study of dry-smear preparations of blood or bone marrow obtained by sternal puncture (see Israëls) [12]

NORMAL AND ABNORMAL RED-CELL DEVELOPMENT

In the adult, red blood-cells are formed only in the bone-marrow The most primitive cell formed there that concerns us now is the *hæmocytoblast*, so-called because it is found in hyperplasia of all blood-cell types [12 27] It is a large cell with a rim of deeply basophilic cytoplasm and a large purple-staining nucleus of rather indefinite pattern and containing nucleoli Its subsequent development is shown in the figure, maturation involves changes in the nuclear pattern leading eventually to shrinkage and fragmentation and in the cytoplasm where the development of hæmoglobin causes a change in the staining reaction from basophilic to eosinophilic Normally these changes in nucleus and cytoplasm progress in a parallel manner, but in pathological states the correlation is disturbed

From the hæmocytoblast a *pro-erythroblast* develops, differing in being somewhat smaller and having a well-defined network nuclear pattern—nucleoli are present Ordinarily the pro-erythroblast gives rise to a series of *normoblasts* In the early normoblasts the nuclear pattern is coarser from coalescence of the network pattern, and nucleoli have disappeared, the cytoplasm is still deeply basophilic The intermediate normoblasts show progressive shrinkage of the nucleus to a cart-wheel pattern and the cytoplasm varies from moderate basophilia to purplish polychromatic staining The late normoblast has a featureless nucleus and the cytoplasm becomes completely eosinophilic Finally the nucleus is lost and the erythrocyte appears When prolonged normal hyperplasia of the hæmopoietic marrow has occurred hæmoglobin may appear in the cytoplasm at an earlier stage and normoblasts with well-patterned nuclei are found with polychromatic or even eosinophilic cytoplasm [13], the late normoblasts and the erythrocytes developing from these prematurely hæmoglobinised cells tend to be somewhat larger than usual

In pernicious and allied anæmias an entirely different set of cells appears in the marrow—the *megaloblasts* The early megaloblasts resemble the pro-erythroblasts in size and staining properties, but the nucleus shows a more open network pattern and there is no coalescence of the chromatin as seen in the early normoblasts; nucleoli are absent As maturation proceeds the chromatin strands become finer and more separate so that the intermediate megaloblast has a highly characteristic open network nucleus; hæmoglobin appears early and these cells are usually polychromatic and may be fully eosinophilic; the cells are large compared with the corresponding normoblasts In the late stage the nucleus collapses and is commonly eccentrically placed in a large eosinophilic cell, some traces of nuclear pattern may remain, finally the developed erythrocyte is a relatively large cell There is much more variation in cell-size and in correlation of nuclear pattern and hæmoglobinisation of the cytoplasm among megaloblasts than among normoblasts Mitotic figures are found in both series up to and including the intermediate stage

The descriptions given here apply to typical cells, but since continuous change occurs along the lines of development indicated by arrows in the diagram, cells intermediate between the typical stages are always to be found

The theory that the appearance of the megaloblasts represents a return to embryonic blood-formation was advanced by Ferrata [7] and Naegeli [19] In the early embryo hæmocytoblasts are present in the walls of the blood islands of the yolk-sac and from them the first erythroblasts are formed—they are often called "primitive megaloblasts" At about the sixth week of development, hæmocytoblasts appear in the liver and give rise to a second generation of erythroblasts different from the megaloblasts—these are the permanent or "definitive" generation and are called normoblasts so long as they have nuclei (Downey) [6] Later normoblast formation begins in the bone-marrow and after the 23rd week liver hæmopoiesis gradually fades out [8] It is suggested that the megaloblasts of pernicious anæmia are identical with the primitive megaloblasts of the embryo,[6 7 17 19 27] and it is certainly a striking coincidence that when the hæmopoietic liver factor fails, blood-cells should appear that resemble those which serve the organism in its pre hepatic stage of development This idea, though attractive, is not yet firmly established and some workers, notably Maximow,[15] regard the megaloblasts of pernicious anæmia as purely pathological cells.

This description of the scheme of normal and pathological red blood-cell development has been given first since it defines the names used for the various cells (the term *erythroblast* is used generically for all the nucleated red-cell precursors) The evidence on which the scheme is based may now be considered

FOUR TYPES OF PATHOLOGICAL ERYTHROPOIESIS

In untreated pernicious anæmia the marrow shows megaloblastic hyperplasia—that is to say, all types of

Obituary

VINCENT JOSEPH REDMAN SHERIDAN

D S C , M B EDIN , SURGEON LIEUTENANT, R N

Surgeon Lieutenant V J R Sheridan, who was lost when H M S *Kelly* sank off Crete, was the second son of Dr John Sheridan of Barnsley Born in 1914 he was educated at Stonyhurst and graduated at Edinburgh in 1936 He joined the medical service of the Royal Navy a year later and after a course at Chatham was posted to the China Station In October, 1938, when H M S *Sandpiper* was bombed by Japanese aircraft he was commended for his cool and excellent conduct In January, 1940, he won his D S C for further services in connexion with the Sino-Japanese conflict Sheridan returned to England in March of last year and was appointed to H M S *Kelly* When the ship was torpedoed on May 9 the sick bay was wrecked and Sheridan had to look after the wounded by the light of a torch, but the captain of the flotilla later wrote that he was untiring in his efforts to ease their pain

Captain **Frank Robert Oliver Hayward**, whose death is announced, was in practice before the war at Chelmsford, where he was anæsthetist to the Chelmsford Hospital He volunteered for service the day war was declared and was posted as medical officer to a yeomanry regiment He qualified M R C S from Guy's Hospital in 1932 He was 33 and leaves his widow with a young son

Captain **Robert Thomson Easton**, who died of wounds in the Middle East in May, was born in 1903 He graduated M B at the University of Aberdeen in 1927 and held house-appointments at the Royal Infirmary, Oldham, later becoming an assistant resident medical officer at St Mary's Hospital, Plaistow He joined the R A M C T A shortly before the outbreak of war and last year was promoted captain

Lieutenant **Thomas William Greatorex**, who is reported to have died of wounds, was the son of Dr R W Greatorex of Halifax He was born in 1914 and obtained his conjoint qualification last year He was gazetted lieutenant in the R A M C last December

Infectious Disease in England and Wales

WEEK ENDED AUGUST 2

Notifications —The following cases of infectious disease were notified during the week smallpox, 0 , scarlet fever, 863 , whooping-cough, 3731 , diphtheria, 727 , paratyphoid, 194 , typhoid, 34 , measles (excluding rubella), 3084 , pneumonia (primary or influenzal), 424 , puerperal pyrexia, 136 , cerebrospinal fever, 166 , poliomyelitis, 28 , polio-encephalitis, 5 , encephalitis lethargica, 5 , dysentery, 122 , ophthalmia neonatorum, 86 No case of cholera, plague or typhus fever was notified during the week

Notifications of paratyphoid for the second time showed a decrease Of the 194 cases, 25 were reported from the County of Chester (Birkenhead 7, Bebington 6) and 96 from Lancaster (Liverpool 70)

Deaths —In 126 great towns there were no deaths from enteric fever, 1 (0) from scarlet fever, 22 (2) from whooping-cough, 4 (0) from measles, 26 (2) from diphtheria, 31 (4) from diarrhœa and enteritis under 2 years, and 4 (0) from influenza The figures in parentheses are those for London itself

Tottenham reported 4 deaths from whooping cough, Sheffield 3 There were 3 fatal cases of diphtheria at Liverpool

The number of stillbirths notified during the week was 191 (corresponding to a rate of 41 per thousand total births), including 24 in London

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The Index and title-page to Vol I, 1941, which was completed with the issue of June 28, will be ready shortly A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager of THE LANCET, 7, Adam Street, Adelphi, W C 2 Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now

Births, Marriages and Deaths

BIRTHS

Black —On Aug 9, at Alresford, Hants, the wife of Temp Lt-Colonel J Gordon Black, R A M C —a daughter

Creighton —On June 7, at Nairobi, Kenya, the wife of Capt J O Creighton, E A A M C —a son

Crimmin —On Aug 8, at Woking, the wife of Major G W Crimmin, R A M C —a daughter

Morris —On Aug 3, the wife of Dr Lawrence Morris, of Bickenhall Mansions, W 1—a son

Pritchard —On Aug 5, at Hemel Hempstead, the wife of Dr J J Pritchard—a son

Rudd —On Aug 4, at Aberdeen, the wife of Major T N Rudd, R A M C —a daughter

Simmonds —On Aug 5, the wife of Dr F A H Simmons—a son

MARRIAGES

Golden—Waterson —On Aug 7, in London, Michael Golden, M R C S , to Diana Waterson

Mills—Davies —On July 26, in London, Reginald Peter Mills, M R C S , to Margaret Frances Steuart Davies

Whiteside—Spencer —On Aug 8, at Bradford on Avon, Wilts, Cecil Hamilton Whiteside, M R C S , captain R A M C , to Charlotte Spencer

DEATHS

Fulton —On Aug 5, Thomas Ronald Fulton, M B Glasg , of Sutton on Sea

Melville —On Aug 11, in Edinburgh, Kenmure Duncan Melville, M D Edin

O'Meara —On Aug 10, at Luton, John Morgan O'Meara, M D Lond

Rice Oxley —On Aug 10, at Chalfont St Peter Alfred James Rice Oxley, Kt , C B E , M A Oxfd, M D Dubl , M R C P , of Kensington, aged 85

Ridout —On Aug 9, Charles Archibald Scott Ridout, M S Lond , F R C S , of Southsea

Shires —On Aug 8, in London, Bertram Shires, M B Edin , D M R E

Verdon Roe —On Aug 7, Spencer Vernon Roe, M B Camb , of Sinnington, Yorks (formerly of Putney)

Waring —On Aug 9, at Maresfield, Anthony Henry Waring, D S O , M R C S , colonel, late R A M C , aged 69

Appointments

Brockington, C Fraser, M D Camb , *D P H* M O H for Warwickshire

Brown, K Carnarvon, M B Lond , *D A* R M O at Royal Northern Hospital, London

Ellis, G E D , M R C S , surgeon captain, R N retd asst M O (civil defence) for Brighton

Flecker, Margaret, M B , Adelaide R M O at the Emergency Maternity Hospital Gilsland

Gillespie J E O'N , M D Dubl , D P M medical registrar at the National Temperance Hospital, London

Herapath, J C , B M Oxfd, M B Wales junior assistant in the medical unit, Welsh National School of Medicine, Cardiff

Jenkins, Ritchie, M B Wales R M O at Cardiff Royal Infirmary

Lindsay, James, M D Glasg examining factory surgeon for Royton, Lancashire

Scott, Edith, M B Aberd R M O at Leicester General Hospital

Shooter, R A , M B Camb R M O at the Royal West Sussex Hospital, Chichester

Smith, J B Gurney, L M S S A asst R M O at Norwich Infirmary

Todd, R M , M B Camb R M O at Leicester General Hospital

Royal Sussex County Hospital, Brighton —As an extension of the Latilla department of physical medicine, its founder, Mrs Herbert Latilla, and her two daughters have presented to the hospital a motor van equipped with apparatus for electrical treatment, which daily visits centres in country districts, avoiding towns where treatment is already available All new patients must first attend at the hospital and pass through the almoner's department Overlapping and abuse of the service are thus avoided Masseuses are selected from the staff of the department and the van is driven by members of the W V S

The **Fellowship of Medicine and Post Graduate Medical Association** has arranged the following M R C P courses neurology at the West End Hospital for Nervous Diseases (Aug 26–Sept 19, Tuesdays and Fridays at 3 30 P M), heart diseases at the Royal Chest Hospital (Aug 27–Sept 17, Wednesdays at 3 30 P M), chest and heart diseases at the London Chest Hospital (Sept 2–25, Tuesdays and Thursdays at 2 P M) They will also hold the following final F R C S courses clinical course at St Mary Islington Hospital (Sept 3–24, Wednesdays at 2 P M), orthopædics at Royal National Orthopædic Hospital, Stanmore (Sept 6–27, Saturdays at 2 15 P M), and a comprehensive course at the Royal Cancer Hospital (Sept 29–Oct 17, every morning) Further information may be had from the secretary of the fellowship, 1, Wimpole Street, London, W 1

MORBID ERYTHROPOIESIS

BONE-MARROW TYPE	CLINICAL TYPES
Failure of normal maturation of pro-erythroblasts · suppression of normoblasts, deflection of maturation to megaloblasts	(a) Pernicious anæmia due to deficiency of liver-principle (b) Achrestic anæmia refractory to treatment due to non-utilisation of liver-principle (c) Anæmia due to dietary deficiency or failure of absorption of liver-principle
Failure of maturation of normoblasts: hyperplastic but deformed normoblasts and inadequately hæmoglobinated microcytes	Iron-deficiency anæmias
Hyperplastic normal maturation: increased normoblasts and pro-erythroblasts, often unusually early hæmoglobin formation in normoblasts	(a) Anæmias due to prolonged peripheral blood loss by chronic hæmorrhage intravascular lysis (hæmolytic anæmia) purpura, malignancy, cirrhosis of liver, leukæmia, &c (b) Anæmias of unknown ætiology refractory to treatment, pseudo aplastic
4 *General failure of erythropoiesis*: diminished or completely absent erythroblasts when present all normoblasts	Aplastic anæmias of primary type and those secondary to action of drugs or toxins secondary hypoplasia in leukæmia or splenic anæmia

Blood-picture Group 1 always megalocytic with colour-index over 1 Group 2 always microcytic with colour index under 1 Groups 3 and 4 usually normocytic colour index about 1 but may be over 1 and there may be megalocytosis in some cases especially in group 3

Treatment Liver, or desiccated stomach treatment is only appropriate in group 1 iron therapy is specific in group 2 in groups 3 and 4 treatment of the anæmia takes second place to action against the cause of the anæmia if known, blood-transfusions and iron treatment are indicated.

blasts with suppression of normoblast development and hyperplasia of megaloblasts,

2 Failure of maturation of normoblasts with hyperplastic but distorted development of normoblasts leading to the formation of inadequately hæmoglobinised microcytes,

3 Hyperplastic normal maturation, which if sufficiently severe and prolonged leads to the appearance of many early erythroblasts and unusually early hæmoglobin formation in the normoblasts,

4 General failure or erythropoiesis, of varying degree

Clinical conditions corresponding to these groups are given. Group 1 comprises pernicious and allied anæmias due to deficiency or disturbed action of the hæmopoietic liver-principle, group 2 corresponds to the iron-deficiency anæmias, group 3 changes are found in a variety of anæmias characterised by vigorous erythropoietic response to loss of red blood-cells—liver-deficiency plays no part here, group 4 comprises the idiopathic and secondary aplastic anæmias Attention is drawn to the refractory cases occurring in groups 1 and 3

Treatment of an anæmia varies according to the pathological group into which it falls Specific liver or desiccated stomach treatment is only appropriate in group 1

I am indebted to Dr John F Wilkinson and other members of the honorary staff of the Manchester Royal Infirmary for allowing me access to their patients Part of this work was carried out while holding a Foulerton research fellowship of the Royal Society

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MOTOR NEURONE DEGENERATION TREATED WITH VITAMIN E

C Worster-Drought.
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PHYSICIAN TO THE WEST END HOSPITAL FOR NERVOUS DISEASES

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MEDICAL REGISTRAR TO THE HOSPITAL

This clinical investigation was undertaken to ascertain the possible value of vitamin E in the treatment of motor neurone degeneration (progressive muscular atrophy, amyotrophic lateral sclerosis and progressive bulbar paralysis) A series of 25 cases of different forms of the disease have been treated for periods ranging from 5 to 10 months with vitamin E (α-tocopherol acetate) in doses of either 18 mg or 30 mg daily, and the results have been assessed

The assumption that vitamin E is of therapeutic value in motor neurone degeneration rests on the following experimental and clinical evidence

EXPERIMENTAL EVIDENCE

Evans and Burr (1928) first noted the occurrence of a *nutritional muscular dystrophy in young rats* deprived of vitamin E in their diet, and whose mother had been given only just enough of the vitamin to produce a litter The onset of the muscular paresis was sudden on or about the twentieth day of life, if the animal survived the paralysis appeared to be self-limiting Pathological examinations showed severe degeneration of the skeletal muscles but the central nervous system was unaffected the terminal portions of the peripheral nerves and the end-plates were found to be intact in the midst of necrotic muscle cells The muscular dystrophy could be prevented if wheat-germ oil or vitamin-E concentrates were administered to either mother or young during the period of lactation. Similar muscular lesions have been produced in ducklings guineapigs and rabbits reared under comparable conditions

Older rats observed by Einarson and Ringsted (1938) showed changes in the central nervous system in addition to those in the skeletal muscles In the earliest phase of the disorder they describe characteristic lesions in the *posterior spinal nerve-roots and posterior columns of the spinal cord* These are later succeeded by degeneration of the anterior horn cells and anterior spinal nerve-roots The third phase which is inconstant is distinguished by involvement of the pyramidal tracts Einarson and Ringsted consider the pathological findings as representing a process resembling a combination of tabes dorsalis and amyotrophic lateral sclerosis The muscular changes, they state although ultimately resembling those of a muscular atrophy of spinal origin, in the earlier stages approximate more closely to a muscular dystrophy. They suggest the possibility of a true mixed phenomenon —a combination of muscular dystrophy and amyotrophic lateral sclerosis

While vitamin E is capable of preventing the disease if given sufficiently early and in some animals is of curative value in others the prolonged and concentrated administration of the vitamin has failed to influence the established condition. This does not necessarily disprove that the essential ætiological factor is a vitamin-E deficiency Goettsch and Pappenheimer (1931) and Morgulis and Spencer (1936), however, claim that the nutritional muscular dystrophy cannot be considered

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megaloblasts are present together with the more primitive pro-erythroblasts and some hæmocytoblasts, normoblasts are few and only of intermediate or late types, every stage of transition from hæmocytoblast to late megaloblast can often be seen, and the megaloblasts show characteristically variable hæmoglobinisation When the specific liver factor is given in proper doses a remarkable change comes over the marrow, sometimes within 24 hours [25] Early normoblasts appear in increasing numbers and then intermediate normoblasts, many showing early hæmoglobinisation, the megaloblasts decrease in number About the time of the reticulocyte peak in the blood, the marrow picture shows a complete reversal There is now a normoblastic marrow with only a few intermediate and late megaloblasts remaining, pro-erythroblasts and some hæmocytoblasts are still present and show mitosis As recovery proceeds this normoblastic hyperplasia dies away in its turn and the marrow returns towards a normal picture [2,12,20,25,26] These findings suggest that the liver-principle is necessary for the maturation of normoblasts from the pro-erythroblast When the liver-principle is deficient megaloblasts appear in an attempt to make up for the lost normoblasts

Megaloblastic hyperplasia of the marrow may also occur when, because of dietary deficiency, liver-principle cannot be produced [3,28], or when proper absorption from the alimentary tract is interfered with, as in sprue [21,29] or after gastro-intestinal operations [1] Normoblastic marrow can be restored with liver treatment

Hence megaloblastic marrow is an indication—the only certain indication—for liver treatment But the expected result does not always emerge, for there is a group of cases which are refractory to treatment, sometimes temporarily, sometimes permanently This group has been named achrestic anæmia by Israels and Wilkinson [14,16] who suggested that these patients were unable to utilise the liver-principle known to be present in adequate amounts Megaloblasts have not been certainly identified in any other types of anæmia (except the very rare acute erythræmia) [9,11] The erythroblasts appearing in all other primary and secondary anæmias are always normoblasts and pro-erythroblasts

Iron-deficiency anæmia is an example of failure of maturation of the normoblasts Bodley Scott [24] recently pointed out that though the marrow is hyperplastic the intermediate normoblasts are small, distorted and poorly hæmoglobinated, and give rise to the characteristic microcytes Sufficiently energetic iron therapy restores normal erythropoiesis When peripheral loss of erythrocytes is prolonged and severe, as in hæmolytic anæmias, there is again an intense normoblastic hyperplasia in the marrow, but this time they are larger than usual, their nuclei are well-patterned and there is often sufficient hæmoglobin in their cytoplasm to cause advanced polychromatic or even eosinophilic staining, pro-erythroblasts and even hæmocytoblasts are usually present [12,13] There is no evidence of liver-principle deficiency in this group The treatment is that of the primary condition causing the loss of blood-cells plus administration of iron to provide for the exceptionally active erythropoiesis Here again there occurs a group of refractory patients with normoblastic marrow, in whom no evidence of undue peripheral blood loss can be found, who do not respond to treatment, and who, if supported by blood may eventually recover, such cases have been called "pseudo-aplastic" [15,22]

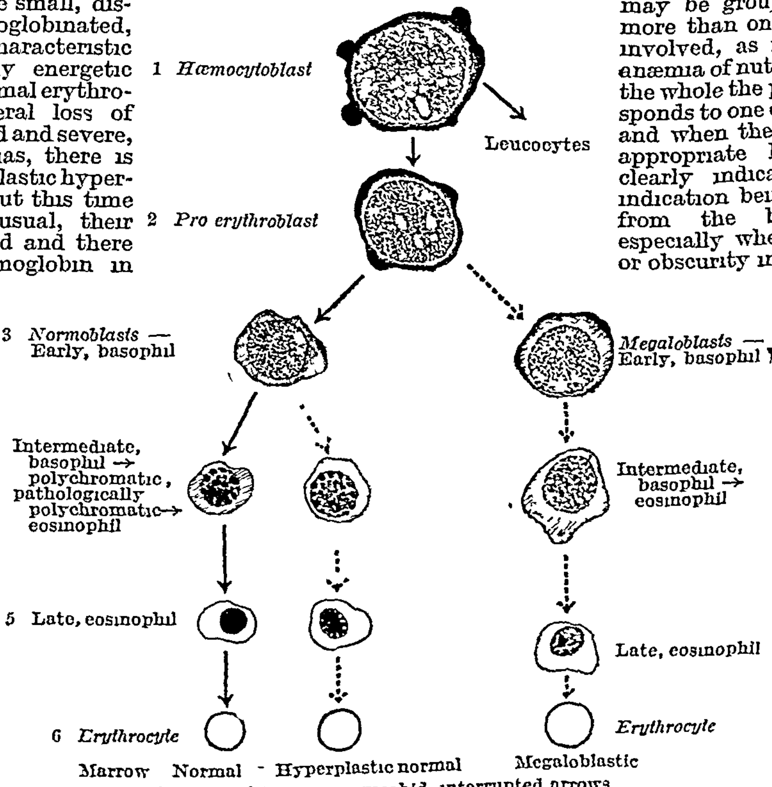
Thus hyperplasia of the erythropoietic tissue may megaloblastic or normoblastic, the primitive erythroblasts being present in both The former occurs only when the hæmopoietic liver-principle is absent action is disturbed, all others fall into the latter "Shift to the left," caused for instance by prolonged blood loss, leads to the appearance of increased numbers of primitive normoblasts and pro erythroblasts never leads to the appearance of megaloblasts, and there is no convincing evidence that megaloblasts and normoblasts are interchangeable

Finally there are the conditions in which the erythropoietic marrow is hypoplastic or completely aplastic Such red blood-cell development as remains proceeds along the normoblastic line, and there are all grades of hypoplasia shading down to complete aplasia There may be patches of hyperplasia which will be misleading if punctured at sternal biopsy, but in progressing cases diminution of erythropoieses is always seen after an interval This group includes primary aplastic anæmia and secondary anæmias caused by the depressing action of drugs or toxins on erythropoiesis The primary aplasias can only be treated by blood transfusion, the secondary group are treated according to the cause, and transfusions to tide over difficult periods together with iron when erythropoiesis recovers is a rational plan of treatment

Experience has shown that there are four main types of pathological erythropoiesis (1) hyperplastic *but with failure of normal maturation of pro erythroblasts*, (2) hyperplastic with failure of maturation of normoblasts, (3) hyperplastic erythropoiesis with normal maturation, and (4) general failure of erythropoiesis The clinical syndromes corresponding to these pathological types are given in the Table on the opposite page

Into a scheme such as this the majority of cases of anæmia will be found to fit Some diseases provoke erythropoietic changes in more than one category Thus the anæmia accompanying splenic anæmia cirrhosis of the liver or leukæmia may in one patient be of group 3, in another group 4, the anæmia following gastric resection may be group 1 or 2 Sometimes more than one pathological group is involved, as in some patients with anæmia of nutritional origin But on the whole the pathological type corresponds to one or other of these groups and when the group is decided the appropriate line of treatment is clearly indicated, a more certain indication being thus obtained than from the blood-picture alone, especially when there is any doubt or obscurity in diagnosis

DEVELOPMENT OF RED BLOOD-CELLS


1 *Hæmocytoblast*
Leucocytes
2 *Pro erythroblast*
3 *Normoblasts* — Early, basophil
Megaloblasts — Early, basophil
4 Intermediate, basophil → polychromatic, pathologically polychromatic→ eosinophil
Intermediate, basophil → eosinophil
5 Late, eosinophil
Late, eosinophil
6 *Erythrocyte*
Erythrocyte
Marrow Normal - Hyperplastic normal Megaloblastic

Normal, solid arrows, morbid, interrupted arrows

SUMMARY

A scheme of normal and pathological erythropoiesis is proposed, which shows that disease may cause changes in the development of the normoblastic group of cells, or maturation may be deflected to a megaloblastic group—regarded by some as a return to the first type of embryonic blood-cell development

Four main groups of pathological erythropoiesis are distinguished —

1 Failure of maturation of pro-erythro

6–9 months Evidence of an advance in the disease s seen in 5 cases examined after this period of treat- nt, and 1 case showed no change in symptoms or ysical signs In 2 cases there appeared to be some provement in gait with a raised level of general health, d 1 patient remained more or less stationary but with more cheerful outlook Details of the last 3 cases are follows —

CASE 1 —A woman, aged 42, presented the extraordinary mbination of Cushing's syndrome (pituitary basophil lenoma), and motor neurone degeneration, which had made its ppearance at the remarkably early age of 11 Examination April, 1940, showed weakness and atrophy of the small uscles of the hands and a spastic paresis of the lower limbs ith bilateral extensor plantar reflexes Wheat germ oil apsules, 1 t d s, were prescribed (equivalent to 18 mg ocopherol daily), after 2 months, tocopherol acetate, 0 mg daily, was given instead While in hospital the patient was depressed and irritable, and indeed, before her admission he had been under observation for her mental condition After 4 months' vitamin E therapy no change in the physical indings was noted, although her gait had slightly improved Her mental state had responded very satisfactorily, she was now much happier and her periodic emotional outbursts were ess frequent and less violent

CASE 2 —A man, aged 59, seen in May, 1940, when the condition had been present for 8 months He had gross wasting of the small muscles of the hands and of the forearms, both pectoralis major muscles and less severe wasting of the leg muscles He was given α tocopherol acetate, 30 mg daily, until December, 1940 At the end of this period there had been no advance in the loss of muscle substance but possibly some increase in the weakness The patient said he had greatly improved in spirits and general health In March, 1941, he wrote from Dorset to say that he continued in good health and seemed to be walking better

CASE 3 —A man, aged 69 In July, 1940, 8 months after the onset of illness, clinical examination showed weakness and wasting of the muscles of the shoulder girdle and the hypothenar eminences, and loss of power in the legs with fibrillation but no muscular atrophy Administration of α-tocopherol acetate, 30 mg daily, was begun in July and continued until the middle of December, 1940 There was no change in the disease, but a great improvement in his general health and he was now more cheerful

AMYOTROPHIC LATERAL SCLEROSIS

Paraplegia of upper neurone type was the predominant clinical manifestation in 7 of the cases treated, 6 were men and 1 a woman, aged from 45 to 52 After 6–9 months' treatment, 5 cases showed evidence that the disease was steadily advancing, 1, in spite of some advance in muscular atrophy, showed a striking amelioration in general health and mental outlook In the remaining 2, details of which are given below, the clinical condition had definitely improved

CASE 4 —A man, aged 45, in whom the disease began in April, 1940 In May, 1940, he had slight wasting and weakness of the interossei and lumbrical muscles, with spastic paraplegia, both plantar reflexes were extensor and the abdominal reflexes were absent Treatment with α tocopherol acetate, 30 mg daily, was continued until December, 1940, when there was some improvement in power of the lower limbs and in walking, while the early wasting of the hand muscles was less evident His general health had also improved and he was more cheerful

CASE 5 —A man, aged 50, who first experienced weakness of the lower limbs 18 months before beginning vitamin-E therapy in June, 1940 Examination showed a spastic paraplegia but no muscular wasting in any part of the body He could walk only with assistance After 6 months' treatment with α tocopherol acetate, 30 mg daily, he could walk the length of the ward several times by himself with a stick but there was no change in the physical signs of a bilateral pyramidal lesion At first sight this patient's neurological condition seems to have been benefited by vitamin-E therapy, but such a conclusion cannot be accepted unreservedly For the 18 months before his admission he had been confined to bed and had become depressed and despondent The interest and encouragement shown him in hospital stimulated his desire and his efforts to improve, and the undoubted improvement in his mental outlook had a similar effect

DISCUSSION

Vitamin E was administered to the patients in two forms—as wheat-germ oil and α-tocopherol acetate In 1936, Evans, Emerson and Emerson succeeded in isolating from wheat-germ oil two alcohols both of which possessed the biological properties of vitamin E and to which they gave the names of α- and β-tocopherol respectively, α-tocopherol has since been synthesised and has been proved to be as active (by the fertility test in animals) as the vitamin obtained from natural sources The acetate of α-tocopherol is a very stable form Each capsule of the wheat-germ oil we used is stated to have a standardised tocopherol content of 6 mg In addition to vitamin E, wheat-germ oil contains other active factors, such as vitamin B_6 Antopol and Schotland (1940) report beneficial effects from the use of vitamin B_6 in cases of muscular dystrophy In consequence, reports of the value of wheat germ oil in neuromuscular disorders must be accepted with reserve as evidence of the efficacy of vitamin E, since other principles may participate or even be entirely responsible for the alleged improvement

The cause of motor neurone degeneration still remains obscure Various hypotheses have been presented but none is wholly acceptable No definite evidence exists in support of an infective agent or toxin The view has been advanced that the disease is of the nature of an abiotrophy, but Wilson (1940) considered such a theory untenable in view of the distribution of the lesions He pointed out that the degenerative changes are not confined to the motor system nor are they clearly systematised, the process being diffuse in many zones On the results of the experimental work on animals, some grounds exist for the postulation of vitamin-E deficiency as part of the underlying ætiology Vitamin E is very stable to heat, light and desiccation, but—as Bicknell argues—it is readily decomposed in the presence of salts and fats, especially when the fats become rancid It has never been conclusively demonstrated, however, what minimum quantities of this vitamin are essential in the human body, nor that a deficiency produces untoward effects The difficulties in estimating the content of vitamin E in the blood, and the scanty investigations in normal subjects, account for the lack of detailed evidence Vitamins may possibly act as therapeutic agents, irrespective of whether or not there is a deficiency in the body, so that our inability to prove a vitamin-E deficiency in motor neurone degeneration does not rule out the possible value of the vitamin in treatment

The prognosis of motor neurone degeneration is always grave, although the rate of progress varies Death may occur in a few months, or only after many years Periods during which no advance of the disease takes place are by no means uncommon, so that in those of our cases in which the condition has become stationary it cannot be claimed that vitamin E necessarily produced this effect Clinical methods were relied on in the observations of the course of the malady An attempt was made to aid assessment of progress by estimating the urinary creatine and creatinine but this proved unsuccessful, partly because we were unable to control the patients' diets and partly on account of the difficulty in estimating urinary outputs

The general result of vitamin-E treatment has been disappointing, only 3 of the 25 cases showing some improvement In one of these (case 5) psychologic factors influencing the result have already been discussed, and it is doubtful whether the response could be attributed entirely to the vitamin E Case 4 improved both as regards spastic paraplegia and muscular atrophy, and it seems reasonable to assume that the favourable response in this case was dependent on the vitamin-E therapy In case 2 we had to rely on the patient's report of his improvement since distance from London precluded clinical examination All 3 of these cases had been treated with 30 mg of α-tocopherol acetate daily for 6–9 months · 2 other cases in the series remained more or less stationary over periods of 5 and 6 months respectively, and another (case 1) showed slight improvement in gait but no change in physical signs after 5 months' treatment It is noteworthy that all 9 cases of bulbar paralysis became definitely worse as solely dependent on the absence of vitamin E, they think the disorder should be regarded rather as a multiple deficiency disease This view has been challenged by Mackenzie, Levine and McCollum (1940), who state that they have been able to cure the muscular dystrophy of rabbits raised on identical vitamin-deficient diets by the administration of vitamin E (α-tocopherol) alone

It is well known that in the absence of vitamins other than vitamin E in a diet, paralytic syndromes are liable to arise, but these syndromes can be distinguished from the form of vitamin-E deficiency under discussion Thus while the animals deprived of vitamin E were normal in every respect apart from the muscular and nervous lesions, the paralysis consequent on the absence of vitamin B or C from the diet is only part of a profound constitutional change with emaciation, invariably ending fatally

The spontaneous arrest of the muscular dystrophy in young rats deprived of vitamin E has been mentioned, Abeile (1934) found that rats reared on a diet deficient in vitamin A showed—in addition to a disabling paralysis—profound loss of weight and xerophthalmia Finally Evans and Burr were unable to influence the incidence of the muscular dystrophy in young rats by the administration of vitamins A, B, C and D, but vitamin E was found to be effective

The neuromuscular disorder resulting from vitamin-E deficiency in animals seems to vary according to the particular class of animal and to some extent with the period of life at which the deprivation occurs Pappenheimer (1940) has recently reviewed the various forms of disorder hitherto described For instance, while the adult hen manifests no abnormality when deprived of vitamin E newborn chicks develop an encephalomalacia, the essential pathological lesion being an ischæmic necrosis An entirely different response is observed in the turkey, in which the central nervous system and skeletal muscles escape but the smooth muscle of the gizzard undergoes a patchy hyaline necrosis

Experimental evidence thus indicates that animals, as a result of vitamin-E deficiency, may develop a muscular dystrophy and degenerative changes in the central nervous system Further, that the nature and extent of the degenerative lesions vary with the class and age of the animal

CLINICAL EVIDENCE

Bicknell (1940) treated several cases of muscular dystrophy with fresh dried whole wheat-germ oil, ½ oz twice daily In addition, he placed 4 cases of amyotrophic lateral sclerosis on similar treatment, 2 of these patients died, but some clinical improvement was noted in the 2 remaining He suggests that a large supply of vitamin E may be of value in all degenerative conditions of the muscular or nervous systems Demole (1940) supports Bicknell's assertion Wechsler (1940) records 2 cases of amyotrophic lateral sclerosis which were seen to improve when given synthetic α-tocopherol 3 mg thrice daily. In a subsequent communication (1940) he claims improvement of varying degrees in 11 of 20 cases of amyotrophic lateral sclerosis The treatment consisted in a daily dose of 30 mg α-tocopherol acetate (later increased to 50 mg), a diet rich in vitamin E, bile-salts to increase the absorption of the fat-soluble vitamin, and the whole vitamin-B complex In addition, every patient received 2 teaspoonfuls of whole wheat-germ oil daily, and in about half the cases 50 mg of tocopherol in oil was injected intramuscularly each day

Shelden (1940) obtained negative results in 18 patients, 10 of whom were suffering from amyotrophic lateral sclerosis and 8 from muscular dystrophy, but hopes that future research may reveal some combination of this vitamin with other essential nutrient materials which may prove more efficacious A family is reported by Donovan (1940) in which the father and daughter had lordosis and the son muscular dystrophy Whole wheat-germ oil was prescribed, and all 3 cases showed improvement in their general health and felt more energetic Stone (1940) noted improvement in muscular strength and texture in 7 patients—5 with muscular dystrophy, 1 with muscular wasting as a sequel of multiple neuritis and 1 with muscular atrophy following poliomyelitis—as the result of treatment with wheat-germ oil, 1 capsule thrice daily Spies and Vilter (1940)
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PRESENT INVESTIGATION

The 25 cases in this series are groupe
headings according to the part of the
system most affected by the degenerati
paralysis, progressive muscular atrophy an
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Owing to restriction in space, it has no
to include details of all cases, only 5 sp
have been selected All systems other th
muscular system showed no abnorm
cerebrospinal fluid was examined in every
normal, the blood Wassermann reaction
in all cases Muscular fibrillation was n
case where evidence of involvement of the
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BULBAR PARALYSIS

The 9 cases of bulbar paralysis treated i
and 3 women, their ages ranging from
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with glossolabial paresis, and most of the
degrees of spinal motor neurone degener
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fibrillation in some muscle groups or an e
with extensor plantar reflexes In 8 ca
α-tocopherol acetate was given daily for
the ninth case received wheat-germ oil
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under treatment 3 of the patients died, but
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PROGRESSIVE MUSCULAR ATROP

In 9 cases the predominant clinical
muscular weakness and atrophy with f
had evidence of additional upper motor n
in the lateral columns There were 6 men
aged from 42 to 59, and 1 woman who show
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r 6–9 months Evidence of an advance in the disease as seen in 5 cases examined after this period of treat-ent, and 1 case showed no change in symptoms or ysical signs In 2 cases there appeared to be some nprovement in gait with a raised level of general health, nd 1 patient remained more or less stationary but with more cheerful outlook Details of the last 3 cases are s follows —

Case 1 —A woman, aged 42, presented the extraordinary ombination of Cushing's syndrome (pituitary basophil denoma), and motor neurone degeneration, which had made its ppearance at the remarkably early age of 11 Examination April, 1940, showed weakness and atrophy of the small uscles of the hands and a spastic paresis of the lower limbs ith bilateral extensor plantar reflexes Wheat germ oil apsules, 1 t d s, were prescribed (equivalent to 18 mg ocopherol daily), after 2 months, tocopherol acetate, 0 mg daily, was given instead. While in hospital the patient as depressed and irritable, and indeed, before her admission he had been under observation for her mental condition fter 4 months' vitamin E therapy no change in the physical indings was noted, although her gait had slightly improved Her mental state had responded very satisfactorily, she was ow much happier and her periodic emotional outbursts were ess frequent and less violent

Case 2 —A man, aged 59, seen in May, 1940, when the ondition had been present for 8 months He had gross vasting of the small muscles of the hands and of the forearms, oth pectoralis major muscles and less severe wasting of the eg muscles He was given α tocopherol acetate, 30 mg laily, until December, 1940 At the end of this period there ad been no advance in the loss of muscle substance but ossibly some increase in the weakness The patient said he ad greatly improved in spirits and general health In March, 1941, he wrote from Dorset to say that he continued n good health and seemed to be walking better

Case 3 —A man, aged 69 In July, 1940, 8 months after the onset of illness, clinical examination showed weakness and wasting of the muscles of the shoulder girdle and the hypothenar eminences, and loss of power in the legs with fibrillation but no muscular atrophy Administration of α tocopherol acetate, 30 mg daily, was begun in July and continued until the middle of December, 1940 There was no change in the disease, but a great improvement in his general health and he was now more cheerful

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Case 5 —A man, aged 50, who first experienced weakness of the lower limbs 18 months before beginning vitamin-E therapy in June, 1940 Examination showed a spastic paraplegia but no muscular wasting in any part of the body He could walk only with assistance After 6 months' treatment with α tocopherol acetate, 30 mg daily, he could walk the length of the ward several times by himself with a stick, but there was no change in the physical signs of a bilateral pyramidal lesion At first sight this patient's neurological condition seems to have been benefited by vitamin-E therapy, but such a conclusion cannot be accepted unreservedly For the 18 months before his admission he had been confined to bed and had become depressed and despondent The interest and encouragement shown him in hospital stimulated his desire and his efforts to improve, and the undoubted improvement in his mental outlook had a similar effect

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Denker and Scheinman (1941) treated 11 cases of amyotrophic lateral sclerosis with α-tocopherol, administered orally, parenterally or by both routes Each patient received a total dosage of 100 mg each day, but no therapeutic results of any value were noted From their observations on 6 cases treated for periods varying from 6 to 12 months, Ferrabie, Klingman and Frantz (1941) concluded that vitamin E and vitamin B_6 preparations, even when given in large amounts, failed to influence the course of either amyotrophic lateral sclerosis or muscular dystrophy

PRESENT INVESTIGATION

The 25 cases in this series' are grouped under three headings according to the part of the neuromuscular system most affected by the degeneration, as bulbar paralysis, progressive muscular atrophy and amyotrophic lateral sclerosis The last term is sometimes used to include all manifestations of motor neurone degeneration, but it will be restricted here to cases in which a lesion of the pyramidal tracts is the predominant clinical feature Occasionally it is difficult to distinguish between the pure spastic paraplegia of amyotrophic lateral sclerosis, with no definite muscular wasting, and certain cases of disseminated sclerosis, especially those in which paraplegia is not associated with signs of incoordination, bladder disturbances or remission The diagnosis in some such cases must remain a matter of personal opinion In this study, a diagnosis of motor neurone degeneration has been accepted in cases of upper neurone paraplegia in which the onset has been after middle age , the deterioration has been steady and relentless, and there have been no symptoms, signs or history to suggest disseminated sclerosis

Owing to restriction in space, it has not been possible to include details of all cases , only 5 special examples have been selected All systems other than the neuromuscular system showed no abnormalities , the cerebrospinal fluid was examined in every case and was normal , the blood Wassermann reaction was negative in all cases Muscular fibrillation was noted in every case where evidence of involvement of the anterior horn cells existed, and will therefore be referred to only in the exceptional cases

BULBAR PARALYSIS

The 9 cases of bulbar paralysis treated included 6 me and 3 women, their ages ranging from 50 to 64 A showed the usual symptoms of dysarthria and dysphag with glossolabial paresis, and most of them had differe degrees of spinal motor neurone degeneration show itself by atrophy of the intrinsic muscles of the han fibrillation in some muscle groups or an early parapleg with extensor plantar reflexes In 8 cases 30 mg α-tocopherol acetate was given daily for 6–9 month the ninth case received wheat-germ oil equivalent 18 mg of tocopherol daily for 10 months While s under treatment 3 of the patients died, but each had tak vitamin E for more than 8 months The remaining patients showed a steady increase in the degree of bul paralysis even during treatment , only 1 case show some improvement in his sense of well-being, in spite retrogression in the neurological condition

PROGRESSIVE MUSCULAR ATROPHY

In 9 cases the predominant clinical features w muscular weakness and atrophy with fibrillation , had evidence of additional upper motor neurone chan in the lateral columns There were 6 men and 2 wom aged from 42 to 59, and 1 woman who showed pronoun muscular atrophy, especially of the intrinsic muscles both hands, and a mild upper neurone paraplegia at unusually early age of 25 In all cases except the described below, treatment with tocopherol was contin

TABLE I—INSULIN, LIGHT COMAS, AND SUGAR

Case	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Weight Before treatment st. lb.	Weight [illegible]	[illegible]
1*	[illegible]	D	20	64	46	9 0½	15	✓
2*	[illegible]	D E H	20	64	42	7 3	12	✓
3	[illegible]	A E H	20	102	10	10 2	17	✓
4	[illegible]	D	20	120	75	11 8	6½	0
5	[illegible]	D E *	20	64	60	9 8	10	✓✓
6	[illegible]	D	20	140	22	9 0	12	✓
7	47	D	20	80	15	11 1	1	✓✓
8	30	D	20	100	88	10 0	6½	0
9	20	D E A	20	200	41	10 6½	15	✓✓
10	32	A E H	20	200	61	9 8½	11	✓✓
11	35	A E H	20	200	62	10 6½	11	✓
12	23	A E H	20	300	43	10 8	8	✓
13	25	D E H	20	140	44	11 0	4	0
14	[illegible]	D	20	92	17	9 10	1	0
15	31	A E H	20	145	30	10 9	9	✓✓
16	20	A E H	20	130	64	[illegible] 12½	21	✓✓
17	24	D	30	180	16	10 6½	6	✓
18	22	D	20	180	13	10 6½	2	✓

D, depression; E, epilepsy; A, anxiety; H, hysteria; O, obsessional.
* Cases 1 and 2 were women; all the rest of the series were men.

✓ denotes some improvement during treatment.
✓✓ denotes considerable improvement during treatment.

signs of slipping into light coma, he is at once aroused by a cup of sweet tea and thereby brought round sufficiently to eat the potatoes. The dose of insulin is then reduced slightly the next day. Extra supplies of sugar, and the means of nasal or intravenous interruption, are constantly to hand for use as an emergency measure, but are very seldom required; careful and experienced nursing should do much to obviate their use. This method is almost entirely without danger, and by it as many as 20 patients can be treated in a ward simultaneously if desired. Appetite is often enormously increased; and second and third helpings of potatoes are urged on the patient. A full lunch is provided at 12.15 P.M., and the patients have physical training in the afternoon. So far, no after-shocks have been experienced†, but the patients are not allowed out of the hospital grounds on treatment days except under supervision, and their diet is watched. Treatment is given every day except Sunday; on Saturdays half doses of insulin are given. In successful cases it is continued until physique, appearance, and behaviour return to normal or weight increase stops after an initial steady gain. In practice, the time allowed for each patient is to a certain extent influenced by the number of fresh cases awaiting treatment. Table II records the results obtained in the treatment of 64 patients by this second method. Besides those given in tables I and II, 27 other cases were treated by these methods; 8 of these were schizophrenics; 4 had Cardiazol in addition to insulin; 1 refused to continue treatment; in 14 cases the available records are not entirely complete for various unavoidable reasons; the essential findings in the relevant cases do not differ from those discussed below.

RESULTS

The great difficulty in getting the exhausted neurotic patient to put on weight is only too well known, and some of the large gains in weight shown in the tables are therefore in themselves worthy of record. It may be thought that the mental improvement is entirely secondary to these gains, but it is more probable that they are both symptoms of a common change. It will be noted that the gains in weight in the cases making the best improvement are no greater than the average, and that large gains are sometimes accompanied by little psychiatric benefit, small gains by considerable benefit. It seems likely that other factors, such as the sweating, other autonomic effects, and the general quickening of the metabolism, may also be important.

From the psychiatric point of view, the cases in the first group did not do so well on the whole as those in the second group. There was, however, a difference in the material as well as in the treatment. We soon found that severe cases of depression, especially endogenous in type, and cases with depersonalisation, included in the first group, did not do well, the best results being obtained in men of fairly good personality with anxious, hysterical and depressive symptoms of a reactive type. In these, though long-standing and ingrained neurotic symptoms and tendencies were not relieved in any way, the acute symptoms often diminished.

There were more of these latter cases in the second group. They included men who had broken down in the Flanders retreat or as a result of other severe war stress. Often their condition had passed from the acute to the semi-chronic before they found their way to this unit. Some of them might have been treated with continuous narcosis, but the insulin treatment seemed so much simpler. Their symptoms were often a mixture of depression, anxiety and hysterical features in a reactive setting, and labelling them would be a matter of opinion,

TABLE II—INSULIN, SUBCOMA, AND POTATOES

Case	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Weight Before treatment st. lb.	Weight [illegible]	[illegible]
1	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	A E	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	D E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9	[illegible]	A E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
10	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	A	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
15	[illegible]	A	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	[illegible]	A E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	[illegible]	A E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
19	[illegible]	A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
20	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
21	[illegible]	A	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
22	[illegible]	A E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
23	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
24	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
25	[illegible]	D E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
26	[illegible]	A	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
27	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
29	[illegible]	A E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
30	[illegible]	A E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
31	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
32	[illegible]	D E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
33	[illegible]	A	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
34	[illegible]	D E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
35	[illegible]	D E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
36	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
37	[illegible]	D	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
38	[illegible]	A E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
39	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
40	[illegible]	D E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
41	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
42	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
43	[illegible]	A E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
44	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45	[illegible]	A	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
46	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47	[illegible]	D E A	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
48	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
49	[illegible]	D *	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
50	[illegible]	A	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
51	[illegible]	A E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
52	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
53	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
54	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
55	[illegible]	D	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
56	[illegible]	D E A	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
57	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
58	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
59	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
60	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
61	[illegible]	A E H	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
62	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
63	[illegible]	D	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
64	[illegible]	A E H	20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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† Since this article was written a further 98 cases have been completed. In 4 instances, mild hypoglycæmic symptoms have been observed in the afternoons; they were quickly relieved when sugar was taken by mouth.

An unexpected feature of the investigation was the pronounced effect on the general vitality and emotional tone in 9 of the 25 patients, who said they felt better and were happier and more contented To a large extent the despairing and depressed outlook, engendered by the gravity of their malady, was mitigated, while in 2 cases an actual tendency to euphoria was observed In view of the deterioration in the neuromuscular disorder and consequent increasing incapacity noted in some of these patients, this result was the more surprising It might partly be attributed to the institution of a definite line of treatment in a malady regarded as incurable, but it is also possible that vitamin E may act as a stimulant to general health and give rise to a feeling of well-being in states of depression Judging by our series the body-weight is unaffected by the vitamin

The published reports on the clinical aspects of vitamin-E therapy are as yet so few that Bicknell's statement " that vitamin E appears indeed to be one of the great advances in general medicine of the century " is at least premature, nor has it been justified by the results hitherto recorded From a practical standpoint it seems that vitamin-E therapy is in too early a stage for any definite conclusions to be drawn, and its value in neuromuscular disorders remains speculative

SUMMARY

The experimental and clinical evidence in favour of the application of vitamin-E therapy to neuromuscular disorders, and especially to motor neurone degeneration, is reviewed

A series of 25 cases of motor neurone degeneration is recorded, including bulbar paralysis, progressive muscular atrophy and amyotrophic lateral sclerosis, in which vitamin-E therapy was applied for periods of 5 to 10 months

Vitamin E was given in the form of synthetic α-tocopherol acetate (30 mg daily) or wheat-germ oil capsules equivalent to 18 mg tocopherol daily

Of the 25 cases, only 2 showed definite improvement, a third case reported his condition as improved, and slight improvement in gait was noted in a fourth

Progressive deterioration occurred in all 9 cases of bulbar paralysis

Improved general health and emotional tone were noted in 9 patients

The value of vitamin-E therapy in motor neurone degeneration remains speculative, but in view of the improvement in 2 of our cases it is worthy of further trial

We wish to thank Dr Frederick Prescott for his help in the investigation, Dr Colin Edwards for the notes of two cases, and Messrs Roche Products for supplies of α-tocopherol acetate

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According to the *New York Times* Dr Alexis Carrel, who is now in France, is to organise an institute for scientific and medical research in the occupied zone

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MODIFIED INSULIN THERAPY IN WAR NEUROSES

WILLIAM SARGANT,
M B CAMB, M R C P, D P M

NELLIE CRASKE,
M B, B SC MANC

(*From an E M S Neurological Unit*)

PREVIOUS communications from this unit[1] have emphasised that loss of weight and other physical changes have figured prominently in many cases of war neurosis admitted here, especially where there has been severe or protracted stress These changes may occur insidiously, and even where they are considerable the patient often does not look particularly thin or ill on admission Careful inquiry, or the patient's photograph before illness may be necessary to show the extent of the physical alteration Once lost, weight is not easily regained, but it is open to doubt whether a stable psychological recovery can be obtained without restoration of normal physique

Many years ago Weir Mitchell urged the importance of restoration of physique in the treatment of neurotic illness By means of an enormous diet, supplemented by rest and heavy massage to promote sweating and appetite, he bolstered up the neurotic's physical constitution and thereby obtained some remarkable psychological improvements More recently his results were interpreted as being largely due to suggestion, and the essentials of his treatment held of little value This paper reports the results of two modified forms of insulin therapy, the second probably somewhat similar in its effects to the original Weir Mitchell treatment A considerable physical improvement may be obtained, together with amelioration of acute neurotic symptoms But the evidence is against the suggestion that by this means long-standing neurotic tendencies, innate in the personality, are in any way altered There is nothing new in the essentials of this treatment, for many workers have noticed its occasional benefit in psychiatric conditions other than schizophrenia, but such a large series of cases has not previously been reported

TECHNIQUE

For its application to different material, the technique was modified in two stages from that generally used in the treatment of schizophrenia At first, a group of patients with reactive and endogenous depression or anxiety states, who showed loss of weight, were given increasing doses of insulin until light coma supervened The insulin was given intramuscularly at 7 A M, when the patient was fasting, and light coma followed in the third hour afterwards It was interrupted by the nasal administration of 7 oz sugar in tea as soon as it was deep enough for the nasal tube to be passed unnoticed by the patient Interruption by intravenous glucose was also used for convenience, or when hypoglycæmic excitement needed controlling Only a small number of patients could be treated at one time in this way, and though the method eliminated the dangers of prolonged and deep coma it required skilled nursing and constant supervision Large doses of insulin (20–300 units) had to be used, and special precautions, by securing an adequate diet during the rest of the day, were required to prevent the occurrence of after-shocks Table I shows the results obtained in the treatment of 18 cases by this method

As it became necessary to conserve both sugar and insulin, a simpler technique was adopted, which has the considerable advantage that a much larger number of patients can be treated at the same time A smaller dose of insulin (20–100 units) is given fasting at 7 A M, just insufficient to produce a light coma or hypoglycæmic excitement The interruption, at 10 A M, is by giving a cup of tea containing 2 oz of sugar, the rest of the carbohydrate being made up with 12 oz or more of potatoes* The aim is to produce a state of drowsiness for as long as possible between injection and interruption Nasal interruption is no longer necessary If the patient shows so for two days His temperature was 102° F , and pulse rate 120 He had purulent conjunctivitis His lips were swollen and dusky and their inner surfaces were covered with shallow ulcers on which was a greyish adherent false membrane which bled on removal The mucous membrane of the whole mouth, including the gums, inner surfaces of the cheeks, palate, tonsils and faucial pillars were similarly affected The pharynx was reddened and œdematous He could open his mouth only with difficulty and found it very hard to swallow There was no odour to the breath There were a few scattered moist râles and slight blowing breathing at both pulmonary bases A radiogram of the chest was negative Swabs were taken of the mouth lesions and conjunctival secretions Both smears and cultures showed numerous gram-positive encapsulated diplococci which were thought to be pneumococci No other organisms were seen

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[1] Sargant, W and Slater, E *Lancet*, 1940, 2, 1, Slater et al *Ibid*, 1941, 1, 107

* The substitution of potatoes for sugar making possible the continuation of treatment on a large scale despite sugar rationing was first suggested by Dr Russell Fraser in a personal communication

Sulphapyridine was given in gramme doses every four hours Within two days the chest symptoms and signs had entirely disappeared but the mouth and eyes showed no improvement, the temperature remained elevated and the patient continued to be very ill Swallowing became more difficult On Aug 18 he developed a pustular rash on his legs but this cleared up rapidly without treatment Unfortunately the pustules were not examined bacteriologically The conjunctivitis improved from this period on and smears were negative on the fifth day Sulphapyridine was continued in gramme doses four hourly until Aug 22 when a total of 36 g had been given During this period his temperature varied from 100 8° to 103 8° F and he remained acutely ill The mouth did not improve although the usual non specific local measures were applied A severe generalised dermatitis developed which was thought to be due to the drug and it was discontinued on Aug 22 There were no facilities available for an estimation of the blood sulphapyridine but the fact that he was very cyanosed suggested that it was well absorbed During this seven day period repeated swabs of the mouth lesions demonstrated a pure culture of the same organism

On Aug 23 his general condition became much worse and resembled the typhoid state He became apathetic, showed extreme prostration and refused anything by mouth His temperature ranged up to 104° F and his pulse became more rapid and thready Hæmoglobin 80% (Sahli), red cells 4,700,000, white cells 5450 Because of the extreme toxæmia it was decided to give him small whole-blood transfusions, and he received 250 c cm of stored whole blood By next morning he was greatly improved and accepted small quantities of food and drink He was given another 250 c cm of stored whole blood next day and this was repeated on the 29th During these days he made a spectacular improvement both in his general condition and his mouth By Sept 5 his stomatitis had cleared up, apart from small scars on his soft palate He was discharged from hospital completely well on Sept 13

CASE 2 —A Canadian subaltern of English origin, aged 21, was admitted on Oct 28, 1940 Four days previously his gums and lips had become dry and sore , they became progressively worse and he felt generally ill On the day of admission he had developed a slight cough and dyspnœa There was a past history of mild periodic asthma and four months before he had had a similar mouth condition accompanied by fever and general malaise At that time he was in another hospital and a diagnosis of " trench mouth " had been made, but there was no record of any bacteriological examination He said that he was not very ill at that time but that his mouth took nearly four weeks to clear up with various local treatments He was severely ill with a temperature of 101 5° F There was acute conjunctivitis with thin purulent secretion His lips were swollen and deeply cyanosed and their inner surfaces had several large shallow ulcers covered with an adherent greyish false membrane which bled on being disturbed The whole mucous membrane of the mouth was similarly affected and the lesions extended back to the soft palate, tonsillar pillars and pharynx He had considerable difficulty in opening his mouth and in swallowing The breath was not fœtid There were a few scattered sibilant rhonchi in both lungs which disappeared a few hours after admission X ray examination of the chest was negative Smears taken from the ulcers and conjunctival exudate showed numerous gram positive encapsulated diplococci and pure cultures of these were obtained No other organisms were found

He was given sulphapyridine, 8 g , in the first twenty four hours and 6 g each day thereafter in divided doses at four hourly intervals , a total of 26 g was given before the drug was discontinued on Oct 31 His condition became steadily worse Temperature reached a maximum of 103° F on the first day and subsided a little, to vary from 99 5° to 101° F He was toxic and drowsy and refused anything by mouth The pulse-rate remained over 110 and by Nov 1 it was considered that he was dangerously ill ; the white cells on this day were 6500

In view of our experience in case 1 and his now desperate condition the patient was given 350 c cm of stored whole blood on Nov 1 (twenty-four hours after the drug had been discontinued) Within a few hours there was a striking change in his whole condition The temperature fell to 99° F and he began to feel and look very much better He was able to swallow comfortably that evening A second transfusion of 250 c cm of stored blood was given next day and a third of like amount on Nov 4 He steadily improved after the first transfusion and by Nov 5 the mouth and eye conditions had almost gone The temperature remained normal after Nov 1 He was discharged completely recovered on Nov 8

CASE 3 —A Canadian medical officer of English origin was admitted on Dec 4, 1940 He had been unwell for several days with slight fever, general malaise and cough On the day of admission he had a severe chill and the other symptoms became aggravated His temperature was 102 2° F , respirations 28 and pulse rate 120 His eyes were slightly reddened and he was intolerant of light The pharynx was injected and there were moist râles and blowing breathing in the left lung base posteriorly and in the right upper lobe A chest radiogram showed some infiltration of the left base and a more definite infiltration of the lower part of the right upper lobe A diagnosis of bilateral bronchopneumonia was made The sputum contained mixed organisms with the pneumococcus predominating Sulphapyridine was given, starting with 2 g , and 1 g every four hours for two days and then gradually reduced until a total dosage of 30 g had been given He slowly improved until his temperature was normal on the fifth day (Dec 9) when the pulmonary signs and symptoms had gone During this time he complained of severe headaches in the frontal area and much photophobia Conjunctivitis was noted from the first day and reached its height on the fifth day There was a thin purulent conjunctival exudate Smears from this exudate showed a few gram positive encapsulated diplococci As his general condition improved he developed ulcerations on his lips, gums, inner sides of the cheeks and under the tongue much like those described in the other cases but not as severe Smears and cultures from these lesions yielded nothing but gram positive encapsulated diplococci Apart from the local discomfort associated with such lesions he felt well and they healed with local treatment only He improved rapidly and by Dec 16 the mouth and eye conditions had disappeared

DISCUSSION

The outstanding feature of these cases was the finding on repeated examinations of pure cultures of a gram-positive encapsulated diplococcus The fact that no other organisms were found on direct smear or culture was most striking Morphologically they could not be distinguished from the pneumococcus and in fact they were considered to be such and the cases were treated accordingly In the two primary cases adequate dosage of sulphapyridine had no beneficial effect , actually, the patients became steadily worse during its administration This observation led us to doubt whether we were really dealing with a true pneumococcus and a further study of our cultures was made Dr C J C Britton, who made a complete study of the organisms at the Bland-Sutton Institute, reported that although they were encapsulated and lance-shaped gram-positive diplococci they could be grown easily on relatively simple media, did not ferment inulin and were not bile-soluble A heat-resistance test was not done The organisms were not agglutinated by any of the pneumococcal typing sera It was thought that they probably belonged to the streptococcus group and were possibly of the fæcalis type This may account for the lack of response to sulphapyridine

Clinically the cases were characterised by the severe local lesions in the mouth and by the extreme general toxæmia Although the first case made a dramatic recovery after small transfusions of pooled blood we doubted whether these had anything to do with the improvement, so that when the second case came in we felt that he should be given full trial on sulphapyridine, The symptoms most benefited by the treatment were those of exhaustion lethargy, loss of appetite, despondency, inability to think clearly, and general feelings of tension Somatic accompaniments of "conditioned" fears, of raids, bombs, aeroplanes and so on might be lessened, but the fears themselves were rarely abolished, they were often too deeply ingrained by the time the patients came for treatment Improvement generally occurred in the first month It was helped by superficial psychotherapy and by such other obviously necessary measures as filling in amnesic gaps The method is of little use against a strong psychological resistance to recovery It has therefore been found most valuable as a means of speeding up rehabilitation in service or civilian cases, before boarding out of the Army or discharge to take up readjusted duties There is no reason to think that even the most successful patients, if again exposed to the stresses causing their breakdown, would not relapse

Psychological factors undoubtedly played a part in the treatment The patients were often exhausted and showed increased suggestibility They were receiving a definite treatment after a long period of therapeutic inactivity, or inefficiently carried out duty Two or three patients in the ward who were doing well influenced the rest Every encouragement was given to them to eat as much as possible with their improved appetite But these things did not explain the whole of the improvement obtained The patients often looked and felt physically better or resembled much more closely the photographs taken of them before their illness And this return to previous physique, if it could be achieved, was taken as the indication for the cessation of this particular form of treatment

CONCLUSIONS

The possible uses of modified forms of insulin treatment for soldiers and civilians suffering from depression and various neurotic reactions have been investigated in a large number of cases Tables showing alterations in weight and symptoms in relation to days of treatment are given for 82 such cases The following general conclusions were arrived at as to the value of such treatment

1 Rapid gains in weight and improvement in appetite may often be obtained in neurotic subjects whose general physique has deteriorated under stress

2 Long-standing neurotic traits, innate in the personality, are not altered The somatic symptoms accompanying recent "conditioned" fears may sometimes be lessened but the fears themselves rarely abolished

3 Generalised neurotic anxiety, and hysterical and depressive symptoms in a reactive setting sometimes improve rapidly The improvement is mainly in the associated symptoms of nervous exhaustion

4 The greatest improvements do not necessarily coincide with the largest gains in weight Other factors seem to play a part

5 Severe cases of depression, especially of the endogenous type, were less helped by the methods used In other cases, not reported here, convulsion therapy or continuous narcosis has been a useful alternative treatment

6 The treatment is ineffective against strong psychological resistance to recovery When used, it should be in conjunction with other established methods of treatment for neurosis and with adjustment of environment

7 In practice, its main value will be for speeding up normal processes of recovery in patients to be boarded out of the Army, fit to do civilian work, or before they are returned to readjusted duties

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A WELCOME GUEST —The journal of the Polish Army Medical Corps (*Lekarz Wojskowy*), published in Warsaw up to two years ago, is now being published in London by Thomas Nelson and Sons The July number, among other things, contains a useful review of the treatment of wounds by Colonel Dr T Sokolowski, and a discussion of the special problems of medical services in desert warfare by Lieutenant J. Kwoczyński, the main articles have English summaries

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ACUTE ULCERATIVE STOMATITIS

THREE UNUSUAL CASES

C H A WALTON, M D, M SC MANITOBA
LIEUT COLONEL, R C A M C

H M GRAHAM,
M D, C M QUEEN'S, ONTARIO

L P LANSDOWN
M D MANITOBA

MAJORS R C A M C

(*From No 5 Canadian General Hospital, Overseas*)

WE have recently seen three cases of acute ulcerative stomatitis or angina which differed materially from the better known clinical types Their severity, the peculiar bacteriological findings and the results of treatment led us to think that they should be reported They were almost identical in their clinical course and were characterised by widespread ulcerative lesions of the lips, buccal cavity and pharynx with an associated mild purulent conjunctivitis All the patients were acutely ill and two of them showed alarming prostration Repeated swabs from the ulcerated areas and the conjunctival secretion in all cases yielded pure smears and cultures of an encapsulated gram-positive diplococcu This organism resembled the pneumococcus morphologically, but subsequent careful investigation showed that it had none of the cultural or serological characteristics of the pneumococcus group Repeated swabs of the various lesions always yielded pure smears and cultures of the same organism throughout the acute phase of the illness

Chalier and Ledu (1939) report cases which they call acute pneumococcal angina and from which they recovered pure smears and cultures of the pneumococcus They suggest that the condition is common but describe only a few of their own cases They say that many cases with membranous lesions of the tonsils and pharynx which are suspected of being diphtheritic yield smears and cultures of pneumococci, and that most of these cases are mild and clear up rapidly with local measures However, they report some further cases which were very severe and which were associated with much general toxæmia In these the usual methods of treatment, including antipneumococcal sera (type not specified), were ineffective They treated five cases with sterilised beef bile applied locally with apparent success All their reported cases were febrile and toxic and showed œdema and shallow ulceration associated with an adherent membranous exudate involving the lips, gums, insides of the cheeks, tongue, palate, tonsils and pharynx Although they state that pure cultures of pneumococci were obtained in all cases they give no evidence that the identification of the organisms was based on anything other than their appearance

Schmidt La Baume and Otto (1933) quote three cases These all had lobar pneumonia with a concurrent ulcerative and pseudomembranous stomatitis due to organisms said to be pneumococci One of these cases developed a rash from the lesions of which supposed pneumococci were recovered They also describe a fourth case which had pneumonia, stomatitis and a pustular exanthem from which "pneumococci" were recovered in pure culture Again identification of the organisms was incomplete and appeared to be only morphological

It seems that cases of acute ulcerative stomatitis or angina do occur in which an encapsulated diplococcus is the only organism found Such cases may arise as primary conditions resembling diphtheria, or may be a complication of pneumonia In all the reported cases there was moderate or high fever accompanied by severe toxæmia The local condition is characterised by swelling and cyanosis of the mucous membranes of the lips, gums, buccal cavity, palate, fauces, tonsils, tongue and pharynx There is widespread superficial ulceration with production of an exudate best described as a false membrane which is adherent and bleeds easily on being disturbed The membrane appears as glistening greyish white patches of varying size which become confluent in the more severe cases We have to report two similar primary cases and a third secondary to pneumonia

CASE-HISTORIES

CASE 1 —A French Canadian soldier, aged 28, was admitted to hospital on Aug 15, 1940 He was acutely ill and had been

TABLE II—ANALYSIS OF CALCIUM AND PHOSPHORUS METABOLISM IN 3 CASES OF MYXŒDEMA

Case	Age (yr)	Before treatment							After treatment						
		Calcium balance			Phosphorus balance			B M R	Calcium balance			Phosphorus balance			B M R.
		per 3 day period							per 3-day period						
		Intake	Output	Balance	Intake	Output	Balance		Intake	Output	Balance	Intake	Output	Balance	
		g	mg /kg body weight		g	mg /kg body weight			g	mg /kg body-weight		g	mg /kg body weight		
EZ	54	0.3	7.85	−4.62	1.47	15.9	0	−45	0.21	9.93	−7.58	1.3	22.1	−7.59	+3
FA	60	0.26	9.69	−6.2	1.43	9.96	+9.29	−35	0.23	11.25	−7.98	1.48	32.95	−11.82	+4
FB	37	0.29	8.34	−3.51	1.92	28.73	+3.34	−42	0.31	19.36	−13.8	1.85	43.35	−10.22	+7
Mean		0.28	8.62	−4.78	1.62	18.2	+4.21	−41	0.25	13.51	−9.79	1.54	32.8	−9.88	+5

TABLE III—ANALYSIS OF CALCIUM AND PHOSPHORUS METABOLISM IN 3 TREATED AND 3 UNTREATED CASES OF MYXŒDEMA AND 9 NORMAL CONTROLS

—	No of cases	Three day periods									
		Calcium intake	Phosphorus intake	Calcium output		Calcium balance		Phosphorus output		Phosphorus balance	
				Mean	Range	Mean	Range	Mean	Range	Mean	Range
		g	g	mg /kg body-weight				mg /kg body-weight			
Untreated myxœdema	3	0.28	1.62	8.62	7.85 to 9.69	−4.78	−3.51 to −6.20	18.2	9.96 to 28.73	+4.21	0 to +9.29
Treated myxœdema	3	0.25	1.54	13.51	9.93 to 19.36	−9.79	−7.58 to −13.80	32.8	22.1 to 43.35	−9.88	−7.59 to −11.82
Normal controls	9	0.34	1.12	13.3	9.1 to 19.30	−7.58	−3.85 to −11.70	31.3	23.4 to 41.5	−10.54	−7.39 to −19.50

TABLE IV—ANALYSIS OF CALCIUM AND PHOSPHORUS METABOLISM IN A CASE (FB) OF MYXŒDEMA OUTPUT IN FÆCES AND URINE MEASURED SEPARATELY

Three-day periods												B M R.	
Calcium balance						Phosphorus balance							
Intake		Output				Intake		Output					
		Urine		Fæces				Urine		Fæces			
Bef g	Aft g	Bef g	Aft g	Bef g	Aft g	Bef g	Aft g	Bef g	Aft g	Bef g	Aft g	Bef g	Aft. g
0.29	0.31	0.07	0.51	0.42	0.57	1.92	1.85	0.94	1.94	0.78	0.48	−42	+7

observations that the serum-calcium is normal in myxœdema, and that adequate thyroid therapy causes the serum-calcium to fall below normal

Phosphorus.—The mean inorganic phosphorus in the serum in untreated myxœdema is slightly raised above the normal mean but the difference is not significant, for $P > 0.4$ Thyroid feeding caused the mean inorganic phosphorus to rise from 3.93 to 4.22 mg per 100 c cm, and this rise is probably significant, for $P = 0.05$ This assumption is supported by the significant difference in the mean inorganic phosphorus level of treated myxœdema and normal controls, for $P < 0.01$ These observations show that in myxœdema the serum inorganic phosphorus is normal and that thyroid feeding causes the phosphorus to rise These findings were not anticipated, with a fall in the serum-calcium I expected a corresponding fall in the inorganic phosphorus similar to that found in thyrotoxicosis A possible explanation is that given by Albright and others (1931), who described a variation in the serum-calcium and inorganic phosphorus ratio such that their product remained roughly constant If this is so then this relationship is not present in thyrotoxicosis, where both the serum-calcium

TABLE V—OBSERVATIONS ON THE SERUM IN 9 CASES OF MYXŒDEMA

Case	Duration of thyroid feeding	Before treatment				After treatment			
		B M R	Calcium	Inorganic phosphorus	Phosphatase (units*)	B M R	Calcium	Inorganic phosphorus	Phosphatase (units*)
	(wk.)		(mg /100 c.cm)				(mg /100 c cm)		
CY	7	−28	10.8	4.4	7	+6	9.8	4.7	10.8
CZ	10	−35	10.6	3.9	10.2	+4	10.6	4.4	12
DA	12	−42	10.8	4.5	7	+7	10.1	4	6.1
DB	10	−46	10.4	3.8	6.5	−12	10.3	4.3	5.7
DC	7	−29	10.3	4	3.8	+9	9	3.8	5.1
DD	9	−32	10.3	3.8	3	+1	9.7	4.2	5.4
DE	6	−40	10.4	3.9	3.1	+1	10	4.1	5.2
DF	5	−30	11.2	3.6	3.5	+12	9.9	4.6	7.3
DG	5	−30	9.8	3.5	4.6	−5	9.3	3.9	8.7
Mean		−35	10.51	3.93	5.41	+2	9.85	4.22	7.37

* Units of King and Armstrong

TABLE VI—OBSERVATIONS ON THE BLOOD-SERUM IN 9 TREATED AND 3 UNTREATED CASES OF MYXŒDEMA AND 60 NORMAL CONTROLS

—	Serum calcium		Serum inorganic phosphorus		Serum phosphatase	
	Mean	Standard dev	Mean	Standard dev	Mean	Standard dev
Normal controls*	10.39	0.27	3.83	0.395	7.195	2.03
Untreated myxœdema	10.51	0.4	3.93	0.33	5.41	2.4
Treated myxœdema	9.85	0.49	4.22	0.32	7.37	2.6

* See first paper

and this was done He became progressively worse and on the fifth day the drug was discontinued because it was clearly not benefiting him and was probably making him worse Next day his prostration was so great that his life seemed in danger We now started transfusions of pooled blood and again spectacular improvement set in within a few hours We appreciate that pooled stored blood has little, if any, antibody or complement but the fact remains that immediate improvement followed its use in two successive cases

King (1940) has drawn attention to the possibility of a deficiency of the pellagra-preventing factor (nicotinic acid) in cases of " trench mouth " and Vincent's disease Our patients may also have suffered from some deficiency although their stomatitis was associated with the diplococcus described instead of the usual Vincent's organisms If so, the stored whole blood may have supplemented the deficiency and thereby led to the rapid recovery With this idea in mind we wanted to use nicotinic acid in the second case but supplies of the drug could not be obtained in time

The general appearance of the mouths of all three of our cases was compatible with Vincent's disease, but there was no unpleasant odour to the breath and of course the bacteriological examination confirmed the absence of that type of infection It seems probable that in many of the mild cases of stomatitis which are diagnosed as Vincent's infection without a bacteriological examination such examination would reveal an infection with a similar organism to that we have described, or perhaps others King's thesis—that ulceromembranous infections of the mouth with Vincent's organisms are associated with a defective cell metabolism due to a deficiency of part of the vitamin B. complex—may also apply to infections with other organisms

The cases here reported could have been classified as pneumococcal stomatitis if full bacteriological study had not shown that the organisms were not pneumococci All cases of buccal ulceration seen here are now being examined bacteriologically to determine the frequency of this type of infection

SUMMARY

Three unusual cases of ulcerative stomatitis are reported in which repeated bacteriological examination showed pure smears and cultures of a gram positive encapsulated diplococcus which lacked many of the cultural, biological and serological properties of the pneumococcus A diagnosis of pneumococcal stomatitis should therefore be made with caution

The disease did not respond to adequate sulphapyridine therapy but transfusions of pooled whole blood seemed to act as a specific It is suggested that infection of the mouth with organisms other than Vincent's may be associated with a deficiency of nicotinic acid

We are indebted to Colonel Leonard Colebrook, Dr C J C Britton and Major Charles Moore for their advice and assistance, and to the Director of Medical Services, Canadian Army (Overseas), for permission to publish this report

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CALCIUM AND PHOSPHORUS STUDIES IN MYXŒDEMA*

J Douglas Robertson, M D, D Sc St And, D P H

On a low daily intake of calcium, such as 0 1 g, the normal person steadily loses about 0 25 g a day, chiefly in the fæces but also in the urine In thyrotoxicosis, on a similar intake the loss is much greater This was clearly demonstrated in 1910 by Towles, later by Aub and his colleagues (1929), and more recently in a study of 33 cases by Beaumont, Dodds and Robertson (1940) It has further been shown by the last two groups of workers that successful subtotal thyroidectomy was accompanied by a return of the calcium balance to normal limits A natural corollary to these observations would be the demonstration that in myxœdema the calcium output was diminished and that it rose to normal after adequate thyroid therapy Of 5 cases of myxœdema reported by Aub and his colleagues (1929) only 2 showed an increased calcium loss after thyroid feeding, in the other 3 the calcium loss was actually diminished

In the present paper the calcium and phosphorus metabolism has been studied in 3 cases of myxœdema before and after thyroid feeding Observations were also carried out on the serum calcium, inorganic phosphorus and phosphatase to determine whether these substances were altered in myxœdema and whether thyroid feeding changed their concentrations

CALCIUM AND PHOSPHORUS METABOLISM

In table I the results of the calcium and phosphorus lances in the 3 cases of myxœdema are given In bles II, III and IV a more detailed analysis of the calcium d phosphorus metabolisms of these cases has been esented

In view of the variations in the calcium intake the lcium balance was used for comparison The mean gative calcium balance in myxœdema per three days as 4 78 mg per kg body-weight, as compared with 58 mg in my study of 9 normals reported in the first per of this series On adequate thyroid medication uring which the basal metabolism rose from − 41 to 5) the mean negative calcium balance increased to 79 mg Thyroid feeding produced an increased calcium ss in all cases, greatest in the youngest subject In treated myxœdema the body stored phosphorus per three days at the rate of 4 21 mg per kg of body-weight Thyroid feeding changed this gain into a loss of 9 88 mg comparable with the negative balance in normal people of 10 54 mg per kg Table IV shows the calcium and phosphorus balance in a case (FB) of myxœdema where the output of these minerals in the urine and fæces was measured separately

The reduction in calcium output was greater in the urine than the fæces, the calcinuria amounting to 14% of the total calcium output as compared with the normal of 24% The calcium output rose after thyroid feeding, the increase taking place chiefly in the urine The reduction in the phosphorus output was also chiefly in the urine, the phosphaturia amounting to 55% of the total phosphorus output as compared with the normal of 70% After thyroid feeding there was a decided increase in the urinary output of phosphorus and at the same time a fall in the output of phosphorus in the fæces

TABLE I—CALCIUM AND PHOSPHORUS BALANCES IN 3 CASES OF MYXŒDEMA

Case	Before and after treatment	Calcium per 3 day period			Phosphorus per 3 day period			B M R *	Wt kg
		In-take	Out-put	Balance	In take	Out put	Balance		
		g	g	g	g	g	g		
EZ	Before	0 3	0 73	−0 43	1 47	1 48	−0 01	− 45	93
	After	0 21	0 89	−0 68	1 3	1 98	−0 68	+ 3	89 6
FA	Before	0 26	0 72	−0 46	1 43	0 74	+0 69	− 35	74 3
	After	0 23	0 79	−0 56	1 48	2 31	−0 83	+ 4	70 2
FB	Before	0 29	0 5	−0 21	1 92	1 72	+0 2	− 42	59 9
	After	0 31	1 08	−0 77	1 85	2 42	−0 57	+ 7	55 8

* Standards of Aub and DuBois

BLOOD-SERUM STUDIES

Calcium—The blood-serum findings are set out in tables V and VI The mean serum-calcium in untreated myxœdema is slightly raised above the normal mean but the difference is not significant, according to Fisher's P test (1938), for $P = 0\ 3$ Thyroid feeding brought about a fall in the mean serum calcium from 10 51 to 9 85 mg per 100 c cm Statistically this difference is significant, for $P < 0\ 01$ There is also a significant difference in the levels of the serum-calcium in normal people and in the cases of myxœdema treated with thyroid, for $P < 0\ 01$ It seems, therefore, from these

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* The fourth paper in this series For references and methods of estimation see the first paper, *Lancet* July 26, 1941, p 97

TABLE II—ANALYSIS OF CALCIUM AND PHOSPHORUS METABOLISM IN 3 CASES OF MYXŒDEMA

Case	Age (yr)	Before treatment							After treatment						
		Calcium balance			Phosphorus balance			B M R	Calcium balance			Phosphorus balance			B M R
		per 3 day period							per 3 day period						
		Intake	Output	Balance	Intake	Output	Balance		Intake	Output	Balance	Intake	Output	Balance	
		g	mg /kg body weight		g	mg /kg body weight			g	mg /kg body weight		g	mg /kg body weight		
EZ	54	0 3	7 85	− 4 62	1 47	15 9	0	− 45	0 21	9 93	− 7 58	1 3	22 1	− 7 59	+ 3
FA	60	0 26	9 69	− 6 2	1 43	9 96	+ 9 29	− 35	0 23	11 25	− 7 98	1 48	32 95	− 11 82	+ 4
FB	37	0 29	8 34	− 3 51	1 92	28 73	+ 3 34	− 42	0 31	19 36	− 13 8	1 85	43 35	− 10 22	+ 7
Mean		0 28	8 62	− 4 78	1 62	18 2	+ 4 21	− 41	0 25	13 51	− 9 79	1 54	32 8	− 9 88	+ 5

TABLE III—ANALYSIS OF CALCIUM AND PHOSPHORUS METABOLISM IN 3 TREATED AND 3 UNTREATED CASES OF MYXŒDEMA AND 9 NORMAL CONTROLS

—	No of cases	Three day periods									
		Calcium intake	Phos phorus intake	Calcium output		Calcium balance		Phosphorus output		Phosphorus balance	
				Mean	Range	Mean	Range	Mean	Range	Mean	Range
		g	g	mg /kg body weight				mg /kg body weight			
Untreated myxœdema	3	0 28	1 62	8 62	7 85 to 9 69	− 4 78	− 3 51 to − 6 20	18 2	9 96 to 28 73	+ 4 21	0 to + 9 29
Treated myxœdema	3	0 25	1 54	13 51	9 93 to 19 36	− 9 79	− 7 58 to − 13 80	32 8	22 1 to 43 35	− 9 88	− 7 59 to − 11 82
Normal controls	9	0 34	1 12	13 3	9 1 to 19 30	−7 58	− 3 85 to − 11 70	31 3	23 4 to 41 5	− 10 54	− 7 39 to − 19 50

TABLE IV—ANALYSIS OF CALCIUM AND PHOSPHORUS METABOLISM IN A CASE (FB) OF MYXŒDEMA OUTPUT IN FÆCES AND URINE MEASURED SEPARATELY

Three day periods												B M R	
Calcium balance						Phosphorus balance							
Intake		Output				Intake		Output					
		Urine		Fæces				Urine		Fæces			
Bef g	Aft g	Bef g	Aft g	Bef g	Aft g	Bef g	Aft g	Bef g	Aft g	Bef g	Aft g	Bef g	Aft g
0 29	0 31	0 07	0 51	0 42	0 57	1 92	1 85	0 94	1 94	0 78	0 48	− 42	+ 7

observations that the serum-calcium is normal in myxœdema, and that adequate thyroid therapy causes the serum-calcium to fall below normal

Phosphorus —The mean inorganic phosphorus in the serum in untreated myxœdema is slightly raised above the normal mean but the difference is not significant, for $P > 0\ 4$ Thyroid feeding caused the mean inorganic phosphorus to rise from 3 93 to 4 22 mg per 100 c cm , and this rise is probably significant, for $P = 0\ 05$ This assumption is supported by the significant difference in the mean inorganic phosphorus level of treated myxœdema and normal controls, for $P < 0\ 01$ These observations show that in myxœdema the serum inorganic phosphorus is normal and that thyroid feeding causes the phosphorus to rise These findings were not anticipated , with a fall in the serum-calcium I expected a corresponding fall in the inorganic phosphorus similar to that found in thyrotoxicosis A possible explanation is that given by Albright and others (1931), who described a variation in the serum-calcium and inorganic phosphorus ratio such that their product remained roughly constant If this is so then this relationship is not present in thyrotoxicosis, where both the serum-calcium

TABLE V—OBSERVATIONS ON THE SERUM IN 9 CASES OF MYXŒDEMA

Case	Duration of thyroid feeding	Before treatment				After treatment			
		B M R	Calcium	Inorganic phosphorus	Phosphatase (units*)	B M R	Calcium	Inorganic phosphorus	Phosphatase (units*)
	(wk)		(mg /100 c cm)				(mg /100 c cm)		
CY	7	− 28	10 8	4 4	7	+ 6	9 8	4 7	10 8
CZ	10	− 35	10 6	3 9	10 2	+ 4	10 6	4 4	12
DA	12	− 42	10 8	4 5	7	+ 7	10 1	4	6 1
DB	10	− 46	10 4	3 8	6 5	− 12	10 3	4 3	5 7
DC	7	− 29	10 3	4	3 8	+ 9	9	3 8	5 1
DD	9	− 32	10 3	3 8	3	+ 1	9 7	4 2	5 4
DE	6	− 40	10 4	3 9	3 1	+ 1	10	4 1	5 2
DF	5	− 30	11 2	3 6	3 5	+ 12	9 9	4 6	7 3
DG	5	− 30	9 8	3 5	4 6	− 5	9 3	3 9	8 7
Mean		− 35	10 51	3 93	5 41	+ 2	9 85	4 22	7 37

* Units of King and Armstrong

TABLE VI—OBSERVATIONS ON THE BLOOD-SERUM IN 9 TREATED AND 3 UNTREATED CASES OF MYXŒDEMA AND 60 NORMAL CONTROLS

—	Serum calcium		Serum inorganic phosphorus		Serum phosphatase	
	Mean	Standard dev	Mean	Standard dev	Mean	Standard dev
Normal controls*	10 39	0 27	3 83	0 395	7 195	2 03
Untreated myxœdema	10 51	0 4	3 93	0 33	5 41	2 4
Treated myxœdema	9 85	0 49	4 22	0 32	7 37	2 6

* See first paper

and inorganic phosphorus were found to be below normal

Phosphatase—The mean serum-phosphatase in untreated myxœdema is diminished below the normal mean and there is a significant difference, for $P > 0\ 02$ In comparing the serum phosphatase before and after thyroid feeding it will be noted that the standard deviations are high in proportion to the difference in the respective means In view of the small number of cases of myxœdema investigated it is unlikely that a significant difference could be demonstrated before and after thyroid medication and this in fact was so, for $P = 0\ 1$ If however the treated or untreated cases of myxœdema are compared with the 60 normal controls in the first paper in this series it is found that a significant difference exists between the untreated myxœdema and the controls and that there is no significant difference between the treated myxœdema and the controls It seems justifiable to conclude that the serum-phosphatase is diminished in myxœdema and that thyroid feeding raises it to normal

SUMMARY

In 3 cases of myxœdema the negative calcium balance was found to average 4 78 mg per kg of body-weight per three-day period, compared with the normal of 7 58 mg The diminution in output chiefly affected the urine

The phosphorus output was diminished, so that a positive balance was produced Per three day period there was a retention of phosphorus amounting to 4 21 mg per kg body-weight, compared with a loss, or negative balance, in normal subjects of 10 51 mg The diminution chiefly affected the urine

Examination of the blood in myxœdema showed that the calcium and inorganic phosphorus of the serum are normal but that serum-phosphatase is diminished

Adequate thyroid medication, resulting in a return of the heat output to normal, produced the following changes in the calcium and phosphorus metabolism The negative calcium balance per three-day period rose from 4 78 mg per kg to 9 79 mg, the increased output taking place almost entirely in the urine There was an increased phosphorus output, changing the balance in three days from a positive one of 4 21 mg per kg to a negative one of 9 88 mg, the increase in output taking place only in the urine and being accompanied by a fall in the fæcal output of phosphorus The immediate effects on the blood-serum were that the serum calcium fell below normal limits, the inorganic phosphorus rose above normal in proportion to the fallen serum calcium, and the diminished serum-phosphatase rose to normal limits

Reviews of Books

Old-age Pensions

An historical and critical study By SIR ARNOLD WILSON, M P, and G S MACKAY London Humphrey Milford, Oxford University Press Pp 229 16*s*

THIS is the first full description and examination of one of the most important social developments of our time It should be of great interest and use to every thoughtful citizen and particularly to our profession It is an impartial and lucid account of the steps which have produced our British system In the historical section the authors bring out many facts which will be new to the general reader They show that the duty of making provision for old age and dependency is enjoined in many religious systems Legislation of the time of Henry VIII assumed that the poor will be supported by voluntary alms, but Elizabeth prescribed compulsion In the reign of Charles I, attempts were made to establish an elaborate system, far in advance of his times, but the Puritans strongly discouraged anything which tended to diminish personal thrift, an attitude which was closely followed by the friendly societies later, who were the sternest opponents of state assistance This is brought out in the description of the efforts of Joseph Chamberlain, who became in the 1890's the great champion of old-age pensions He scornfully said in Parliament "some economists expect from the poor a virtue which we do not find in ourselves" But his efforts to secure legislation were defeated, and he had to acknowledge that "the vested interest in voluntary thrift is overwhelmingly strong" It was Mr Lloyd George who in 1908 put non-contributory pensions on the Statute Book, and the only opposition came from a small body of "hard-boiled" individualists The book describes the various steps by which the original non-contributory pension has been raised from 5*s* to 10*s* a week, and the maximum income which will attract the full pension from £31 10*s* a year to £49 17*s* 6*d* The authors point out that in July, 1939, this 10*s* had the same value as 16*s* had when the earlier rate was fixed The same full particulars are given of the inception in 1925 and growth since of the contributory schemes, which give to all "insured persons" the right to a pension at 65 There are chapters on the adaptation of the system to war conditions and on old-age pensions in other countries, from which it appears that we were the last country but two out of the twenty-five tabulated as having obligatory schemes, being followed in 1927 by Cuba and Russia In a concluding chapter we are told of the Labour Party's plea in July, 1939 for a rise in the pension to £1 a week, with 35*s* for a married couple, followed by the reminder by Neville Chamberlain that the cost of the non-contributory pensions all came out of the general taxpayer and 60% of the contributory, and that the cost to the taxpayer had risen from 8¼ millions in 1909 to over 69 millions in 1939 The means test which is used in dealing with the supplementary pensions of 1940 is considered by the authors as "not a permanency but useful as a quick remedy for a war-time difficulty" They remind us that "all classes may have to revise their ideas as to what is a tolerable part of their income for the state to demand in peace-time, whether as taxes or contributions"

In his foreword Sir George Schuster deals briefly with general principles, and in a long and interesting preface Mr W B Reddaway discusses the vexed question of decreasing fertility

Applied X Rays

(3rd ed) By GEORGE L CLARK, D Sc London McGraw Hill Publishing Co Pp 674 42*s*

MUCH of this book is inevitably related to non medical sciences The study of the physics of X rays crosses the path of medicine little more than does the science of visible light, but though Professor Clark of Illinois gives relatively little space to medicine the book is none the less of considerable interest to those associated with medical radiology The chapter on the biological effects of X radiation is well set out and up to date, and gives the reader a clear idea of the theories of the actions of X rays on living cells The second part, which occupies about two-thirds of the volume, deals with the X-ray analysis of the ultimate structure of materials It makes fascinating reading and illustrates how X rays have revolutionised chemistry in the conception of the structure of solids Only a generation ago crystallography was a very small branch of chemistry, but since the work of the Braggs X-ray analysis has made it one of the largest and foremost branches

Annual Review of Physiology

Vol III Edited by J M LUCK and V E HALL, Stanford University California American Physiological Society and Annual Reviews Inc Pp 784 $5

THERE are 28 articles by 31 authors in this book which is bigger than volume II, and—in its average level of reviewing—better A good review should give views as well as news, and there is a welcome increase in the number of contributions in which recent work is evaluated as well as recorded This trend is well worth an increase in size The articles on histamine and anaphylaxis (Feldberg), bacterial chemotherapy (E K Marshall) and the autonomic nervous system (D Sheehan) are probably those of most clinical interest, though few are devoid of clinical significance in one respect or another

AMERICAN DOCTORS FOR BRITAIN—The response to the request made by the British Red Cross for 1000 American doctors has not so far been large By the middle of July, 18 doctors were about to leave, and another 56 were soon to follow The chance that the United States may herself be entering the war is said to b

THE LANCET
LONDON SATURDAY, AUGUST 23, 1941

VITAMIN E FALLS FROM GRACE

VITAMIN therapy is passing into relative disrepute ecause one after another of the enthusiastic claims made are being disproved The sequence of events s often the same A biochemist feeds lower animals n a purified diet and induces pathological changes hat are later prevented or cured by the addition of a oncentrate or a pure chemical substance A new vitamin has been found The discoverer perhaps uggests human diseases that may be benefited by such therapy because he believes them, often wrongly, o be analogous to the pathological condition in his animals or the clinician, legitimately encouraged by its manufacturers, tries the new panacea on a few of his patients who loyally say they feel better Before the series of cases and controls are adequate the results are published, and other clinicians hasten to join what Walshe has aptly termed the vitamin band-waggon It remains for more cautious workers to investigate the claim laboriously and publish their negative results This sorry story cannot yet be told about vitamin E, but the fires of enthusiasm already burn less brightly

We are indebted to H M Evans for the discovery and most of the chemistry of vitamin E, and he was the first to show[1] that suckling rats developed paralysis if their mothers were kept on a diet deficient in this factor The subsequent work on animals, which we reviewed last year[2] culminated in the suggestion of Einarson and Ringsted[3] that amyotrophic lateral sclerosis and tabes dorsalis might be due to deficiency of the vitamin Clinically, the hypothesis was first put to the test independently by Bicknell[4] and Wechsler The former treated 18 cases of muscular dystrophy with 1 oz of dried fresh wheat germ daily, and noted improvement in all except 6 of the 11 cases that he classified as advanced He also noted improvement in 2 cases of amyotrophic lateral sclerosis and a single case of amyotonia congenita, although he had faith that vitamin E would be of value in tabes, neither of his 2 advanced cases improved Bicknell believed that the muscular dystrophies, and most probably amyotrophic lateral sclerosis, were deficiency diseases and curable Wechsler[5] treated 2 cases of amyotrophic lateral sclerosis with the synthetic ester of the vitamin (tocopherol acetate, 9 or 18 mg daily), one case completely recovered and the other was much improved, but 3 advanced cases did not improve He believed that vitamin B may aid vitamin E in treatment, and gave his later patients B complex as well as E Later[6] he reported varying success in 11 of 20 cases of amyotrophic lateral sclerosis that were "carefully observed and consistently treated", some 30 cases in all were treated These patients received daily 30–200 mg of α-tocopherol acetate, 2 teaspoonfuls of wheat-germ oil, a diet rich in vitamin E, with bile salts and the whole vitamin-B complex More recently,[7] he presented at a meeting 7 cases successfully treated, and could show 4 or 5 others who had partially improved But he could cite at least 25 patients who had not improved at all with treatment, and assured the meeting that there were at least three and possibly four kinds of amyotrophic lateral sclerosis, of which only one (representing a third or a quarter of all cases) would respond to vitamin E Stone[8] used wheat-germ oil, 2 ml a day by mouth, and yeast tablets in the treatment of 5 cases of muscular dystrophy, one patient with muscular atrophy after anterior poliomyelitis, and one with muscular atrophy after multiple neuritis, all improved, particularly when the vitamin-B complex was added A pure member of the B complex was first used by Antopol and Schotland,[9] who were encouraged by their work on rats to try synthetic vitamin B_6 in the treatment of 6 patients with pseudohypertrophic muscular dystrophy Considerable improvement was noted in all, but none was cured and one relapsed and became worse despite intensive therapy This work has not been confirmed[10] Spies and his colleagues have made optimistic claims for both vitamins B_6 and E Synthetic α-tocopherol benefited occasional cases of amyotrophic lateral sclerosis[11], and injection of 500 mg relieved "neuromuscular symptoms, roaring sensations in the ears, anorexia, and insomnia of selected persons with malnutrition", 4 people given B_6 became less irritable, less nervous, less weak and less awkward in walking,[12] but this also has not been confirmed[13], cases of pernicious anæmia in relapse showed a reticulocytosis[14], improvement was noted in amyotrophic lateral sclerosis,[15] and also in cases of idiopathic epilepsy myasthenia gravis, and postencephalitic parkinsonism[16] (Jolliffe[17] found improvement also in non-postencephalitic parkinsonism) Thus the vitamin band-waggon rumbles along

Others have not been so successful with vitamins E or B_6 or both together At the Mayo Clinic[18] synthetic α-tocopherol combined with wheat-germ oil produced no therapeutic benefit in 6 cases of amyotrophic lateral sclerosis, 4 of progressive muscular atrophy and 8 of progressive muscular dystrophy At the Boston City Hospital[19] 8 cases of motor-neurone degeneration, a case of Erb-Landouzy scapulohumeral and one of Charcot-Marie-Tooth muscular dystrophy, a case of pseudohypertrophic muscular dystrophy and one of amyotonia congenita were treated with an excellent diet, cod-liver oil vitamin-B complex syrup, vitamins B_1 and B_6 and liver extract intramuscularly, wheat-germ oil and α-tocopherol intramuscularly In all 12 patients there was either no change or the disease progressed, in 2 definite and early cases of amyotrophic lateral sclerosis there was unabating and rapid progression From two New York hospitals equally negative results were reported simultaneously Denker and Scheinman[20] treated 15 cases of amyotrophic lateral sclerosis with large doses of α-tocopherol, both by mouth and by injection and 4 of these with massive doses of vitamin B_6, no therapeutic results of any value were observed Ferrebee and others[21] treated 13 cases of pseudohypertrophic muscular dystrophy and 13 of motor-neurone degeneration with wheat germ, Tocopherex, vitamin B_6, and α-tocopherol both by mouth and by injection, and failed in every case to influence the course of the disease, all the 6 cases of amyotrophic lateral sclerosis, which were treated for more than five months, became considerably worse In this issue we publish Dr Worster-Drought's series of 25 cases of motor-neurone disease treated for five to ten months with α-tocopherol acetate or wheat-germ oil, only 2 or possibly 3 improved neurologically, all being patients with amyotrophic lateral sclerosis who received α-tocopherol only

A year ago we suggested [2] that it would be an advantage in future work if untreated controls were observed, and if analyses of creatine-creatinine excretine were carried out as a more definite indication of the extent of concurrent muscular wastage than was provided by merely subjective impressions Ferrebee and his colleagues noted no change in the creatinuria and creatine tolerances of 2 cases of pseudohypertrophic muscular dystrophy treated orally and parenterally with α-tocopherol In Madrid, Vivanco [22] treated 4 cases of progressive muscular atrophy, 1 of dystrophia myotonica and 3 of amyotrophic lateral sclerosis for two months with 2 ml of wheat-germ oil and 40 g of dried brewer's yeast daily The only patients who did not improve were one with progressive muscular dystrophy and 2 with amyotrophic lateral sclerosis The excretion of creatine and creatinine was observed before and during treatment, and the former not only failed to fall but actually rose in all cases (except one in which it was zero throughout and a second in which no estimations were made), thereby pointing to a true deterioration Recently Fitzgerald and McArdle [23] have carried out a full and careful investigation of 20 cases of motor-neurone disease and muscular dystrophy Bemax, Viteolin and synthetic α-tocopherol acetate and vitamin B_6 were administered in large doses In each case there was no significant clinical improvement, and no biochemical evidence of improvement judged by the daily excretion of creatine and creatinine

It is difficult to reconcile these conflicting claims Amyotrophic lateral sclerosis is a disease without remissions, and Wechsler [5] claimed that in one of his patients the weakness returned twice when treatment was stopped "This is almost absolute proof of the efficacy of the treatment," he said, but it may be objected that the patient knew when his treatment was stopped and started Fitzgerald and McArdle noted dramatic subjective improvement in one case within an hour of the intravenous injection of vitamin B_6, but equally dramatic improvement followed the injection of saline next day Yet Antopol and Schotland [9] claimed that one of their patients, who was getting progressively worse, improved with vitamin-B_6 therapy, partially relapsed when saline was substituted, and improved again when B_6 was injected once more Doyle and Merritt,[19] however, were struck by the variations in the natural course of motor-neurone disease In one of their cases the rapid onset and progression during the early part of the illness was followed by years of slow advancement Such variations might lead to a false impression of the value of therapy, and might explain the much smaller percentage of successfully treated cases that Wechsler now claims For this reason biochemical evidence of improvement is especially valuable In rats [24] and rabbits [10] with nutritional muscular dystrophy there is an abnormally large excretion of creatine which falls steeply when α-tocopherol is given In man also the amount of creatine in the urine (on a creatine-free diet) depends on the amount of improperly functioning muscle, and its provides a convenient biochemical method of asse therapy All three groups of workers who have this criterion have found vitamin E and vitamin completely valueless in human muscular dystrop and motor-neurone disease In the earlier papers seemed that those who used synthetic vitamin E vitamin B_6 were unsuccessful, whereas those wh used whole wheat germ, or the oil combined wit vitamin-B complex, obtained encouraging And since it has been maintained,[25] though probab wrongly,[10 26 27] that a water-soluble member of vitamin-B complex (perhaps the doubtful vit B_4) is necessary in addition to vitamin E for the of nutritional muscular dystrophy in animals, seemed that the solution lay in the use of vitamin preparations—in fact, vitamin B_1 itself been claimed [28] to cure nutritional muscular dyst produced in animals by a diet deficient in vitamin E This impression of the advantage of crude over synthetic vitamins proves on closer analysis to be questionable, for some of the most unsuccessful workers [18] used the most extensive therapy That there is something behind all this no-one can doubt What it is may yet emerge from further studies, in which untreated controls must also be observed and biochemical tests employed where possible as an adjunct to critical clinical observation

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GETTING THE BEST FROM GOOD TOOLS

WE have been told that in time of national need we must think of ourselves as links in a chain or cogs in a machine These similes should help us to remember that chains, cogs and other items of machinery are subject to wear and tear The good workman looks after his tools because he knows his care will be repaid in time saved at work A saw that needs resetting is a jibbing delaying tool, and a man that needs a holiday is equally unhandy During the last war VERNON and his colleagues made a reliable assessment of optimum conditions of work They collected evidence on the effects of hours of work, arrangement of work periods, lighting, rest pauses and the like, and most of this knowledge had been applied in industry before the armistice Since 1919 the Industrial Health Research Board has collected more information on these and related subjects which should have safeguarded us against the stupid and extravagant mistakes made in the early stages of the last war It was worse than disappointing to see, en this war broke out an impulsive scamper to rease production by simple increase of the number hours worked The knowledge so carefully accumulated during the last twenty-five years was immediıly discarded. The facts however, remained the ne and it soon became clear that the initial output hieved by this misguided burst of energy could not maintained Absenteeism and sickness-rates eased as scientists knew they must and producon suffered with the producers Some of the worst uses were remedied but though members of the vernment, from the Prime Minister downwards ve stated the principle often enough there is still general realisation that only by keeping demands the workers within physiological limits can output maintained at its maximum level.

We have an outstanding opportunity at present assess the needs of workers, especially those whose ities make an unusually heavy demand on them, and formulate scientific procedures which would help us place men in jobs appropriate to their capacity. nly a small proportion of men boarded out of the rmy find suitable work too often they are left to fend or themselves to gravitate into any job they are able get, or to sink into a state of chronic incapacity hich not only destroys their contribution to the ational output but may at last bring them into the anks of an army of misfits similar to that left by the ast war Lord BEAVERBROOK speaking of Watt s work on radiolocation said · "Technical developments make progress in war which sometimes outstrips all that has gone before It is the scientist who will heal our wounds It is the scientist who will protect us against the loss of our life-blood ' Perhaps , but science can do nothing if the knowledge it makes available is neglected

Recently the zeal of miners has been questioned often by people without knowledge of the risk and strain of coal-mining The accident-rate among miners is three times as great as among workers in other industries Their work is heavy and carried out in distorted postures, under working conditions which inevitably fall short of those demanded and enforced in industries above ground Men in the insured population as a whole are incapacitated by sickness for an average of 8 7 days a year, in miners the corresponding period is 18 days, and many incapacitating conditions—septic and inflammatory skin conditions, rheumatic disease, anæmia and gastritis—are two or three times as common among miners as among the general population Fatal accidents at the coal face increased from 783 in 1939 to 910 in 1940 a similar rise was observed in 1914–18. Work carrying such hazards deserves a specially good health service , and it may even be that in order to maintain his full efficiency the miner must have special concessions over and above his 8 oz of cheese when foodstuffs and clothing are being apportioned. The Minister of Labour has already agreed that it would probably be better to allow the present miners 2*s* 6*d* worth of meat a week than take back another 10,000 men If further investigation shows that rationing concessions to miners are justified, no administrative difficulties should be allowed to stand in the way Colonel WALTER ELLIOT has suggested[1] that feeding on the spot in works and canteens is one way of ensuring that supplementary rations get to those who most need them It should not be an impossible piece of research to determine the quantities and types of foodstuffs needed

NEW WORK ON CARCINOGENESIS

SOME three years ago DODDS GOLBERG, LAWSON and ROBINSON,[1] in an account of the œstrogenic activity of certain derivatives of diphenylethane and stilbene drew attention to the structural resemblance between the molecules of diethylstilbœstrol (I) and œstrone (II) The comparison indicated that by ring closure there could be obtained from diethylstilbœstrol a condensed carbon ring compound similar to œstrone on the one hand and to chrysene on the other Since all the known carcinogenic hydrocarbons possess this polycyclic aromatic structure, it was decided to ascertain to what extent the condensed rings of the carcinogens might be disrupted without a complete loss of the characteristic biological activity DODDS LAWSON and WILLIAMS[2] have now reported that two tumours have developed in mice which had been painted for considerable periods with a solution in benzene of α-ethyl-β-*sec*-butylstilbene (III) This possesses a skeletal resemblance to 3 4-benzpyrene (IV) and 1 2-dimethylchrysene (V) the carcinogenic activity of which had previously been described by COOK and others[3] The tumours obtained by DODDS and his collaborators were unusual in that both were spindle-celled, one being a spindle-celled epithelioma and the second apparently a sarcoma—that is they were of histological types not commonly encounte after the application of carcinogenic agents to skin in mice It should also be noted that connective-tissue tumour arose not in the pa area but subcutaneously about 2 cm away. there can be no doubt that these tumours were nant and although attempts to transplant th failed fragments of the sarcoma were suc grafted in stock mice The yield of tumours doubtedly low, and the latent period of moderately long, since the first tumour dev one of a group of seven mice after 1 mont and the second in one of a gr 15 months . these groups we two series of twenty-five adult which the experiment was desirable that the experimen and this is being done If t this will be the first des associated with a hydro condensed structure

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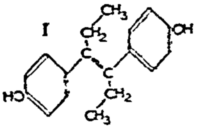

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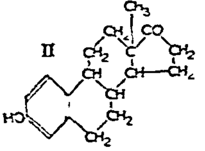

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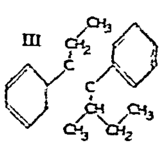

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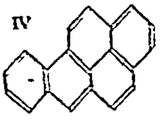

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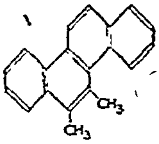

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1 See *Lancet* Aug 16, 1941 p 203

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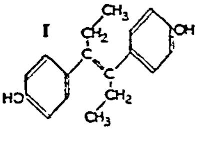

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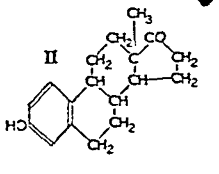

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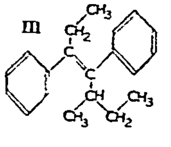
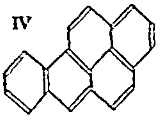


IV



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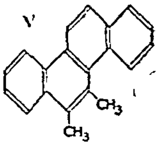

The new observation can reasonably be expected to modify our conceptions of the relation between molecular composition and carcinogenic activity The intensive investigations of the past decade on carcinogenesis by pure chemical compounds have

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1 See *Lancet*, Aug 16, 1941, p 203

shown this type of biological activity to depend in general on an optimal degree of molecular complexity, and in particular on certain more specific requirements While it was known that molecular simplification might proceed to a restricted extent without complete loss of potency, the carcinogenic activity of the new analogue, albeit slight, suggests that the limits of such simplification may be wider than has been supposed The systematic examination of synthetic carcinogens is directed in part to an understanding of the mechanisms by which tumour-producing compounds may be formed in vivo, as is assumed to be probable at least in certain cases Hence, evidence of the production of cancer by compounds of simpler structure than has previously been recognised is of great interest to workers engaged on this important aspect of the general problem

We have not yet been told how far α-ethyl-β-*sec*-butylstilbene acts as an œstrogen, but from its nature it seems likely to revive interest in the mutual relations of carcinogenic and œstrogenic activity This subject was originally developed through the work of Cook and Dodds, with Hewett and Lawson,[4] when they demonstrated œstrogenic activity in the carcinogenic hydrocarbons 5 6 *cyclo*penteno-1 2-benzanthracene and 3 4-benzpyrene, and proceeded to study compounds containing the same ring system as the carcinogenic hydrocarbons, but with polar groups present and some rings reduced A subsequent inclination on the part of others to exaggerate the significance of a superficial structural resemblance between œstrogenic and carcinogenic agents was followed by a phase in which the importance of any such relation tended to be minimised The latest work, and particularly the extension of it which is promised, may lead to a reinvestigation of this larger problem Yet another subject likely to be advanced is the study of the growth-inhibitory properties of carcinogenic compounds[5] in connexion both with the cellular physiology of tumour induction[6] and the search for inhibitory compounds of possible therapeutic value This property of tumour-producing hydrocarbons had already found some sort of parallel in the growth-inhibitory effects recorded by Zondek[7] for "folliculin" and by Noble[8] and Gaarenstroom and Levie[9] for diethylstilbœstrol Thus this suggestive finding, if it is fully confirmed, may stimulate inquiry in many diverse but related fields It also gives ground for the belief that although (or perhaps because) these fields have yielded richly to investigation in the past, equal or greater crops may be expected from them in future

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1 Dodds, E C, Golberg L, Lawson, W and Robinson, R *Nature, Lond* 1938, **141**, 247 —2 Dodds, Lawson and Williams P C *Ibid*, 1941, **148**, 142 —3 Cook, J W Hewett, C L and Hieger I *Ibid*, 1932, **130**, 926, Badger, G M, Cook Hewett, Kennaway, E L, Kennaway, N M, Martin, R H and Robinson, A M *Proc Roy Soc* B 1940, **129**, 439 —4 Cook, and Dodds, *Nature Lond* 1933, **131**, 205 Cook, Dodds, Hewett and Lawson, *Proc Roy Soc* B, 1934, **114**, 272 —5 Haddow, A and Robinson, *Ibid*, 1937, **122**, 442, *Ibid* 1939, **127**, 277 —6 Haddow, *Acta Un int contre Canc* 1938, **3**, 342 —7 Zondek, B, *Lancet*, 1936, **2**, 842 —8 Noble, R L *J Endocrinol* 1939, **1**, 128 —9 Gaarenstroom, J H and Levie, L H *Ibid*, p 420

Annotations

DRUG-FAST BACTERIA

DRUG-RESISTANCE or drug fastness was first noted in trypanosomal infections from which most of our knowledge of the phenomenon is derived It is, for example, easier to induce drug resistance in vivo than in vitro, trypanosomes rendered resistant to one drug are usually resistant to chemically-related substances, and strains may be drug fast in one host but not in another Bacteria can be trained to tolerate increasing doses of a particular antiseptic in vitro, and in practice it is often found useful to change the antiseptic in a dressing if good results are not quickly obtained Evidence suggestive of resistance to the sulphonamides among a variety of bacterial pathogens has gradually been accumulating It was early noted in the treatment of gonorrhœa with sulphanilamide that a proportion of cases failed to react to the drug, or relapsed with persistent discharge despite further treatment These refractory cases, usually attributed to insufficient early dosage, have mostly responded to treatment with the more active sulphapyridine, but even with it a small proportion of infections fail to clear up Drug resistant pneumococci also occur Thus, Ross[1] described two cultures of a pneumococcus isolated from a patient with meningitis—the first, obtained shortly after commencement of treatment with sulphapyridine, was sensitive to the drug, the second, obtained post mortem and apparently identical culturally and in virulence with the first, was drug resistant Differences in susceptibility to sulphapyridine among laboratory strains of the pneumococcus, apart from serological type, has been noted by MacLean, Rogers and Fleming[2] and a similar phenomenon has just been recorded by Florey and his colleagues for penicillin Streptococcal infections resistant to the sulphonamides are sometimes encountered, and Colebrook and Francis[3] have now isolated drug-resistant strains of hæmolytic streptococci from wounds powdered with sulphanilamide preparatory to skin-grafting These strains, detected by their growth on specially prepared sulphanilamide containing blood agar plates, belonged to four different serological types, and were apparently equally resistant to sulphapyridine, sulphathiazole and sulphadiazine Besides preventing successful skin grafts, they were responsible for secondary infection of other wounds in the same ward Such an occurrence obviously raises new problems in the control of streptococcal cross infection It is not yet known if these sulphonamide fast streptococci are also resistant to unrelated antiseptics, like proflavine or penicillin, which could replace sulphanilamide for local application Nor is it known if drug-fastness is always acquired or if some strains are naturally resistant If the acquisition of resistance is most often due, as seems likely, to inadequate early dosage with the appropriate sulphonamide, a warning is needed against the prescription, too common in general practice, of almost homœopathic doses of the drug "Strike hard and strike early" must be the watchword in chemotherapy

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[1] Ross R W *Lancet* 1939 **1** 1207

[2] MacLean, I H Rogers K B and Fleming A *Ibid* **1**, p 562

[3] Colebrook, L and Francis, A E *J Path Bact* July 1941, p 155

CONSTIPATION IN WAR-TIME

THE physical results of going short of food were fully observed in the last war, more especially among the Austrians but to some extent in our own people and notably in our British and Indian garrison at Kut This time the majority of our population have suffered, if they have suffered at all, only from monotony, but since variety in dishes and flavours aids digestion and cheers the heart the advisers of the Ministry of Food are wise to encourage the production of vegetables and herbs used in pickle-making and the conversion of most of our season's fruit crop into preserves of all kinds There have been some, however, who have found the war time diet upsetting to their bowel habits A reduction in total consumption, and especially in fruit and sometimes beer, has made some people constipated, while others have compensated for less meat with too much vegetables and have brought on diarrhœa. Apart from an unusual awareness of the abdomen, the layman can only judge the state of his intestine by the excreta, speaking of constipation when the motions are few and the fæces hard. For the doctor constipation is only present if the residue of food taken is unduly delayed. If a couple of teaspoonsful of charcoal is swallowed most of it should appear about 48 hours later, though some may be held in the large intestine and be passed a day or two afterwards. The timetable of movement through the stomach and small intestine differs little in normal people, but there is considerable variation in the rate of progress through the colon even in perfect health. Radiology has shown that there is not a steady forward movement, after an accumulation in the cæcum and proximal colon a giant contraction takes place at intervals which moves the mass of residues through the rest of the colon and is intended to result in evacuation. The mass movement seems to be set up by taking more food into the stomach, but the evacuation can usually be deferred by voluntary closure of the anal sphincter. Mass movement is thus dependent on there being enough residue in the ascending colon to form a mass, and may be reduced in force if the diet contains little indigestible material, or if the muscle of the bowel wall is weak. But in a great number of the so called constipated the delay is in the terminal colon from habitual inhibition of the defæcation reflex, and this bad habit may be encouraged by the rush and bustle of war-time and the shortage and awkwardness of lavatory accommodation to which hostels and the like are prone. The war worker, then, even if he cannot choose the diet which suits him best, will be wise to keep his meals and his times for defæcation as regular and unhurried as circumstances allow.

CONGENITAL MALARIA

THE existence of congenital malaria has been doubted because the causative parasites have never been convincingly demonstrated either in the fœtal portion of the placenta or in blood from the umbilical cord, but in view of the number of authentic case records it must now be admitted that transplacental infection does take place, and what applies to malaria applies equally to other protozoal blood infections, such as trypanosomiasis and leishmaniasis. The exact mechanism is still conjectural. Some have thought there must be a mechanical tear or other damage so that there is no longer a sharp separation between maternal and fœtal blood, but in several cases the placenta has been found apparently undamaged. It is also possible that malarial infection induces pathological changes in the placenta itself, thus facilitating the passage of parasites to the fœtal circulation, or they may reach the fœtus through a placental hæmorrhage. If a genuine case of transplacental infection is to be claimed the child must be born in a locality where malaria is not endemic and anopheline mosquitoes capable of transmitting malaria are not found, or, if the child is born in an endemic area, infection must take place at a time of the year when infected anophelines are absent. A further condition is that the interval between the birth of the child and the demonstration of parasites in the blood should be shorter than the shortest incubation period of malaria. Hoo[1] reports that on Aug. 2, 1940, an infant aged 14 days was taken to the Pædiatric Clinic in Amsterdam with the provisional diagnosis of quinine poisoning. The child was breast-fed, and the mother, who suffered from repeated attacks of malaria, had taken much quinine in the preceding days. Directly after parturition the mother had an attack of fever and 4 days afterwards malaria parasites (benign tertian) were found in her blood. The father and one of the other children (seven in the family) had also suffered from the fever which is indigenous to the Northern districts of Amsterdam. On the third day the child developed icterus neonatorum, with a loud systolic basal murmur, the spleen was not palpable. The probable diagnosis of quinine poisoning was negatived by the absence of the alkaloid in the urine, as well as in the mother's milk. At the age of 20 days ring forms of the benign tertian parasite were demonstrated in the child's blood. At no time was there high fever, an enlarged spleen or other signs of malarial infection. The provisional diagnosis of congenital heart disease was confirmed at autopsy 80 days after birth. The immediate cause of death was double otitis media. Diffuse malarial pigmentation was demonstrated in the liver and spleen. There is one loophole in the evidence—the child may have been bitten by an infected mosquito after birth—but the large number of gametocytes of *Plasmodium vivax* in the blood on the 24th day of life is definitely against an extrauterine infection. Moreover it has been shown[2] that from May 1 to Aug. 15, only 0.4% of local anophelines are infective. Hoo gives references to similar occurrences in the Dutch literature and cases have been reported from France, America and Italy. Malaria parasites have been demonstrated by Buckingham[3] in fœtal blood in China, and Jean & Van Nitsen[4] found malarial schizonts in the spleen of six stillborn children in Katanga (Belgian Congo). Examples of congenital transmission of benign tertian malaria in England have been reported. Thus Tanner and Hewlett[5] described a case in one of twins born of a malarial mother in London, and Llewelyn Jones and Brown[6] demonstrated a heavy infection in the blood of a baby aged 16 days born in Buckinghamshire, the mother having apparently acquired malaria in England during the last two months of pregnancy. Most of these records refer to benign tertian malaria, but Heiser has told of an infant aged 7 days with crescents of *P. falciparum* in its blood. Wickramasuriya[7] in Ceylon thinks that congenital transmission of the latter parasite is comparatively common there. Blacklock & Gordon[8] have effectively shown that enormous concentrations of the subtertian parasite can be demonstrated in the placentas of native women in Sierra Leone and that this parasite is responsible for premature and stillborn births. The evidence must then be accepted, and since transmission from mother to fœtus can occur it seems strange that it happens so seldom.

INTIMAL HÆMORRHAGE IN CORONARY OCCLUSION

MOST pathologists agree that coronary sclerosis is the most important common factor in the various causes of occlusion of these vessels, but many views are held as to the precise nature of the lesion leading up ot the occlusion. M. G. Nelson of Belfast[9] urges the importance of hæmorrhage in and around the intima of the coronary vessel. Authorities differ as to how the artery gets its blood-supply in health, but Nelson has confirmed that atherosclerotic vessels are well vascularised. Capillaries may be found in the intima of atherosclerotic vessels at two sites, one on the deeper aspect in close proximity to the media of the adventitia, and the other beneath the endothelium. Those at the former site are derived from the vasa vasorum of the adventitia. In both cases these vessels are of the nature of sinusoidal capillaries, they are usually found in relation to intimal atheromatous plaques and are surrounded by chronic inflammatory changes In a series of cases examined, Nelson found that hæmorrhage from these sinusoids was not uncommon Such hæmorrhages in the deeper zones of the intima healed by granulation tissue in which new capillaries were numerous An increase of fibrosis evidently then followed and predisposed the patient to a further hæmorrhage, a vicious circle then being set up The condition was present in 11 out of 17 instances investigated, and in 9 thrombotic occlusion of the lumen was also present The factors determining the intimal hæmorrhage are probably weakening of the sinusoidal wall by toxic action and transient raised intraluminar pressure induced by exertion or emotion.

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[1] Hoo, P. G. *Acta pædiatr.* 1941, 28, 293.

[2] Swellengrebel, N. H. and de Buck, A. Malaria in the Netherlands, Amsterdam, 1938.

[3] Buckingham, E. W. *Chin. med. J.* 1925, 39, 1140.

[4] Jean, L. and Van Nitsen, R. *Bull. med. Katanga*, 1927, 4, 131, 133.

[5] Tanner, N. C. and Hewlett, R. F. L. *Lancet*, 1935, 2, 369.

[6] Llewelyn Jones, J. and Brown, H. C. *Ibid*, 1924, 2, 1058.

[7] Wickramasuriya, E. A. W. Malaria and Ankylostomiasis in the Pregnant Woman, London, 1937.

[8] Blacklock, B. and Gordon, R. M. *Ann. trop. Med. Parasit.* 1925, 19, 37, 327.

[9] *J. Path. Bact.* August, 1941, p. 105.

WAR INJURIES OF THE LUNGS

IT is wise to remember, as Sir Joseph Barcroft pointed out in opening the discussion on lung injuries at Porton reported in our columns last week (p 197), that while the aerial offensive on England has not as yet included gas attacks, not only H E but gas bombs may be used in future raids Both can cause lung injuries, and the discussion concerned itself with the clinical differentiation of the two types of pulmonary damage Those who took part agreed that histologically the differentiation is relatively straightforward Gases which act on the lungs cause bronchial spasm, destroy the bronchial mucous membrane, damage the alveolar walls, and produce acute pulmonary œdema Pulmonary damage which occurs as a result of H E explosions takes the form of hæmorrhagic lesions, which may be associated with signs of pulmonary fat embolism, and occasionally with those of carbon-monoxide poisoning It is to be hoped that future events—if they materialise—will justify the optimism of the participants in the discussion, and that it will be as simple to make a differential clinical diagnosis of nonfatal forms of lung damage as it is to differentiate them histologically in the dead At present it is undoubtedly true that not enough is generally known about the pulmonary changes which occur in H E incidents to distinguish the factors which may be responsible for different types of lung damage However obvious it may sound, Professor Ryle's suggestion that the differentiation of pulmonary injuries would be assisted by the knowledge of the history of the incidents responsible for them should be firmly borne in mind, to help in distinguishing not only gas injury from H E injury but also one form of H E injury from another The lack of such histories may well make the problem of a combination of gas and H E injury in the same casualties not just " more complex " as Prof Shaw Dunn remarked, but completely insoluble

THE AUTONOMIC NERVOUS SYSTEM

THE sympathetic chain was so called because of its numerous connexions with other nerves It was supposed to be the major factor in mediating " sympathies," or reactions accompanying but bearing no direct relation to the main reaction, an example being the pupillary constriction in a blind eye accompanying the constriction in the illuminated seeing eye " Sympathetic " has now become a purely anatomical term, applied to the autonomic outflow from the thoracic and lumbar segments The term parasympathetic, also anatomical, refers to the cranial and sacral outflows which overlap the sympathetic peripherally, acting usually in the opposite sense One of the outstanding discoveries of the last twenty years has been that autonomic postganglionic fibres can be classified on a physiological basis into those which act by liberating acetylcholine (cholinergic) and those which liberate an adrenaline like substance (adrenergic) at the effector organ The partition between cholinergic and adrenergic corresponds roughly, but not exactly, to the parasympathetic and sympathetic systems respectively In a historical survey and a later review[1] of modern work on the autonomic Sheehan points out that, concurrently with these studies of humoral transmission of impulses, there has been a growing realisation that the autonomic is not a system on its own, it has not only intimate associations with the spinal cord, of which it is an outgrowth, but important connexions with higher centres, to which it is subordinate Interest at present centres chiefly in the hypothalamus, but there is no doubt that the cerebrum, especially the precentral cortex, also influences the autonomic The activity of any group of cells in the central nervous system depends on the intensity of its " excitatory state." Such a group might have either a predominantly visceral or a predominantly somatic function yet its final activity might be determined—perhaps raised above a significant threshold—by a quite subsidiary access of excitation from the complementary source This seems further evidence that the autonomic and somatic nervous systems are inseparable

ANATOMY OF INGUINAL HERNIA

DESCRIPTIONS of the surgical anatomy of the inguinal region usually assume that the arrangements of the structures met with at operation for hernia is the same as is found in dissection of the normal, non-herniated subject Ashley and Anson[2] have made careful dissections to decide how far this is true They found that indirect passage of a fairly large hernia did not take place—the peritoneal sac passed through the wall directly, in its course displacing the inferior epigastric artery inwards, so that the first part of the artery passed almost horizontally, and then turned at a right angle to pass upwards behind the rectus abdominis muscle Hesselbach's triangle did not exist The inferior epigastric vessels were thus important medial and inferior relations of the neck of the sac The sac had a more medial disposition than is conventionally described, and on the floor of the abdominal ostium was formed by the iliac vessels, the anomalous obturator (present in this case), the ductus deferens and the internal spermatic vessels Their other main observation was concerned with the identity of the various coverings of the hernial sac These are usually described as the external spermatic fascia, derived from the external oblique, the cremasteric fascia and muscle, derived from the internal oblique, and the internal spermatic fascia, derived from the transversalis muscle By dissection the coverings were identified and separated in the scrotum and traced upwards to the parietal layers of the abdominal wall It was found that they could be definitely followed to their source In all cases examined the contribution from the external oblique was entirely fascial, consisting of the conjoined fascia which invests the two aspects of the muscle In the cremasteric layer scattered muscle fibres were identifiable, but there were no definite aponeurotic fibres, and it was concluded that this layer was predominately fascial The internal spermatic covering represented a fusion of the thin outer lamina of the fascia investing the transversalis and iliopsoas muscles and the thicker inner one, commonly known as the transversalis fascia

MR E Rock Carling, senior surgeon to the Westminster Hospital, and Dr S P Bedson, F R S, professor of bacteriology in the University of London at the London Hospital, have been appointed members of the Medical Research Council, in succession to Prof G E Gask and Dr W W C Topley, F R S, who retire on Sept 30

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[1] Sheehan D *Arch Neurol Psychiat* 1936, 35, 1081, *Ann Rev Physiol* 1941, 3 (reviewed on page 218)

[2] Ashley F L and Anson, B J *Quart. Bull Nthwest Univ* 1941, 15, 114

Special Articles

MEDICAL SERVICE FOR THE HOME GUARD *

G B Shirlaw, L R C P.E
ASSISTANT MEDICAL OFFICER (A R.P) FOR BATTERSEA

Provision of a medical service for Home Guard detachments serving in urban areas is not a question of devising new means but of using those which exist already. It has now been officially announced that doctors can be enrolled in the force. Health problems will not normally be considerable, for the men will be covered by national health insurance. A close watch should be kept on older men, who may develop ailments resulting from overstrain, and guard duty involving long hours on their feet may mean foot troubles for the sedentary workers, but during the period of waiting the chief duty of the doctor in charge will be planning his casualty service for when trouble starts.

THE COAST TOWN

The Home Guard M O. and his colleagues will work directly under the local command, and in close contact with the heads of both civil and military medical services. If a town is of great strategic importance—on the coast, for instance, and in the obvious path of the invader—it may be assumed that in a serious attack the military authorities will take over everything, evacuating as far as possible the civilian population, or at least sending it to shelter when battle is imminent. The military will probably use existing stations which the civil-defence organisations have established—first-aid posts, ambulance depots and decontamination plants—and they will certainly make use of any hospitals sufficiently removed from the main zone of battle which are still functioning. The Home Guard doctor will find himself part of a well thought out system.

If this complete absorption of the civilian casualty services takes place there will be some obvious difficulties. As an example, there are two patterns of stretcher in use in this country—Army and A R P. They fit two different types of ambulance and are not interchangeable. Few things are worse for a casualty than shifting from one stretcher to another. Wounds are reopened, pain is restarted, fractures are jarred, shock, which may be passing off, is suddenly intensified by hurried and unexpected handling. It is the aim of casualty organisation to reduce such disturbance to a minimum. The Home Guard doctor who has foreseen this difficulty and has made plans to avoid it—either by careful ear-marking of ambulances or some device (if that is possible) producing interchangeability—will have done a good service to his area.

If the military take charge of a coast zone it by no means follows that the Home Guard will be absorbed completely. The type of situation most likely to arise is a shore battle area under absolute military control, and lines of communication guarded at frequent intervals by bodies of local volunteers. These lines will be under continuous bombardment from the air and there will be a fair number of casualties. Civilians nearby will also suffer, and the normal A R P. services will deal both with them and with any injured members of the Home Guard. But suppose the first attack is held. If the area has been badly strafed advantage will be taken of the first respite to get civilians back out of danger. Special routes may be allotted to them so that military needs are not encumbered and the Home Guard may conceivably have the task of shepherding the refugees. Once this is done the guardsmen will return to their defence duties, but now they may be working in an area from which civil casualty services have been evacuated. The Army will have its hands full. The Home Guard doctor who has not planned in advance for this emergency will have to improvise his own medical service under very adverse conditions. If the whole subject has been considered during the training period and proper liaison established with the military and A.R P authorities no hiatus will occur. Certain civil defence units will remain to serve the H G posts along the communications, or the R A M C may have the situation in hand.

THE INLAND TOWN

In the large inland city an entirely different problem exists. It is in the highest degree unlikely that the enemy advance having established shore bases will be able to attack industrial cities en masse, if such a break through occurs it will appear for the moment almost invincible yet will in reality be of astonishing vulnerability. Invasion attacks, however they spread their branches, suffer from a serious root weakness. Already naval reinforcements may be striking a shrewd blow which will smash the source from which the attackers' strength is drawn. Soon the snared battalions will advance not from choice but only because all possibility of retreat is denied them. This point of strategy should be made widely known.

Granted the unlikelihood of such attacks developing the duties of the Home Guard M O in inland towns of any size will best be carried out in conjunction with the A R P authorities. Large numbers of regular troops, bringing with them the R A M C, are not likely to be stationed in cities like Birmingham and Manchester. Attack upon such centres will be by air bombardment and by parachutists. The Home Guard will have to withstand the one menace and rapidly finish off the other. If air attack is so severe that the city is devastated, then the military may have to be called in to aid the civil defences. Fire-fighting, care of wounded, maintenance of essential supplies and the preservation of morale might in the last resort require the presence of the Regular Army, but the soldiers would not come in large numbers and would leave as soon as their work was done. Assuming that attacks on large towns take place on the lines here indicated, the Home Guard M O will probably have to rely entirely on the coöperation of the civil defences.

In the town as in the country the main functions of the Home Guard are static. The essence of a casualty service is, on the other hand, mobility. Casualties have to be evacuated, the local volunteer force must always, at all costs, stand firm. The Home Guard will sometimes be acting as besiegers and sometimes besieged. From the point of view of the H G medical officer the handling of casualties can be thought of in terms of these two phases of action. Either phase may at short notice develop into the other. Evacuation of casualties may take place in three ways —

(*a*) Siege evacuation—the withdrawal of wounded to some safer central point in a building or area which the enemy have surrounded.

(*b*) Local evacuation—the removal of casualties to safety from a fluctuating line of strong points or barricades.

(*c*) Total evacuation—the withdrawal of wounded from an area made completely untenable from the casualty point of view.

When the H G defences of a factory are planned as a unit some point must be set aside as an aid-post. It should be as bomb-proof as possible and self-contained in equipment. Electric water heaters, for example, are not much use when an enemy has cut the cable, nor is a brightly polished tap of value when the water has ceased to flow. Each Home Guard section must have what in the Regular Army would be termed its regimental aid-post and when this is near an objective likely to be bombed it must have corresponding protection. A few sandbags and a piece of board nailed across a window are not enough. In cities the aid-post should be underground and beneath as many floors as possible of reinforced concrete. Such places are reasonably common and usually part of them can well be spared for casualty service work. All underground posts should be as big as possible even if the equipment provided is not in proportion to their size. In a heavily bombed town the hospitals might become either overcrowded or unusable and damage to communications might make the working of official evacuation schemes very difficult. Equipment salvaged from damaged hospitals can be quickly installed in underground aid-posts if space is available and if the posts are of sufficient capacity large numbers of wounded can be tended till evacuation conditions improve.

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* Abridged from a chapter of "Medicine v Invasion," by G B Shirlaw and Clifford Troke, shortly to be published by Messrs. Secker and Warburg

While planning cooperation with the civil-defence authorities the Home Guard M O must aim at a fair level of medical self-sufficiency in units under his care While in the large underground aid-post there will almost certainly be an adequate number of A R P first-aiders, in the smaller H G regimental aid-posts there will only rarely be such assistance available It is essential, therefore, that at least two men in every detachment shall have reached a dependable standard of first-aid So far the medical supplies issued to the H G have been on a very small scale, but as the supply position improves proper battalion stores will obviously be accumulated, for there seems no valid reason why the level of equipment should in medical respects fall below that of the regulars Both sets of men run the same risks

The M O should have under him at least a sergeant and corporal for the control of a sufficient number of stretcher bearers These men must be trained not only in first-aid from a strictly common-sense military point of view, but also in the technique of casualty collection under fire In the best of the men this will be instinctive, but a good deal can be taught Collection of wounded is not always possible and must never be attempted when likely to restrict the fire of a strong point under pressure Normally, men who are injured in an isolated pill-box will have to remain till the whole situation is dealt with and the enemy are either rounded up or in full retreat When, however, a pill-box abuts on buildings whose approaches are commanded by other strong points and entry to which can be made without undue hindrance to supporting zones of fire, it should be possible to get the wounded clear without disproportionate danger It may even be possible to move up an ambulance under the shelter of a friendly wall

The town casualty service depends finally on the hospitals These are difficult to defend, they have large expanses of glass, few strong points and numerous approaches, while the presence of wounded within them adds greatly to the defenders' problems Once they are isolated and are being defended from inside their usefulness to the main forces in the town is ended—they can receive further casualties only from the ranks of their defenders The aim must be to keep them as part of the main defensive system within the town, thinking of them not as single buildings but as centres with communication lines

From any defended point the lines of evacuation run to hospital or aid-post It is essential to have more than one line In trench warfare it is known with certainty from which direction the attack will come, but in the type of conflict which we shall be facing this can rarely be known An ambulance going to a single pre-arranged collection point in the rear of a strongly defended post may find that it is from the rear that the attack has come and blunder straight into the attackers Each fortified post or system should therefore have several known collection points—A, B, C, and D they might be called—so arranged that casualties can always be sent to the point which is farthest from the main attacking thrust In giving instructions to the ambulance the A R P Control Centre will not say " collect casualties from West Station " Directions given will be more precise " West Station attacked from the north along main line Remove casualties from collection point B " Reference to the appropriate map shows that point B is a cellar in a goods yard to the south of the station

Such improvisations as these will spring to the mind of any M O who studies his job in advance, but they are the bravura passages The main body of the advance work will consist in the laborious collection of information from a dozen different sources, the creation of smooth liaison with military and civil authorities who may display inertia if not displeasure when confronted by Home Guard keenness, and the training in rational first-aid of well-meaning men who at their worst will appear to the doctor as homicidal maniacs Perseverance and clear thinking will solve all problems of information, liaison and instruction The Home Guard M O must start out on his job determined to obtain first a clear-cut picture of the civilian and military administration of his area secondly, plain undertakings from the authorities concerned as to what help will be available to him and under what conditions, lastly, a level of casualty drill on the part of the men in his charge which will ensure that no life is lost through ignorance or inefficiency.

RURAL AREAS

The task of the Home Guard M O in the prosperous country district, where villages are numerous and there are a few fair-sized towns, involves certain basic difficulties These are distance, the scarcity of doctors, and the absence of proper A R P sense in the average village A village which in the terror raids of last autumn, and in the dislocation raids of the present time, has meant nothing in the Nazi scheme, may become a target of the utmost importance in an invasion Since the defence does not know the invasion plan the pivotal nature of a particular place may not be obvious till the attack has begun, so a village hitherto undisturbed may find itself suddenly a target for dive-bombers and with no anti-aircraft batteries available The attack may have no military objective in the strict sense of that term, and may be intended only to set the villagers in flight, causing them to block the roads The first task of the Home Guard M O in the well-peopled countryside is to show villagers their importance in the scheme of things

The A R P service in a large village is usually no more than a first-aid point a small room with a first-aid kit of about the same size and usefulness as the contents of the average pouch The room may be a disused toolshed, the kit will vary in completeness Its contents may have been drawn on in civil emergencies, not excluding veterinary surgery On the other hand there may be found in a small village a level of intelligent preparation which would shame some towns Rural aid-posts are a mixed bag On them, however, the Home Guard must rely when casualties are incurred, and the first duty of the M O is to make a personal tour of inspection as tactfully as possible It is unwise to depend on statistics in the files of the county medical officer unless you are sure of his quality He may be a brilliant organiser, full of ideas for research and progressive treatments, or he may be a delightful old fellow who has taken a country job because it permits all the pleasures of retirement at a salary usually associated with the performance of useful work

The Home Guard M O must next enrol as many nurses and doctors as he can muster From these he must exact the promise that in case of trouble each of them will proceed to a given point prepared to meet a certain need As this process of enrolment goes on it will almost certainly become plain that the supply of doctors and nurses is inadequate and that a complete fusion of A R P with the Home Guard is needed from the medical point of view The main difficulty which will be encountered in any scheme of fusion is control Though we are all loath to resign authority, it is essential that no doubt shall exist in a military organisation as to who has ultimate control The pitfalls of dual command are obvious and must be avoided from the start If the county medical officer in conjunction with the local M O H is willing and able to undertake the medical organisation of the Home Guard the question of twofold authority will not arise Once an understanding of this nature is arrived at the path to efficiency is smoothed The county may be a convenient area from which to plan, on the other hand, some other regional system may be preferable, but whatever area is taken it must be divided into sectors and medical control for a time of emergency established in each

Lines of casualty evacuation corresponding to various possible situations will have to be laid down Evacuation falls under one of three heads (*a*) siege, (*b*) local, (*c*) total In other words, if a village is attacked casualties may be carried (*a*) into it, (*b*) to a nearby village, or (*c*) out of the whole area The phrase " total evacuation " is here used only in relation to the wounded, and does not mean that everyone is cleared out of an area Total evacuation is an ideal policy, and like most ideals has little hope of being realised In any event it will usually have to be postponed till the scope of the whole conflict is apparent In dealing with siege as distinct from local evacuation, however, various interesting questions are raised immediately The advantages of siege evacuation are that it is rapid and that the conditions likely to be met with are known The disadvantages, which are equally obvious, may be summarised as follows

1 The presence of wounded in a surrounded post hampers the defenders and may lower morale But it must be pointed out that if a post is surrounded the wounded are bound to remain in it, and that men may fight all the better knowing they are protecting their injured comrades

2 The point when surrounded may be bombed from the air This means additional risk for the wounded. But where in total war will they be immune from such risks ?

3 Skilled medical and nursing help, by remaining in an endangered position, risk capture along with the wounded, and cannot well be spared This risk can in part be provided against by issuing clear instructions to skilled staff as to what their duties are A doctor must always remember that his responsibilities are to the many rather than to the few, and he must be prepared to risk the charge of cowardice from the uninformed if quick retreat means the continuance of his service and courageous delay may involve its total loss

Local evacuation has similar advantages and dangers The transport situation may be difficult, the roads long and bad ; there is always in parachute warfare the possibility of enemy being encountered in most unlikely places To offset these considerations is the fact that the underlying principle of good casualty work is always to get the wounded away as rapidly as possible Further the possible immobilisation of medical staff with valuable equipment is a risk which must be avoided as far as human foresight can provide against it The problem will be modified by local conditions but when the enemy attack comes from one definite direction and the defence is falling back, casualties should be evacuated to the nearest village behind the defensive positions A state of siege may after all, be avoided, and even if it is not there is no certainty of capture Relief should always be speedy reinforcement is far easier for the defenders than for the invading enemy Even if wounded and medical staff are captured they are not a certain loss Swift recapture of the position is possible, even likely.

THE VILLAGE AID-POINT

Accessibility, safe structure and good equipment should be aimed at in a village first-aid point Stretchers should be provided, with efficient stretcher-bearers, and a reasonable number of vehicles should be earmarked for the collection of wounded The medical man assigned to the post should be thoroughly acquainted with its staff and equipment Rehearsal is the best means of ensuring smooth working, but it is useless if not thorough, since faults do not appear and false confidence is bred The post should be centrally placed to enable it to be easily defended A centre may be mathematical, geographical, or strategic , the village F.A.P. need not necessarily be at any one of these The strong points on the village perimeter will probably be bombed , so will the social focus of the village as observed from the air. for it will be here that the headquarters will be presumed to lie The F.A.P. can best be placed in the intervening region provided it is sufficiently central to be in comparatively little danger of capture A military casualty clearing station must be sited not only for ease of collection of cases but also with a view to ease of clearance Evacuation routes must not however. be those of great military importance In the first place every convoy of wounded occupies space valuable to advancing reserves , in the second any main route or road junction is a certain target for the bomber and the fighter, suddenly aware of a chance for machine-gun attack. The leafy lanes sometimes sunken which are found in so many parts of England, will often afford an ideal means of bringing ambulances well up to the zone of battle The needs of aid-post regimental station field-ambulance centre, and casualty clearing hospital are alike in this—each demands strategic placing in relation to road, rail or river, sound camouflage adequate protection and a high degree of mobility With regard to camouflage it should be observed that hospitals, however well concealed their buildings or tents may be will inevitably reveal their position if all their washing is hung to dry in the sun, or if a stream of ambulances one after the other, raise characteristic dust-clouds along a road Nurses will do well to conceal their white uniforms when sent out on mobile hospital work They can be seen for miles on a clear day, and should be covered by a khaki macintosh

Unless the number of wounded is large, the trained staff should not leave the village , but if casualties are considerable at some distance it may be urgently desirable to send reinforcements to the place For this purpose small well-protected convoys must be formed consisting in their simplest form of a car and an ambulance In this way additional collection bases may be set up where needed and the cases classified as urgent or non-urgent on the spot The disposal of urgent cases depends on what hospital facilities are available The nearest town to possess adequate surgical necessities may be situated too far away, in which case surgical teams must be summoned to meet the serious cases at a convenient rendezvous Communications are likely to be a serious problem The telephone may not function reliably. but when it fails cyclists can be called upon The wardens' service will have worked out systems of communication and these should be, in general available to the Home Guard

Though each aid-post should have means of becoming mobile in a special emergency the central area under the orders of a chief medical officer should endeavour to have several mobile units in reserve These should be sent forward if a serious casualty situation appeared likely to develop on any section of the front, and they should aim at forming either an advance dressing post or a main treatment and classification post as required Camouflage is important for such purposes It is no use the Home Guard becoming expert at concealing their whereabouts if their ambulance units are to betray them Training must be thorough, and if skilled tuition is not readily forthcoming a good officer must get what literature he can and work things out for himself If a few simple textbook principles of a technical nature (and so not likely to be arrived at by common sense alone) are firmly grasped it is amazing what the comparatively unskilled unit can accomplish

Speedy evacuation must include practice in the quick getaway under conditions of surprise attack An exercise in which this is accomplished under cover of a defensive action by a special H G force should prove of great interest to members of the section Large-scale tests of this type are so difficult to organise that field tests tend in some quarters to be neglected This is a mistake , an extensive exercise of a volunteer force is awkward, for men have their livings to earn and the time they can spare is limited but much can be learned by a series of small affairs Their subsequent dovetailing in theory will provide excellent lecture material

Difficult though A.R P. work may be under blitz conditions, it is simplicity itself compared with the casualty problems which arise when the Home Guard are pictured at grips with invaders In air-raid casualty work the medical officer's responsibility is largely towards individuals By his good work they are saved by his errors or neglect they die. But faced with the task of sustaining morale in small groups of men who may be forced to fight to the death against considerable odds the M O may feel that the responsibility is beyond his powers Not individual but national survival is threatened He may well pray for complete military intervention to relieve him from the burden of decisions fraught with danger If there is one quality. however, which by the nature of his position the country doctor must possess, it is self-reliance No-one who knows this body of men will doubt their steadfastness in time of trial

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AGE-LIMIT FOR OFFICERS OF IRISH LOCAL AUTHORITIES

By a bill which lately passed both houses of the Oireachtas a radical change has been made in the tenure of employment of all officers of Irish local authorities including of course the medical officers generally known as dispensary doctors who make up nearly a third of the entire medical profession in Ireland Hitherto, these officers when once appointed held office for life and could only be removed for misconduct or because they had become incapable of performing their duties by reason of infirmity of mind or body or because their office had been abolished By the new legislation the minister for local government and public health will be empowered to declare an age of retirement for each class of local officer, which will become effective six months after it is made The minister will have power to fix different ages for different classes of officer

The bill passed through the Dail without criticism of this point, but an amendment was moved in the Senate that the section should not apply to part-time officers whose terms of appointment included no compulsory retiring age It was pointed out that the clause interfered with an existing contract between the medical officers on the one hand and the local authorities and the department of local government on the other , that the expectation of a tenure of office uncontrolled by an artificial age-limit attracted candidates to the service , and that adequate powers were already in the hands of the minister to compel the retirement of an officer rendered by age incapable of performing his duties The amendment was rejected by the minister, who maintained that a fixed retiring age was necessary, since at present he found difficulty in securing the retirement of elderly officers He emphasised that it would be open to him to fix different ages for different classes, and he expressed the opinion that 65 would be unsuitable This admission was welcomed, for it was remembered that some five years ago the department had circularised local authorities advising them that 65 should be made a compulsory retiring age for all their officers The circular was phrased so as to appear mandatory on the local authorities, and was acted upon in some instances The Irish Medical Union, however, challenged the circular on legal grounds, and the department had to admit that it had no powers in the matter and that the circular was merely advisory It had been feared that if an age-limit was fixed it would be at 65

In England Now

A Running Commentary by Peripatetic Correspondents

I AM concerned about the V campaign Up to date it has reminded me of an Oxford don in a writing-on-the-lavatory-wall competition I don't want to be censorious, but a Government, eighty per cent of whom were guilty of the gross psychological error of appeasement, the zoological equivalent of which is trying to stop a pack of wolves with a bag of monkey nuts, mustn't be offended if we professional psychologists offer advice I feel that Quentin Reynolds and "Cassandra" were on the right tack when they held their opponents up to scorn on account of their Christian and surnames At first it may seem rather strange that Hitler, who is responsible for millions of blasted lives, a lake of children's blood, sorrow that will rake for fifty years, a thousand tides of terror, a holocaust of youth, a pyre of pain, should be jeered at for having a Christian name that he couldn't help, and for changing his surname from Schickelgruber to Hitler, which seems rather sensible But that's not the point The point is that war is a reversion to a twelve-year-old state and this is the authentic twelve-year-old touch Now, Colonel John Bull Britain (oh how withering !), let's see whom you have on your committee What, Lady Pouncey ? O tut ! Lord Agar ? Pshaw ! I'll have to choose them for you You, Smith minor you who organised your class to stare at your new form-master's fly-buttons until he blushed, I know you got six of the best for it, but your country needs your genius now my boy Come along And that girl of G A Birmingham's who worked in a small Irish hotel and wanted to get rid of the guests, so all their food tasted of paraffin, even the boiled eggs which she contrived with a hat-pin You need girls like that, Colonel B Wire for her at once at Ballyshannon She'll command our Ninth (Cranial) Army Corps Now for the Eighth You, Jones minimus, who ever drum on desks, whistle just out of tune kick tin cans, tattoo on iron railings, specialise in slate-pencil noises, make succulent sounds which I am creditably informed by the bootboy are technically known as "raspberries," you're the man for this Do you know the dog whistle, J minimus, which will bring a dog to heel, but is inaudible to man ? Well, we'll show you how to make one which will keep the Hun's ear on edge They with their dive bombers and whistling bombs have used that pathway down the chorda tympani to rack the parasympathetic so will we I need not remind you, General Jones, that it is the ragged, irregular, very highly or very lowly pitched, unmetrical noises that are particularly trying, especially at bedtime and very early morning And you, young Robinson, who got soundly beaten for making mercaptan in the laboratory, we humbly apologise, we need your enterprise now You shall command our First Army Corps And you, all you other little swine, who carry caterpillars in match-boxes and keep mice in your desks, we need you too We'll give you grisly things to do with tænia eggs and jolly acari We'll train an army in the mystery of making "Russian fleas" —finely chopped horsehair, steeped in an irritant, which tactfully placed on chairs will work through Prussian breeches and even irritate barbarian skin What's that you say, Colonel B ? Childish and beastly Yes, I know, but then war is a very childish business in spite of its mechanisation, and when it comes to man being dominated by brutes, then unarmed man seeks his ancient weapons Onward pin-prick soldiers

* * *

The disruption of family life leaving me with more evening leisure than was pleasant, I decided that it could be used most profitably for the war effort in first aid instruction So for the past two years I have done a good deal of lecturing for the St John and other bodies, and have spent even more time in examining first-aid candidates In the course of all these examinations of both elementary and advanced first-aiders I have not met a single candidate who had any conception of what shock was They all knew the treatment, nearly all knew the signs and symptoms (or most of these) but they had no real understanding of why they occurred Nor was there a single candidate who knew that shock might make its first appearance eight hours after an injury One should not, of course, expect detailed and scientific knowledge in first-aiders, but I have always found classes respond much better when they are told Why as well as How I devised the following model to link the symptoms of shock together, and to correlate them with hæmorrhage

"Let us imagine that this building is heated by a closed hot water system which has a fire to heat the water, a pump to drive it round the pipes and a cistern which is *normally* half full Now the room gets cold and we go to find out why The fire may have died down, the pump may be faulty, the pipes may be leaking, or the cistern may have filled up completely With the exception of the first case the volume of circulating water is reduced and so less heat is carried round the building Now let us relate this to the body The fire corresponds to the chemical processes of the human organism and these may be damped down by disease and long exposure to cold and strain The pump is the heart, and when it fails we have collapse (sometimes associated with the failure of the 'fires') If the pipes have burst and water is pouring down the outside of the building, that is the same as external hæmorrhage—you can see the bleeding without difficulty But the pipes may have burst in such a way that the water is running into the basement, and is not easily spotted because none appears on the outside This is the same as internal hæmorrhage Finally, the whole system of pipes may become porous so that water escapes in small amounts all along their course and at the same time the cistern fills up completely This is the picture of shock In this condition, for reasons which are not well understood, the blood-vessels allow some of the blood fluid to pass through the walls, thus reducing the amount of circulating blood , in addition, blood tends to stagnate in the liver, spleen and large abdominal veins (This is a rather controversial point but the lecture is for first aiders, not experimental pathologists) The essential thing is that the volume of the circulating blood is reduced

"Now I have already told you that one of the chief functions of the blood is to carry oxygen round the body If the amount of oxygen is reduced every organ will be affected The brain does not work so well, the patient therefore becomes anxious, confused, stuporous and finally comatose The muscles do not get enough oxygen so that they cannot contract so well, and the patient becomes weak The lungs try to make up the deficiency and breathing becomes laboured The heart receives messages to counteract the trouble, and beats more rapidly in an attempt to drive the smaller amount of blood round the body quicker So the pulse rate goes up But the heart does not have enough time to fill, and its muscle is not receiving sufficient oxygen so the beats are weaker The normal amount of blood is not flowing through the skin, and what there is is darker in colour, so the patient assumes a leaden pallor As the amount of oxygen carried round the body is reduced so the intensity of chemical actions is lessened and the body temperature falls All these things occur in external and internal hæmorrhage and collapse and shock. From this you can see why we treat these cases as we do You will see also that if you remember the fundamental fact that the blood-volume is reduced in these conditions, then you can easily work out for yourselves how all the signs and symptoms are produced '

This model will perhaps not bear searching analysis from the physiological or pathological viewpoints It does however pass the pragmatic test and satisfies the student's curiosity

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The surgical team that is officially termed the " Facio-maxillary unit ' was recently mentioned in a report The proof came back from the printer with " Facio-maxmillery unit. '

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Most of us I hope would agree with your peripatetic philosopher when he says that our national system of education requires a complete overhaul after the war It is only at the point where we must decide in what ways we propose to alter it that our views begin to diverge Despite the now thoroughly stale gibes at the public schools I for one think that with all their faults they represent the best kind of education we have to offer. We have been told ad nauseam that the competitive type of education they provide with its accent on athleticism makes for war-mindedness but does it? Some nations with nothing approaching a public-school system of education have done a good deal of fighting in their time and we ourselves had a war or two before the public schools really got into their stride. Can the few public schools then extant be held responsible for the doubtless regrettable if highly successful, pugnacity of the Elizabethans? I doubt it The cry that public schools breed class-consciousness is of course, only half true; the real cause is the dual system of education which engenders a feeling of inferiority in those who consider that they have been given something less than the best available Indeed the most socially uncomfortable and class-conscious persons one meets are those who have been educated at secondary schools and subsequently graduated at a university For some reason they are apt to be perpetually on guard and to view the lightest and most innocent conversational opening with suspicion

By all means let us have a single system of education equally available to all children irrespective of the size of the parental purse but let it be built on a high and expanding level of excellence If we contrived to make our improved and ever-improving public schools really public we should have done something worth while. Turning to medical education it seems reasonably certain that come what may something akin to the present general practitioner (only better) will be required in considerable numbers and I would suggest that the present curriculum be drastically revised to meet the basic needs of general practice. First I would have students taught to read, write and speak their own and at least one other language before embarking on the study of any technical aspect of medicine All preclinical studies might, I think, with advantage be curtailed, it is not in the laboratory or the lecture theatre but in the wards and the outpatient departments that the student will learn most of the things that will be useful to his future patients For the embryo general practitioner to stand for hours in the theatre watching major operations that he will never be called on to perform is a pure waste of his time On the other hand, let him administer all the anæsthetics he can, do all the minor surgery he can see and learn to diagnose all the surgical emergencies he can see all the acute and chronic medical cases he can and learn far more pharmacology and therapeutics than he does at present I would have him taught prognosis by an experienced general practitioner and he should do a course of practical domiciliary nursing As for midwifery I would allow none to practise it until he had had at least six months' postgraduate experience at a maternity hospital or, better still assisted at, say 50 cases delivered in their own homes by experienced general practitioners Lastly, before letting him loose on the public I would have him either travel round the world as a ship's surgeon or else tour that dreadful Europe meeting and mixing with all sorts and so overcoming his prejudices for the general practitioner must look on his patients as individuals unique phenomena in nature not to be liked or disliked because they fit in or fail to fit in with his own peculiar code of ethics or standards of behaviour

* * *

Recently I renewed acquaintance with Ern and Jim those skilled agriculturists, whose roots are so deeply embedded in the soil that they pay no heed to " this trifle war " Being pressed by a humane master to take a well-earned holiday on full pay they consented but with considerable reluctance. Ern went first, was thoroughly bored and miserable and returned to work before his leave had expired Jim no less unskilled in the art of leisure so beloved of intellectuals, gravitated to the pub and solemnly filled himself to the brim and overflowing with cider. The local policeman kindly gave him a lift home in a car and on being helped out Jim returned thanks by saying: " You'm ony a p liceman and got no manner o' right on our place, git orf! ' The menacing gesture that accompanied these powerful words would, I understand have been more impressive had Jim been less whistled and so able to stand poised instead of staggering in all directions Next day I met him full of alcoholic remorse. He had sneaked back to the farm while the rest of them were dung-spreading and was furtively carrying a bucket of water to the goats and " giving an eye '—as he described it—to the sheep " If you re supposed to be on holiday Jim " I protested, " why do you come back to work? ' He shifted uneasily and shook his head. " Allus plenty to do on a farm, doctor ' he said

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Adventures like misfortunes, seldom come singly One afternoon I was summoned by a dentist to administer gas to an immense and powerful man who confessed that he was nervous of anæsthetics While he was going under he began to box and from my point of vantage behind the stumps it was pretty to watch his footwork. He kept putting out a nice straight left at the nurse who ducked and side-stepped neatly and at intervals he swung a wicked right dangerously close to the dentist s jaw. We got him down at last and having pinioned his arms securely with a couple of towels the dentist was able to draw the offending teeth " How many rounds did I go ?' was the patient's first question on regaining consciousness " The last time I went to a dentist ' he added dreamily. " I knocked the poor chap out " It turned out that he had been a prize-fighter and has since become a theological student - an instance of muscular christianity That same evening I was called to see a cow. Jim and Ern met me with long faces. " Er s dyin' on 'er feet " said the pessimistic Jim " and there s nought as you can do for 'er ' Where cows are concerned we have only two diagnoses—if they are ' blawed we call it " the information," and if they are breathing fast 'tis the pewmonia This one was certainly very ill with pyrexia, a staring coat and tachypnœa, so we diagnosed pewmonia. I dissolved 10 tablets of sulphapyridine and injected the solution into the buttock. Much to everyone s surprise she was still alive next day so we injected some more sulphapyridine Next morning she was obviously moribund and had to be shot It was just bad luck that the postmortem carried out at the local abattoir revealed that she had swallowed a piece of wire which had touched her heart As her owner observed, we had the satisfaction of knowing that we had done all that modern science could do and her relations could have no cause for complaint.

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When I passed the kitchen door on my way to breakfast this morning a gloomy voice was remarking " One breast-fed baby, remember, dies for every five fed in other ways " Shades of William Farr! Think of the feelings of a mother who has just had to give up feeding her baby on the breast for some very good reason when handed this kind of remark sandwiched between recipes for cooking carrots Of course she might ring up the B B C and ask how many breast-fed and how many bottle-fed babies there are but if she isn t a born fallacy-spotter she may just brood

Letters to the Editor

STANDARDISATION OF DIPHTHERIA PROPHYLACTICS

SIR,—Your leader of Aug 9 is opportune, but I fear it does little to achieve what it very properly advocates—a standard method and technique Let us be clear on this subject The following statements are well documented, as anyone may verify by consulting the literature, which, incidentally, has been reviewed in my monograph on the subject

1 The Schick test is for practical purposes a sound and certainly the most convenient test of susceptibility to clinical diphtheria The Schick-negative rate produced by any antigen or method is a good reflexion of the efficacy of that method but it is impossible to guarantee that any one Schick-negative child will not take diphtheria Furthermore, no small experience is necessary for the accurate performance and interpretation of Schick tests

2 The antigenic results produced by different preparations have not been consistent This is due to three main causes—differences in the original immunity and potential immunisability of a community, and in the antigenicity of the prophylactics used Two small well spaced injections of a reputable brand of A P T have given a constant Schick negative rate of nearly 98% I am unaware of any published work in this country or America where two properly spaced injections of A P T have given a low Schick-negative rate Undoubtedly the peculiar properties inherent in A P T tend to counteract any possible variation in antigenic power

3 If propaganda is to be effective it is essential that the parents and the child be caused as little inconvenience as is possible, every effort should be made to limit the number of injections necessary

These then are the facts How are they to be applied ? Few will deny that A P T is the preparation of choice for general purposes, for it is more effective in two doses than the others are in three But in using A P T, as any other preparation, it is necessary to guard against possible variation in antigenicity and this can be done in two ways—by Schick testing all cases after treatment, or by studying the effect of increased dosage

The Schick-testing of all cases is inadvisable for the following reasons

The test is not infallible and so in individual cases one cannot guarantee immunity Experience in performance and interpretation of the test is necessary At the present time large numbers of doctors have been called on to carry out immunisation who through no fault of their own do not possess this experience It would be as unreasonable to expect inexperienced people to refract a mixed astigmatism or to remove an appendix as to carry out a Schick test

A Schick test means two extra visits for parent and doctor, this will seriously hamper the work of effective propaganda It will cause extra expenditure of time and material and no guarantee of absolute immunity can even then be given

After A P T if further measures are thought necessary it is more logical to give a third injection of prophylactic

As the routine use of the Schick test is untenable attention must be given to dosage and technique in administration of the antigen There are sound reasons for thinking that the dosage given below will give a very high degree of protection and will allow for possible variations in antigenic power due to environmental conditions or due to different batches of A P T The method is as follows

In children under eight years 0 5 c cm of A P T intramuscularly into the extensor aspect of the left arm Interval at least a month and a similar dose repeated into the right arm

In children over eight, 0 1–0 25 c cm of A P T intramuscularly into extensor aspect of left arm Interval at least a month If no reaction to the first dose, 0 5 c cm intramuscularly into extensor aspect of right arm

No final Schick test to be performed

There remains the possibility that a very poor batch of A P T may inadvertently be issued for general use, an unfortunate happening that some think has taken place recently How can this be prevented ? The methods of manufacture, reagents used etc, should be laid down and manufacturers should adhere strictly to the procedure Some of the provisions of the Therapeutic Substances Act may require revision or qualification In addition, arrangements should be made for any new batch of A P T to be tested on a small group of children This should be entrusted to a worker with wide experience of Schick testing and should be carried out in an area where the diphtheria incidence is fairly constant and on children of the same age and social status (This, of course, is a very different matter from general routine Schick testing of all cases)

These precautions would mean a preparation as nearly standardised as possible and tested before issue The larger dose would almost certainly suffice to counteract any variations in antigenic effect resulting from local environmental conditions (low latent immunisation and/or diminished immunisability) Your leader exhorts the Government—and this exhortation will be loudly echoed—to lay down a standard I submit that the above is the way to go about it

Croydon JOHN TUDOR LEWIS

CARE FOR HOME GUARD CASUALTIES

SIR,—Intimate personal experience of the great Jamaican earthquake, the last war, and fierce communal riots in Bombay, Calcutta and Johannesburg, where all medical communication by road or telephone was cut off for days, impels me, as the medical officer of a Home Guard battalion, to elaborate and criticise the leading article of Aug 16

When, and if, the balloon does go up, it must be fully appreciated that the Home Guard at "action stations" cannot depend upon the ready and efficient medical aid of A R P posts, for these are immobile and likely to be tried to the utmost by civilian incidents in the neighbourhood Moreover, it may not be even possible to reach or communicate with this organisation until after dark or until the roads and skies are clear Therefore, it is imperative that every company of a mobile or static battalion should be capable of dealing with its own wounded, burned or gassed men to the extent of 25% of its full strength At present, seeing that there is no provision whatever of medical (drug) equipment, it is not difficult to visualise the ghastly medical mess and devastating loss of morale that must result if the Home Guard were engaged in countering an invasion, say, next week Surely something should be done quickly to rectify this lamentable state of affairs. Is it fair or reasonable to suggest that M O 's of battalions (often over 2000 strong) should go round with cap and bell asking for donations to purchase urgent medical necessities that it is the duty of the state to provide ? Are we in the stress of battle to expect company officers or N C O 's (for there is only one M O per scattered battalion) to depend (in answer to a scrawled demand) on the limited generosity and critical attitude of some capricious O C of an A R P post, an E M S unit, or a military hospital, who, jealous of his own meagre supplies would probably require the certificated quadruplicated authority of the A D M S or Ministry of Health before parting ? No sir, let us have done with charity and muddling through after fifteen months of growing pains

It is my opinion that every company of every battalion should be provided with the minimum requirements in easy portable form, for dealing with the risks of pain, sepsis, burns, tetanus and fractures The outfit, in addition to the queer collection of inadequate splints and bandages you refer to, would be in charge of the N C O of a stretcher party who would be responsible to the company officer and/or medical officer

Pain would require morphia in tablet form for oral use and ampoules for injection, if a syringe can be obtained

Sepsis Sulphanilamide in 5 gramme powders in Cellophane packets or 0 5 gramme tablets should be liberally stocked The former for use in wounds, the latter by mouth Indeed sulphanilamide would be a fitting addition to every new first field dressing

Burns—Vaselined gauze sterile in tins, or tannic or acriflavine jelly, can be readily carried in screw-top metal jars

Tetanus—In the event of fighting in this country, it is more than probable that the incidence of tetanus will be high Therefore, as immediate evacuation is unlikely, antitetanic serum in ampoules or rubber topped bottles must be available, together with a syringe

Fractures—In every company there are men who have done a first aid course or obtained a certificate from the St John

Brigade It should not be difficult to teach these capable men the principles of plaster of-paris slabs or bandaging, thus conserving limbs and maybe lives, for we must all visualise conditions where it may be hours, and perhaps days, before casualties can be safely and properly evacuated

Although I have not touched on anti-gas equipment, I think you will agree that the supply of the suggested equipment to every company that may be working independently is urgently necessary if the medical department is to escape deservedly caustic criticism Stretcher bearers are not only beasts of burden—indeed, they demand that they be given the means, now denied them, of applying the knowledge they have acquired in their classes

I have calculated that the weight of a canvas-covered three-ply container, 18 in by 18 in by 8 in, fully stocked as above, including plaster-of-paris, for 25% of a company, would be about 14 lb

Harley Street, W 1 Y B Green-Armytage

VITAL STATISTICS WANTED

Sir,—No doubt your readers will have noted that a few weeks ago in reply to a question in the House of Commons, the Minister of Health gave the number of deaths from tuberculosis in England and Wales during the years 1939 and 1940 they will also remember how some weeks before that the Minister was reminded that there have been published no health statistics for these countries since those of 1938 and how he promised to try to make public a bare summary of the figures at some future date It may well be that there are sufficient reasons for this reticence, but it is a source of speculation and concern to those of us who are interested for we cannot help thinking how differently this matter is treated in Scotland For that country, Sir, the public-health statistics are available to us in summarised form quarterly with an analytical introduction to the report at the end of the fourth quarter This is admirable, but why is it not done in England? Why do we have to wait for a question in the House before we can discover that there has been a 7 5% rise in the tuberculosis mortality? It is in these particular figures that our interest lies, but statisticians and other workers interested in social health are wondering why the vital statistics and reports which form much of the raw material of their work are not made available, for without knowledge of the facts preventive action must be delayed

Richard M Titmuss
Edgware A S Hall

CALCIUM AND PHOSPHORUS STUDIES IN NORMAL PEOPLE

Sir,—Dr Robertson's paper of July 26 on this subject should be examined in detail, for our calcium requirements are much in the public mind

Calcium minimum —He found, as we did, that there is a "restricted" output under low calcium intake This suggests that some kind of conserving mechanism comes into action under a low intake Evidently the minimum figures in the various experiments depend to an important extent upon the amount of calcium the subject is in the habit of taking The real calcium minima are unknown and obviously lower than those given by the various investigators

Optimum calcium intake —I take it that by these figures Robertson means the calcium intake which completely saturates the subject with that substance (plus a quantity for marginal safety), so that he cannot absorb any more of it The question now arises What is the calcium level in the tissues of the experimental subject under an intake which just covers minimal requirement and a maximal (optimal) intake? Under the latter condition the reservoirs are full We were able to prove that the tissue calcium, too, in such circumstances is higher than under the minimal intake The crux of the whole question is, which of the two conditions is the more desirable? "Optimum requirement" in relation to what? Surely in relation to longevity or good health The vital problem is whether a calcium intake which just meets requirements, or which fills the reservoirs to overflowing, or one which is between the two points, is the ideal No data are available to judge which is the best Robertson's figure of optimal requirement is purely arbitrary—not supported by any evidence whatever Only long clinical observation can show which is the ideal We are confronted with a similar problem in regard to fat reservoirs Clinical experience has taught us that the average expectation of life of those who fill those reservoirs to full capacity is much below that of those who consume only sufficient to cover their needs Robertson does not realise that the calcium level in the tissues is different under a maximal (optimal) from that under a minimal intake He asserts that no harm can accrue under a large calcium intake since the surplus would leave the body via the fæces (This is not quite true part of the surplus is excreted by the kidney) The tissues contain more calcium under a large intake Whatever the action of calcium is, this obviously must be more pronounced under a high than under a low intake According to the textbooks, calcium contracts the vessels and raises the blood-pressure According to Jacoby (*Ther d Gegenw* 1916, 57, 161) calcium "thickens" the kidney filter and makes the performance of its function more difficult We found that the intravenous injection of 2 c cm of a 10% solution of Collosol Calcium (Harris and Levin, *J Physiol* 1937, 89, 153) definitely alters the character of the electrocardiogram, and we also drew attention to the increase of the work of the kidney under a larger calcium intake There is also a considerable amount of literature on the subject, including positive feeding experiments Clearly the assertion of Robertson that a large calcium intake can do no harm is quite untenable The requirement of calcium cannot be determined by experimental methods Clinically it is quite impossible for people to remain in a permanently negative calcium balance, without giving rise to manifestations It is strange that 15–20 million people should be suffering from a calcium insufficiency and not exhibit any signs of it The very rare condition of osteoporosis is now considered to be due to vitamin-D insufficiency

In our paper on calcium we did not refer to retention of the substance in the aged, I only mentioned it in a letter, based on an entirely different set of experiments We found retention of protein in the middle-aged, and we also found that wherever there was retention of protein, calcium too was retained ("High Blood Pressure," London) The reason is simply that part of the calcium is bound to the protein Robertson denies that there is retention of calcium in the middle-aged on the strength of figures given in table VI of his paper Now we pointed out in our paper that under a positive balance saturation must ultimately be reached, after which further absorption becomes impossible Obviously in the fully saturated cases the middle-aged cannot react differently from the young To demonstrate his point the subjects of Robertson's table should have been kept in a calcium-unsaturated state As his figures stand now they are irrelevant to the question of calcium retention in the aged

Why should Robertson think that as large a calcium intake as the body can possibly absorb, plus a margin of safety, makes for optimum health?

Liverpool I Harris

PHARMACY AND MEDICINES ACT

Sir —The concession in the Pharmacy and Medicines Act which perhaps attracted most attention and is regarded as the most satisfactory change in the law, is the clause requiring disclosure of composition of medicines Obviously its value depends on how far it fulfils its principal purpose—that the public should be fully informed of the nature of the medicines sold to them I submit that the two proposals of clause 6 provide safeguards likely to be illusory The reproduction of the accepted scientific name on the container has been widely adopted by the patent-medicine trade, which has not been slow in perceiving that this requirement gives the general public no information which they can appreciate Thus, a proprietary brand of aspirin declares that its product is "pure acetylsalicylic acid," a description which fails to inform the public that the product is nothing else than aspirin, which can be bought under that name at a fraction of the cost of the proprietary product The alternative afforded, namely the quotation of the description of the substance in the current edition of the B P or B P C, is equally ineffec-

Letters to the Editor

STANDARDISATION OF DIPHTHERIA PROPHYLACTICS

SIR,—Your leader of Aug 9 is opportune, but I fear it does little to achieve what it very properly advocates—a standard method and technique Let us be clear on this subject The following statements are well documented, as anyone may verify by consulting the literature, which, incidentally, has been reviewed in my monograph on the subject

1 The Schick test is for practical purposes a sound and certainly the most convenient test of susceptibility to clinical diphtheria The Schick-negative rate produced by any antigen or method is a good reflexion of the efficacy of that method but it is impossible to guarantee that any one Schick-negative child will not take diphtheria Furthermore, no small experience is necessary for the accurate performance and interpretation of Schick tests

2 The antigenic results produced by different preparations have not been consistent This is due to three main causes—differences in the original immunity and potential immunisability of a community, and in the antigenicity of the prophylactics used Two small well spaced injections of a reputable brand of A P T have given a constant Schick negative rate of nearly 98% I am unaware of any published work in this country or America where two properly spaced injections of A P T have given a low Schick negative rate Undoubtedly the peculiar properties inherent in A P T tend to counteract any possible variation in antigenic power

3 If propaganda is to be effective it is essential that the parents and the child be caused as little inconvenience as is possible , every effort should be made to limit the number of injections necessary

These then are the facts How are they to be applied ? Few will deny that A P T is the preparation of choice for general purposes, for it is more effective in two doses than the others are in three But in using A P T , as any other preparation, it is necessary to guard against possible variation in antigenicity and this can be done in two ways—by Schick testing all cases after treatment , or by studying the effect of increased dosage

The Schick-testing of all cases is inadvisable for the following reasons

The test is not infallible and so in individual cases one cannot guarantee immunity Experience in performance and interpretation of the test is necessary At the present time large numbers of doctors have been called on to carry out immunisation who through no fault of their own do not possess this experience It would be as unreasonable to expect inexperienced people to refract a mixed astigmatism or to remove an appendix as to carry out a Schick test

A Schick test means two extra visits for parent and doctor , this will seriously hamper the work of effective propaganda It will cause extra expenditure of time and material and no guarantee of absolute immunity can even then be given

After A P T if further measures are thought necessary it is more logical to give a third injection of prophylactic

As the routine use of the Schick test is untenable attention must be given to dosage and technique in administration of the antigen There are sound reasons for thinking that the dosage given below will give a very high degree of protection and will allow for possible variations in antigenic power due to environmental conditions or due to different batches of A P T The method is as follows

In children under eight years 0 5 c cm of A P T intramuscularly into the extensor aspect of the left arm Interval at least a month and a similar dose repeated into the right arm

In children over eight, 0 1–0 25 c cm of A P T intramuscularly into extensor aspect of left arm Interval at least a month If no reaction to the first dose, 0 5 c cm intramuscularly into extensor aspect of right arm

No final Schick test to be performed

There remains the possibility that a very poor batch of A P T may inadvertently be issued for general use, an unfortunate happening that some think has taken place recently How can this be prevented ? The methods of manufacture, reagents used etc , should be laid down and manufacturers should adhere strictly to the procedure Some of the provisions of the Therapeutic Substances Act may require revision or qualification In addition, arrangements should be made for any new batch of A P T to be tested on a small group of children This should be entrusted to a worker with wide experience of Schick testing and should be carried out in an area where the diphtheria incidence is fairly constant and on children of the same age and social status (This, of course, is a very different matter from general routine Schick testing of all cases)

These precautions would mean a preparation as nearly standardised as possible and tested before issue The larger dose would almost certainly suffice to counteract any variations in antigenic effect resulting from local environmental conditions (low latent immunisation and/or diminished immunisability) Your leader exhorts the Government—and this exhortation will be loudly echoed—to lay down a standard I submit that the above is the way to go about it

Croydon JOHN TUDOR LEWIS

CARE FOR HOME GUARD CASUALTIES

SIR,—Intimate personal experience of the great Jamaican earthquake, the last war, and fierce communal riots in Bombay, Calcutta and Johannesburg, where all medical communication by road or telephone was cut off for days, impels me, as the medical officer of a Home Guard battalion, to elaborate and criticise the leading article of Aug 16

When, and if, the balloon does go up, it must be fully appreciated that the Home Guard at " action stations " cannot depend upon the ready and efficient medical aid of A R P posts, for these are immobile and likely to be tried to the utmost by civilian incidents in the neighbourhood Moreover, it may not be even possible to reach or communicate with this organisation until after dark or until the roads and skies are clear Therefore, it is imperative that every company of a mobile or static battalion should be capable of dealing with its own wounded, burned or gassed men to the extent of 25% of its full strength At present, seeing that there is no provision whatever of medical (drug) equipment, it is not difficult to visualise the ghastly medical mess and devastating loss of morale that must result if the Home Guard were engaged in countering an invasion, say, next week Surely something should be done quickly to rectify this lamentable state of affairs Is it fair or reasonable to suggest that M O 's of battalions (often over 2000 strong) should go round with cap and bell asking for donations to purchase urgent medical necessities that it is the duty of the state to provide ? Are we in the stress of battle to expect company officers or N C O 's (for there is only one M O per scattered battalion) to depend (in answer to a scrawled demand) on the limited generosity and critical attitude of some capricious O C of an A R P post, an E M S unit, or a military hospital, who, jealous of his own meagre supplies would probably require the certificated quadruplicated authority of the A D M S or Ministry of Health before parting ? No sir, let us have done with charity and muddling through after fifteen months of growing pains

It is my opinion that every company of every battalion should be provided with the minimum requirements in easy portable form, for dealing with the risks of pain, sepsis, burns, tetanus and fractures The outfit, in addition to the queer collection of inadequate splints and bandages you refer to, would be in charge of the N C O of a stretcher party who would be responsible to the company officer and/or medical officer

Pain would require morphia in tablet form for oral use and ampoules for injection, if a syringe can be obtained

Sepsis Sulphanilamide in 5 gramme powders in Cellophane packets or 0 5 gramme tablets should be liberally stocked The former for use in wounds, the latter by mouth Indeed sulphanilamide would be a fitting addition to every new first field dressing

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the usual lesions of skin and mucous membranes are missing Often the break-down of an individual organ—liver, kidneys, heart or brain—is the first symptom of the disease (*b*) Patients carefully treated and probably restored to good health In spite of this their children are of inferior constitution, they may show a poor defence against infections and other harmful environmental influences, hypochromic anæmia, lymphocytosis, monocytosis or abnormalities of the endocrine system

Group 3 does not come within the sphere of premarital and prenatal tests, these patients need the attention of a wise cautious and energetic doctor who will take both a scientific and a social interest in them

Cambridge G **Brock**

IN DEFENCE OF CHLOROFORM

Sir,—Increasingly as time goes on those who write with authority about anæsthetics tend to impose their veto upon the use of chloroform To cite two recent instances Professor Macintosh and Dr Freda Pratt in their textbook issued from the Nuffield Department of Anæsthetics at Oxford devote a bare two pages to chloroform, and that only to banish it, and Dr Langton Hewer, in a broad review of the subject in the *British Journal of Surgery*, states that chloroform is becoming increasingly, and he implies rightly, ousted in favour of "safer" agents Even in Edinburgh, the cradle of chloroformists, the drug is now almost outlawed All this may be merely the swing of the medical pendulum, but I submit that if it is allowed to continue without protest we may find ourselves deprived of one of our most potentially valuable allies, because the oncoming generation of anæsthetists will never learn to use it To encourage these, then, and not with any intention of reviving an old controversy, this plea in defence is entered

For many years in civil life it was my practice, and that, I suspect, of many more others than would be willing to admit it, to use small quantities of chloroform in conjunc- on with nitrous oxide and oxygen in some cases Since orking in the Army I have changed "some" to "all" -that is to say, all cases in which gas and oxygen plus emedication are not enough, and this means practically l soldiers These now number upwards of 500, and n be regarded as a series in that in no case has ether een employed at any stage The surgery done includes l the routine "cold" operations, together with gunshot ounds, accidents and acute abdominal conditions, nd the patients are of a more or less uniform type part from the presence or absence of shock The sults of this procedure, in the opinion of all who come contact with the cases, are unmistakably superior those of the gas-oxygen-ether combination, or of mple open ether I have no statistics to offer, nor do think that in this matter they are of so much value s the evidence of patients and particularly of wardsters, but I am sure that sickness, chest troubles (in far as the anæsthetic used has anything to do with hese), and general postoperative morbidity are reduced a minimum Furthermore, the anæsthetics are more onsistently satisfactory at the time in what may be egarded as a difficult type of patient On the debit ide there has been one case of very mild jaundice lasting few days after a hernia operation—that is all

The contention here put forward is that this is not due ither to luck or to any peculiar skill, but that gas-xygen-chloroform is a safe and a sound anæsthetic, nd one which should not be allowed to fall into disepute The first danger of chloroform—that of sudden ardiac failure during induction—is eliminated because nduction is by gas and oxygen, and the chloroform is nly added slowly later on The second danger—respiratory depression followed by cardiac failure—can rise but in fact does not because the amount of chloroform needed is extremely small and because with practice the early warnings of this condition are easy to detect and to check The third danger, that of damage to the liver and metabolic upset, presumably depends on the concentration and amount of chloroform used, and is a theoretical possibility With the exception of the case of mild jaundice mentioned, and which caused no-one any anxiety, it has never occurred in my experience either in the Army or in civil practice and the risk seems to be at least no greater than that of some of the unfortunate sequelæ of, say, spinal anæsthetics In this connexion it is encouraging to note that M D Nosworthy, speaking of the use of chloroform in patients with prolonged toxæmia, has given the opinion that "if the experimental work were re-done today, taking care to produce smooth anæsthesia with a clear airway and excess oxygen, the toxicity would probably be much less"

Finally, lest I should be accused of luring the young anæsthetist to disaster, I would lay stress on the fact that if the advantages of chloroform are to be enjoyed together with peace of mind, it is essential to learn the technique thoroughly, to practise it carefully, and to work with an adequate apparatus But do not let us drop one of the most valuable members of our team simply because he will get out of hand unless properly managed

D H **Belfrage**

TREATMENT OF SUPERFICIAL GRANULATING SURFACES

Sir,—Mr Edmunds in your issue of Aug 2 shows how when a suppurating granulating surface is superficial antiseptic treatment by the Carrel-Dakin method can be accurately applied May I mention another antiseptic method, zinc ionisation which may also be used?

Before beginning treatment microscopic examination is made of smears from various parts of the raw area, especially near the edges (A large number of organisms from one place suggests pocketing under the skin) The area is then measured by tracing its outline on a film of celluloid, placing this on paper ruled in square centimetres and counting the squares covered by the outline Since dosage is important it is necessary to have a certain measure of quantity as a unit For ionisation treatment I chose one milliampere for one minute on a square centimetre and called this a "Leduc" It was found that 40 Leducs sterilised a surface Perhaps less would be sufficient During the last war an attempt was made to abolish suppuration in cases where this was only kept up by an infected discharge It was seldom that the simple condition illustrated by Mr Edmunds presented itself When it did the technique adopted was as follows The skin surrounding the raw area was painted with formalin gelatin as recommended by Sir Almroth Wright in one of his earlier papers Layers of gauze soaked in a sterilised solution of zinc sulphate in gelatin were laid on the raw area to a height of ½ in The gauze slightly overlapped the edge of the skin The positive electrode was kept in contact with the gauze by a bandage At intervals cultures were made from the surface If progress is to be made with this method of treatment it is necessary to determine the average dose which can be relied on to abolish suppuration on an accessible surface This can be done if a sufficient number of cases in which the area can be measured are available In cases where the area cannot be measured—e g, sinuses—the dose can only be estimated The tendency is to give too small a dose

The advantage of zinc ionisation is the speed with which suppuration may disappear Where the area is accessible and the dose is adequate suppuration ceases at once This is due specially to two factors: first, to the fact that zinc albuminate is a bad culture medium for micro-organisms; and secondly, to the absence of irritation of the tissues immediately beneath the actual surface by the treatment

Sidmouth A. R **Friel**

DIAGNOSIS OF CRETINISM

Sir,—Your leading article of Aug. 2 rightly stresses the difficulties that may arise in the diagnosis of cretinism if clinical observation alone is accepted, and the advantage of conducting biological and biochemical tests Some further points may be of interest:—

The precise meaning of the words "cretinism" and "myxœdema" gives rise to some difficulty Presumably a certain clinical state is implied without stating whether the thyroid deficiency is complete or partial Yet if tests are to be interpreted correctly and comparisons made with thyroidectomised animals, such a distinction is important In the absence of suitable methods for detecting circulating thyroid hormone directly, the diagnosis of complete thyroid deficiency in man may only be made with any degree of certainty after elaborate tests during life, combined with post mortem study

tive When it was pointed out that the general public would not be likely to possess copies of these technical publications, the Parliamentary Secretary made the astonishing statement that they could be consulted in local free libraries How many such libraries would stock current editions of either of these expensive works, and would the average purchaser of patent medicines gain any knowledge from consultation of these highly technical treatises ?

Probably one of the greatest abuses in the patent-medicine trade is the licence given to sell well-known drugs under fancy names This abuse was commented on by the Select Committee of 1914, and among others they gave as an example phenolphthalein, which at that date was sold under no less than sixteen fancy names, and the select committee framed the recommendation No 6 “ that fancy names for recognised drugs be subject to regulation ” I sought, in the committee stage, to add a clause carrying out this recommendation It was opposed by two hon members, one of whom very properly disclosed that he had a financial interest in the trade, and the other, a distinguished lawyer, admitted that “ he had been advising some of the trade interests concerned in the arrangements which have resulted in the bill ” Upon the minister declaring that the inclusion of this clause would upset agreements arrived at outside the House, the disturbance of which he strongly deprecated, I withdrew my amendment The minister had declined during the debate to reveal the bodies which it was alleged had come to an agreement in this way, but in a subsequent answer to a question put by me, he gave the list (see *Lancet*, Aug 16, 1941, p 203) For a bill which was to give consideration to the public-health implications of the patent-medicine trade, it is surely remarkable that no opportunity was afforded for the expression of opinion by medical bodies, who are chiefly concerned in the safeguarding of public health

House of Commons E GRAHAM-LITTLE

TREATMENT OF TROOPS AT CIVILIAN V D CLINICS

SIR,—Dr H H White (Aug 16) has called attention to one of the difficulties which often occurs in the treatment of Service V D cases at civilian clinics The lack of cooperation has caused me much concern, the conditions of the last 10 months will, if they continue, result in a considerable proportion of inadequately treated cases I hold a written statement that the civilian clinics will not be held responsible for bad results, but I cannot help feeling that the final situation will be reflected to our disadvantage unless better cooperation can be obtained I have tried to make contact with defaulting cases and have been told that I misunderstood my responsibilities to the Army If a patient fails to attend, I am to infer that he is attending elsewhere for his weekly injection Men attending a week late have told me that they were not allowed off duty on the correct day and cases transferred to me have brought records showing long intervals in their treatment of syphilis I suggest that when a man is transferred to another area, the M O of the civilian clinic which he has been attending and the M O of the clinic in the area to which he is transferred should be *immediately* informed For, in taking on the cases at all, we have a duty to the man quite apart from our “ responsibilities to the Army ”

Often a new case attends with his “ pro forma ” incompletely filled up In any case, every patient calls for individual consideration and the medical officer treating that patient should have a detailed record of previous treatment and of his reaction to that treatment It is absurd to suggest that the civilian clinic is only asked to carry out a prescribed treatment, for the M O of the unit will usually have no special knowledge of V D —in point of fact, I cannot recall a single case referred to me for a prescribed injection I cannot understand why the man should not be given his I 1247 (if desirable, a duplicate I 1247) to be carried to and from the clinic by him on each attendance, this method is effective with civilian cases and it would, if extended to Service cases, overcome most of the difficulties, including that of the man who is returned to his unit long before his records are forwarded from the military hospital The real difficulty is, I think, that the civilian clinics are regarded by the Service authorities as outside their V D schemes but available for intermediate treatment as a conver This inadequate cooperation is apparent in the foll example

A soldier complaining of a discharge from the urethra “ incorrectly ” sent to my clinic by his medical officer found gonococci in the smear, gave sulphathiazole and re the case back to his medical officer The man was, of sent to a military hospital and in due course returned to for surveillance I then found that, in spite of my report, diagnosis “ urethritis ” had been made because were not found at the military hospital after his initial dose Thiazamide

Satisfactory results could be obtained by the utilis of civilian clinics for the routine treatment of cases of venereal disease, but only if Form I 1247 made available and the transfer of cases is no Unless some cooperation is forthcoming medical of of civilian clinics will not be to blame if they tired of trying to maintain some standard of efficien with Service cases

Canterbury DAVID ERSKINE

PREMARITAL AND PRENATAL TESTS

SIR,—I agree with Dr Violet Russell (July 26, p 11 *that there is really no reason why* Wassermann should not form part of the routine examination pregnant women at the antenatal clinics, and it difficult to see why doctors should object to this pro cedure, particularly when the women have no objectio Premarital tests would cause difficulties in many and might have a deterrent effect on the prenatal test I doubt, too, whether a better result would be o if the mother's positive test was discovered marriage It would be interesting to know in Dr Russell's cases how many women per 1000 showed positive result Colonel L W Harrison lately told (*Lancet*, Aug 2, p 136) that in 1939 the number of c of early syphilis dealt with for the first time at civilian centres in England and Wales was 4986, decrease of 45% since 1931, and less than a third of number in 1920 He also showed that there was decline in the role of syphilis in killing infants, th death-rate from this cause had fallen from 2 03 per 10 in 1917 to 0 2 in 1939 My own experience at infant-welfare centres during 28 years bears out Col Harrison's observations I saw remarkably few which showed clinical signs of congenital syphilis Ca of marasmus with snuffles and sore buttocks, which I taught to regard as syphilitic in my student days, referred to hospital for Wassermann tests, but in not single case was the result positive Doctors at welfare centres could give us some valuable figures this important point

Kensington RONALD CARTER

SIR,—Your leading article of July 12 raises an portant question You quote opponents of s interference as casting doubts on the hundred-per-c reliability of any particular test or combination of There is no hundred-per-cent reliability either biology or in sociology—trade, commerce e politics and so on As regards the liberty of the s and professional secrecy, we do not need legal pulsion, a sixpenny book adequately composed and common sense of the British people should be e The main difficulty originates from the nature of disease, which covers the whole gamut of warfare fr the deadly surprise raid to the trench-warfare of s biosis We distinguish by examination —

(1) Patients with clinical symptoms and serological evid

(2) Patients without clinical symptoms but with logical evidence These include patients treated factorily and patients infected in a peculiar way—e g women who conceive a syphilitic child from a syph husband, or the children born of a syphilitic *mother* are not contaminated by the direct implantation of specific germ but by absorption of an antigen anti mixture, thus the reaction is less powerful and the sy matology wholly altered

(3) Patients with neither clinical symptoms nor sero evidence (*a*) Patients with latent disease who are because they often do not know they are ill and inf and their victims do not know they are infected M the virulence of the infectious factor is diminished, and

the usual lesions of skin and mucous membranes are missing Often the break-down of an individual organ—liver, kidneys, heart or brain—is the first symptom of the disease (*b*) Patients carefully treated and probably restored to good health In spite of this their children are of inferior constitution, they may show a poor defence against infections and other harmful environmental influences, hypochromic anæmia, lymphocytosis, monocytosis or abnormalities of the endocrine system

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Cambridge G Brock.

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The contention here put forward is that this is not due either to luck or to any peculiar skill, but that gas-oxygen-chloroform is a safe and a sound anæsthetic, and one which should not be allowed to fall into disrepute The first danger of chloroform—that of sudden cardiac failure during induction—is eliminated because induction is by gas and oxygen and the chloroform is only added slowly later on The second danger—respiratory depression followed by cardiac failure—can arise but in fact does not because the amount of chloroform needed is extremely small and because with practice the early warnings of this condition are easy to detect and to check The third danger, that of damage to the liver and metabolic upset, presumably depends on the concentration and amount of chloroform used, and is a theoretical possibility With the exception of the case of mild jaundice mentioned, and which caused no-one any anxiety, it has never occurred in my experience either in the Army or in civil practice and the risk seems to be at least no greater than that of some of the unfortunate sequelæ of, say, spinal anæsthetics In this connexion it is encouraging to note that M D Nosworthy, speaking of the use of chloroform in patients with prolonged toxæmia has given the opinion that "if the experimental work were re-done today, taking care to produce smooth anæsthesia with a clear airway and excess oxygen, the toxicity would probably be much less"

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Sir —Mr Edmunds in your issue of Aug 2 shows how when a suppurating granulating surface is superficial antiseptic treatment by the Carrel-Dakin method can be accurately applied May I mention another antiseptic method zinc ionisation which may also be used ?

Before beginning treatment microscopic examination is made of smears from various parts of the raw area, especially near the edges (A large number of organisms from one place suggests pocketing under the skin) The area is then measured by tracing its outline on a film of celluloid, placing this on paper ruled in square centimetres and counting the squares covered by the outline Since dosage is important it is necessary to have a certain measure of quantity as a unit For ionisation treatment I chose one milliampere for one minute on a square centimetre and called this a "Leduc" It was found that 40 Leducs sterilised a surface Perhaps less would be sufficient During the last war an attempt was made to abolish suppuration in cases where this was only kept up by an infected discharge It was seldom that the simple condition illustrated by Mr Edmunds presented itself When it did the technique adopted was as follows The skin surrounding the raw area was painted with formalin gelatin as recommended by Sir Almroth Wright in one of his earlier papers Layers of gauze soaked in a sterilised solution of zinc sulphate in gelatin were laid on the raw area to a height of ½ in. The gauze slightly overlapped the edge of the skin The positive electrode was kept in contact with the gauze by a bandage. At intervals cultures were made from the surface If progress is to be made with this method of treatment it is necessary to determine the average dose which can be relied on to abolish suppuration on an accessible surface This can be done if a sufficient number of cases in which the area can be measured are available In cases where the area cannot be measured—e g , sinuses—the dose can only be estimated The tendency is to give too small a dose

The advantage of zinc ionisation is the speed with which suppuration may disappear Where the area is accessible and the dose is adequate suppuration ceases at once. This is due specially to two factors: first, to the fact that zinc albuminate is a bad culture medium for micro-organisms; and secondly, to the absence of irritation of the tissues immediately beneath the actual surface by the treatment

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The precise meaning of the words "cretinism" and "myxœdema" gives rise to some difficulty Presumably a certain clinical state is implied without stating whether the thyroid deficiency is complete or partial Yet if tests are to be interpreted correctly and comparisons made with thyroidectomised animals, such a distinction is important In the absence of suitable methods for detecting circulating thyroid hormone directly, the diagnosis of complete thyroid deficiency in man may only be made with any degree of certainty after elaborate tests during life, combined with post mortem study

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Probably one of the greatest abuses in the patent-medicine trade is the licence given to sell well-known drugs under fancy names This abuse was commented on by the Select Committee of 1914, and among others they gave as an example phenolphthalein, which at that date was sold under no less than sixteen fancy names, and the select committee framed the recommendation No 6 “ that fancy names for recognised drugs be subject to regulation ” I sought, in the committee stage, to add a clause carrying out this recommendation It was opposed by two hon members, one of whom very properly disclosed that he had a financial interest in the trade, and the other, a distinguished lawyer, admitted that “ he had been advising some of the trade interests concerned in the arrangements which have resulted in the bill ” Upon the minister declaring that the inclusion of this clause would upset agreements arrived at outside the House, the disturbance of which he strongly deprecated, I withdrew my amendment The minister had declined during the debate to reveal the bodies which it was alleged had come to an agreement in this way, but in a subsequent answer to a question put by me, he gave the list (see *Lancet*, Aug 16, 1941, p 203) For a bill which was to give consideration to the public-health implications of the patent-medicine trade, it is surely remarkable that no opportunity was afforded for the expression of opinion by medical bodies, who are chiefly concerned in the safeguarding of public health

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SIR,—Dr H H White (Aug 16) has called attention to one of the difficulties which often occurs in the treatment of Service V D cases at civilian clinics The lack of cooperation has caused me much concern, the conditions of the last 10 months will, if they continue, result in a considerable proportion of inadequately treated cases I hold a written statement that the civilian clinics will not be held responsible for bad results, but I cannot help feeling that the final situation will be reflected to our disadvantage unless better cooperation can be obtained I have tried to make contact with defaulting cases and have been told that I misunderstood my responsibilities to the Army If a patient fails to attend, I am to infer that he is attending elsewhere for his weekly injection Men attending a week late have told me that they were not allowed off duty on the correct day and cases transferred to me have brought records showing long intervals in their treatment of syphilis I suggest that when a man is transferred to another area, the M O of the civilian clinic which he has been attending and the M O of the clinic in the area to which he is transferred should be *immediately* informed For, in taking on the cases at all, we have a duty to the man quite apart from our “ responsibilities to the Army ”

Often a new case attends with his “ pro forma ” incompletely filled up In any case, every patient calls for individual consideration and the medical officer treating that patient should have a detailed record of previous treatment and of his reaction to that treatment It is absurd to suggest that the civilian clinic is only asked to carry out a prescribed treatment, for the M O of the unit will usually have no special knowledge of V D —in point of fact, I cannot recall a single case referred to me for a prescribed injection I cannot understand why the man should not be given his I 1247 (if desirable, a duplicate I 1247) to be carried to and from the clinic by him on each attendance, this method is effective with civilian cases and it would, if extended to Service cases, overcome most of the difficulties, including that of the man who is returned to his unit long before his records are forwarded from the military hospital The real difficulty is, I think, that the civilian clinics are regarded by the Service authorities as outside their V D schemes but available for intermediate treatment as a convenien This inadequate cooperation is apparent in the follo example

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TREATMENT OF SUPERFICIAL GRANULATING SURFACES

Sir,—Mr Edmunds in your issue of Aug 2 shows how when a suppurating granulating surface is superficial antiseptic treatment by the Carrel-Dakin method can be accurately applied May I mention another antiseptic method zinc ionisation which may also be used?

Before beginning treatment microscopic examination is made of smears from various parts of the raw area, especially near the edges (A large number of organisms from one place suggests pocketing under the skin) The area is then measured by tracing its outline on a film of celluloid, placing this on paper ruled in square centimetres and counting the squares covered by the outline Since dosage is important it is necessary to have a certain measure of quantity as a unit For ionisation treatment I chose one milliampere for one minute on a square centimetre and called this a "Leduc" It was found that 40 Leducs sterilised a surface Perhaps less would be sufficient During the last war an attempt was made to abolish suppuration in cases where this was only kept up by an infected discharge It was seldom that the simple condition illustrated by Mr Edmunds presented itself When it did the technique adopted was as follows The skin surrounding the raw area was painted with formalin gelatin as recommended by Sir Almroth Wright in one of his earlier papers Layers of gauze soaked in a sterilised solution of zinc sulphate in gelatin were laid on the raw area to a height of $\frac{1}{2}$ in. The gauze slightly overlapped the edge of the skin The positive electrode was kept in contact with the gauze by a bandage. At intervals cultures were made from the surface If progress is to be made with this method of treatment it is necessary to determine the average dose which can be relied on to abolish suppuration on an accessible surface This can be done if a sufficient number of cases in which the area can be measured are available In cases where the area cannot be measured—e g, sinuses—the dose can only be estimated The tendency is to give too small a dose

The advantage of zinc ionisation is the speed with which suppuration may disappear Where the area is accessible and the dose is adequate suppuration ceases at once. This is due specially to two factors: first, to the fact that zinc albuminate is a bad culture medium for micro-organisms; and secondly, to the absence of irritation of the tissues immediately beneath the actual surface by the treatment

Sidmouth. A. R Friel

DIAGNOSIS OF CRETINISM

Sir,—Your leading article of Aug. 2 rightly stresses the difficulties that may arise in the diagnosis of cretinism if clinical observation alone is accepted, and the advantage of conducting biological and biochemical tests Some further points may be of interest —

The precise meaning of the words "cretinism" and "myxœdema" gives rise to some difficulty Presumably a certain clinical state is implied without stating whether the thyroid deficiency is complete or partial. Yet if tests are to be interpreted correctly and comparisons made with thyroidectomised animals, such a distinction is important In the absence of suitable methods for detecting circulating thyroid hormone directly, the diagnosis of complete thyroid deficiency in man may only be made with any degree of certainty after elaborate tests during life, combined with post-mortem study

tive When it was pointed out that the general public would not be likely to possess copies of these technical publications, the Parliamentary Secretary made the astonishing statement that they could be consulted in local free libraries How many such libraries would stock current editions of either of these expensive works, and would the average purchaser of patent medicines gain any knowledge from consultation of these highly technical treatises ?

Probably one of the greatest abuses in the patent-medicine trade is the licence given to sell well-known drugs under fancy names This abuse was commented on by the Select Committee of 1914, and among others they gave as an example phenolphthalein, which at that date was sold under no less than sixteen fancy names, and the select committee framed the recommendation No 6 " that fancy names for recognised drugs be subject to regulation " I sought, in the committee stage, to add a clause carrying out this recommendation It was opposed by two hon members, one of whom very properly disclosed that he had a financial interest in the trade, and the other, a distinguished lawyer, admitted that " he had been advising some of the trade interests concerned in the arrangements which have resulted in the bill " Upon the minister declaring that the inclusion of this clause would upset agreements arrived at outside the House, the disturbance of which he strongly deprecated, I withdrew my amendment The minister had declined during the debate to reveal the bodies which it was alleged had come to an agreement in this way, but in a subsequent answer to a question put by me, he gave the list (see *Lancet*, Aug 16, 1941, p 203) For a bill which was to give consideration to the public-health implications of the patent-medicine trade, it is surely remarkable that no opportunity was afforded for the expression of opinion by medical bodies, who are chiefly concerned in the safeguarding of public health

House of Commons E GRAHAM-LITTLE

TREATMENT OF TROOPS AT CIVILIAN V D CLINICS

SIR,—Dr H H White (Aug 16) has called attention to one of the difficulties which often occurs in the treatment of Service V D cases at civilian clinics The lack of cooperation has caused me much concern, the conditions of the last 10 months will, if they continue, result in a considerable proportion of inadequately treated cases I hold a written statement that the civilian clinics will not be held responsible for bad results, but I cannot help feeling that the final situation will be reflected to our disadvantage unless better cooperation can be obtained I have tried to make contact with defaulting cases and have been told that I misunderstood my responsibilities to the Army If a patient fails to attend, I am to infer that he is attending elsewhere for his weekly injection Men attending a week late have told me that they were not allowed off duty on the correct day and cases transferred to me have brought records showing long intervals in their treatment of syphilis I suggest that when a man is transferred to another area, the M O of the civilian clinic which he has been attending and the M O of the clinic in the area to which he is transferred should be *immediately* informed For, in taking on the cases at all, we have a duty to the man quite apart from our " responsibilities to the Army "

Often a new case attends with his " pro forma " incompletely filled up In any case, every patient calls for individual consideration and the medical officer treating that patient should have a detailed record of previous treatment and of his reaction to that treatment It is absurd to suggest that the civilian clinic is only asked to carry out a prescribed treatment, for the M O of the unit will usually have no special knowledge of V D —in point of fact, I cannot recall a single case referred to me for a prescribed injection I cannot understand why the man should not be given his I 1247 (if desirable, a duplicate I 1247) to be carried to and from the clinic by him on each attendance, this method is effective with civilian cases and it would, if extended to Service cases, overcome most of the difficulties, including that of the man who is returned to his unit long before his records are forwarded from the military hospital The real difficulty is, I think, that the civilian clinics are regarded by the Service authorities as outside their V D schemes but available for intermediate treatment as a co

This inadequate cooperation is apparent in the follo example

A soldier complaining of a discharge from the urethra " incorrectly " sent to my clinic by his medical officer found gonococci in the smear, gave sulphathiazole and r the case back to his medical officer The man was, of sent to a military hospital and in due course returned to for surveillance I then found that, in spite of my report, diagnosis " urethritis " had been made because were not found at the military hospital after his initial do Thiazamide

Satisfactory results could be obtained by the utilisa of civilian clinics for the routine treatment of Se cases of venereal disease, but only if Form I 1247 made available and the transfer of cases is nc Unless some cooperation is forthcoming medical o of civilian clinics will not be to blame if they tired of trying to maintain some standard of efficien with Service cases

Canterbury DAVID ERSKINE

PREMARITAL AND PRENATAL TESTS

SIR,—I agree with Dr Violet Russell (July 26, p 41 that there is really no reason why Wassermann should not form part of the routine examination pregnant women at the antenatal clinics, and it difficult to see why doctors should object to this cedure, particularly when the women have no objecti Premarital tests would cause difficulties in many and might have a deterrent effect on the prenatal test I doubt, too, whether a better result would be obtain if the mother's positive test was discovered marriage It would be interesting to know in Dr Russell's cases how many women per 1000 showed positive result Colonel L W Harrison lately told (*Lancet*, Aug 2, p 136) that in 1939 the number of of early syphilis dealt with for the first time at civilian centres in England and Wales was 4986, decrease of 45% since 1931, and less than a third of number in 1920 He also showed that there was decline in the role of syphilis in killing infants, death-rate from this cause had fallen from 2 03 per 1 in 1917 to 0 2 in 1939 My own experience at infant-welfare centres during 28 years bears out C Harrison's observations I saw remarkably few which showed clinical signs of congenital syphilis Ca of marasmus with snuffles and sore buttocks, which I taught to regard as syphilitic in my student days, referred to hospital for Wassermann tests, but in n single case was the result positive Doctors at welfare centres could give us some valuable figures this important point

Kensington RONALD CART

SIR,—Your leading article of July 12 raises an portant question You quote opponents of interference as casting doubts on the hundred-per- reliability of any particular test or combination of There is no hundred-per-cent reliability either biology or in sociology—trade, commerce, eco politics and so on As regards the liberty of the sub and professional secrecy, we do not need legal pulsion, a sixpenny book adequately composed and common sense of the British people should be en The main difficulty originates from the nature of disease, which covers the whole gamut of warfare the deadly surprise raid to the trench-warfare of biosis We distinguish by examination —

(1) Patients with clinical symptoms and serological

(2) Patients without clinical symptoms but with logical evidence These include patients treated factorily and patients infected in a peculiar way—e g women who conceive a syphilitic child from a husband, or the children born of a syphilitic mother are not contaminated by the direct implantation of specific germ but by absorption of an antigen antib mixture, thus the reaction is less powerful and the sym matology wholly altered

(3) Patients with neither clinical symptoms nor evidence (*a*) Patients with latent disease who are because they often do not know they are ill and infecti and their victims do not know they are infected Moreo the virulence of the infectious factor is diminished, and

1939 He also held the appointments of radiologist to the Hospital for Sick Children, Great Ormond Street, and consulting radiologist to the Infants Hospital, Vincent Square Dr Shires leaves a widow and three children

A colleague writes Those who worked with Bertram Shires knew that they could obtain from him shrewd clinical judgment apart from his expert radiological opinion At St Thomas's we mourn a loyal friend and a colleague on whose level-headed advice we could always count Always an indefatigable worker, during the war Shires had undertaken responsibilities which probably helped to bring about his untimely end

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Infectious Disease in England and Wales

WEEK ENDED AUGUST 9

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Notes, Comments and Abstracts

APPARATUS FOR SUCTION DRAINAGE

ARTHUR EDMUNDS,* C B , M S LOND , F R C S

THE apparatus here described was designed for the treatment of empyema by suction drainage It embodies no new principles but it has the great advantage that the materials for its construction are easily obtainable and their cost is negligible Its manufacture presents no difficulty to anyone who can use a soldering iron

Two large tins (A and B in fig 1) are required—five-gallon Dettol tins answer the purpose admirably These tins have a filling inlet E and a tap for withdrawing the fluid This outlet tap is not used for the present purpose Into each tin two short lengths of brass tube are soldered, one at the top and one at the bottom (*a a′*, *b b′*) Dettol tins are not quite thick enough to support the brass tubes, and the junction should be reinforced by a copper plate about as big as a penny, the whole being "sweated" together The two lower tubes are connected by a rubber tube C, controlled by a screw tap D Over each filling inlet E a piece of thin sheet rubber is fastened—the wrist part of an ordinary operating glove does quite well and it can be fastened in position by the thickened edge of the glove or a rubber band

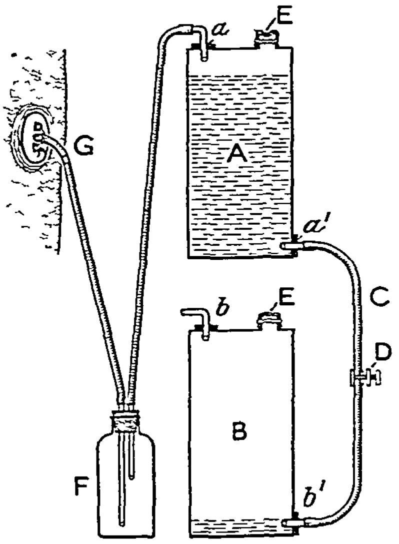

FIG 1

If tin A is filled with water and put on a stand a short distance above B, on opening the screw tap D water flows from A to B, and air is aspirated through *a* If both upper tubes are freely open the rubber diaphragms over the inlet openings are flat, but if there is any resistance to the ingress of air through the upper tube (*a*) the diaphragm on tin A will become concave

The suction apparatus thus arranged is connected to the drainage tube G which goes into the pleural cavity, a bottle F with two tubes through the stopper, or a Woulfe's bottle, being interposed to catch the discharge If the negative pressure in the pleural cavity is to be maintained, the junction between the drainage tube and the chest wall must be as airtight as possible A good junction can be made as follows

Cut some pieces of lint into discs about 4 in in diameter, with a hole in the centre of such a size that the drainage tube fits reasonably tightly These pieces of lint are soaked in melted Vaseline, which is allowed to cool on them so that they are heavily charged with it A piece of sheet tin is also wanted with a hole in the centre through which the drainage tube can pass A small wire ring is soldered on each side of this hole The method of assembling these parts is shown in fig 2, which represents them in diagrammatic section The tube L coming through the chest wall H passes through the lint J and then through the tin plate K A silkworm gut suture is tied to the loops on this plate (*k k′*) and then tied firmly round the drainage tube The whole is then strapped to the chest wall with elastic strapping Gauze, wool and a manytail bandage are applied around the whole of this to absorb any leaking fluid and to keep the vaseline from soiling sheets The whole will need changing every three or four days

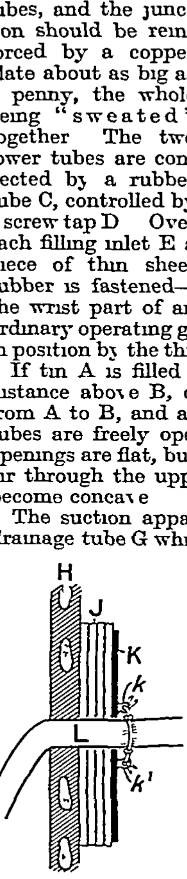

FIG 2

The degree of negative pressure can be regulated by the difference of level between the two tins When the upper tin is empty all that is necessary is to reverse the in the untreated state There seems little doubt, however, that in some cases thyroid deficiency is not complete, thus a "cretin" aged 9 at present under observation shows B M R — 38%, serum cholesterol 450 mg per 100 c cm, and no response to injected thyrotrophic hormone, yet the electrocardiogram shows no changes after 10 months without thyroid

Although the urinary creatine is a valuable index of the response of the thyroid, considerable experience of the use of thyrotrophic hormone over the last 4 years has suggested to us that clinical observation of the pulse rate, temperature, *size of thyroid gland &c is sufficient if a potent preparation is used in adequate quantities* (*Quart J Med*, 1939, 8, 195), and there seems no reason why this valuable test should not be applied in the outpatient department or in practice It should be remembered, however, that there are cases with low basal metabolic rates and structurally normal thyroid glands who are resistant to the stimulation of thyrotrophic extracts

No mention is made in your article of the electrocardiographic changes in cretinism Although the evidence is not yet complete, it seems likely that in man and the rabbit total absence of the thyroid is always associated with characteristic changes, though the converse is not necessarily true—i e, that the presence of the typical electrocardiogram means total absence of thyroid secretion During the first year of life, the simplest confirmatory tests of thyroid deficiency appear to be a study of the development of the centres of ossification and the electrocardiogram, the characteristic low-voltage graph is not likely to be due to other causes at this age Cases of dwarfism and mental retardation diagnosed as cretins on clinical grounds and treated with thyroid for years are often seen, and present a difficult problem In the treated state, of course, all tests will be negative except an absence of response to injected thyrotrophic extract if no thyroid gland is present To establish the diagnosis, thyroid extract may have to be withheld and serial electrocardiographic, biochemical and metabolic studies made In man and the rabbit it may take 80 days or longer for typical electrocardiographic changes to appear after withdrawing all thyroid

Finally, more sensitive methods of assay have demonstrated the presence of circulating thyrotrophic substances in some subjects with thyroid deficiency (Collard, H B et al *Clin Sci* 1940, 4, 323), and if the thyroid behaves in a similar manner to the gonadal system in suppressing pituitary activity in regard to its own stimulating substance, then a further test may be evolved to help in distinguishing between cases of complete and partial thyroid deficiency

E P SHARPEY-SCHAFER

British Postgraduate Medical School

TRAINING AND EMPLOYMENT FOR THE DISABLED

IN a circular (N 2449) issued on Aug 14 the Ministry of Health explain the arrangements they have made with the Ministry of Labour for the resettlement and vocational training of the disabled

The Ministry of Labour already administer a scheme of vocational training in occupations connected with munitions, and this is available for disabled people who are capable of taking the courses In addition, the ministry proposes to set up special training courses covering a wider range of occupations for disabled people only The scheme will be open to men and women over 16 who are unable because of disablement to resume their former occupations Training will be given at the ministry's own centres, at institutions specialising in the training of cripples, at technical colleges administered by local education authorities, and by arrangements made with individual employers The scheme will not be limited to members of the Forces and civil defence services, or civilians disabled by enemy action, but will include people disabled in industry or through other causes Training will be limited at present to those who appear likely, when trained, to obtain employment under ordinary industrial conditions Arrangements for training will be made by employment exchanges, who will send a representative to interview a patient on being notified by his hospital The exchanges will also advise patients who do not need special training but require information about returning to their previous employment or taking up some other

Obituary

CHARLES ARCHIBALD SCOTT RIDOUT

M S LOND, F R C S

Mr C A Scott Ridout of Southsea, who died on Aug 9 after a trying illness of some three months, was the son of the late Staff Surgeon Charles Lyon Ridout, R N He was born in Devon in 1875 and educated at Sherborne, where he played for the cricket XI and the rugby XV He qualified M R C S from Bart's in 1899, and took his London degree two years later While holding house-appointments in the throat department at Bart's and at the North Staffordshire Infirmary and Eye Hospital he continued to equip himself for his specialty, obtaining his M S in 1903 and in 1904 the F R C S and a Jeaffreson exhibition In this same year he also began his long association with the Royal Portsmouth Hospital Two years later he was appointed honorary pathologist and soon he was elected to the surgical staff He also became surgeon to the Portsmouth and Southern Counties Eye and Ear Hospital, where he was later in charge of the aural and throat department During the last war he served, with the rank of major, as a surgeon specialist at the 5th Southern General Hospital at Portsmouth, and later with the 29th Stationary Hospital in Salonika and Italy, finally returning to Portsmouth as divisional surgical officer for ear, nose and throat cases

A G O writes As Scott Ridout's junior it was my privilege to watch his methods and admire his keenness and energy He was anxious to encourage and help his juniors in every way, and later on, when our paths in surgery diverged, it was always a pleasure when he dropped in of an evening to discourse on some particular case and discuss its bearing in other fields of surgery The time came when as a patient I saw how his amazing energy seemed to be entirely directed to each individual patient and how despite his busy life he found time to cheer and encourage one's relatives and help to relieve their anxiety

FRANK HAYDON

L R C P

Dr Haydon, who died at Bideford on Aug 1 in his eightieth year, was for over 35 years secretary to the court of examiners of the Society of Apothecaries During his period of office from 1895 to 1930 the smooth working of the examinations was largely due to his careful organisation' Many candidates will remember him for his courtesy, and he was always sympathetic to those who were referred Soon after he qualified from the Westminster Hospital in 1891 Dr Haydon became interested in ophthalmology, and after holding a clinical assistantship at Moorfields he was for five years assistant surgeon to the Western Ophthalmic Hospital For many years he was also examiner of eyesight to the London and South Western Railway (later the Southern Railway) and his statistical eyesight tables and Railway Test Type Case were based on this experience He also compiled an ophthalmic atlas for recording pathological conditions of the fundus by means of superimposed layers of colour

BERTRAM SHIRES

M B EDIN, D M R E

Dr Shires, who died at his house in Wimpole Street on Aug 8, was one of the band of consultants who continued to live in London in spite of the war His work at St Thomas's Hospital in London and Godalming, and at Great Ormond Street took up almost the whole of his time, and entailed much exhausting travelling, while at the end of a tiring day he would take his turn at fire-watching On the day of his death, after a night of pain, he drove himself to Godalming and put in an afternoon's work there He died in his sleep the same night

Bertram Shires had qualified in medicine at Edinburgh just before the last war, and he joined the R A M C to serve as a major When he returned to civil life he took up radiology and obtained the Cambridge D M R E in 1921 He joined the X-ray department at St Thomas's in 1924 as chief assistant, becoming assistant radiologist in 1927, and director of the department in

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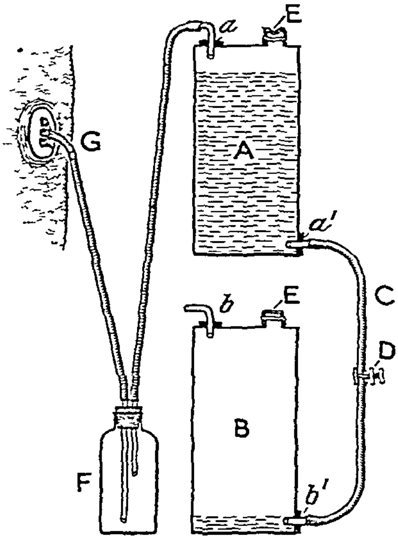

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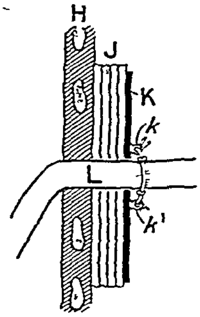

FIG 2

The degree of negative pressure can be regulated by the difference of level between the two tins When the upper tin is empty all that is necessary is to reverse the position of the tins, and to transfer the suction tube to the tin which is now uppermost It should not be necessary to do this more than once a day, and it may be that the apparatus will need no alteration for two or three days The indicator of the partial vacuum is the rubber diaphragm, which can not only be seen but felt, and it is easy for the nurse on night duty to feel whether the apparatus is working satisfactorily

THE HOSPITALS OF ROTTERDAM

THE damage done to the hospitals of Rotterdam during the German air-raids in May, 1940, is described in the *Schweizerische Medizinische Wochenschrift* for June 7 (p 724) During the methodical laying-waste of the centre of the town on May 14 the hospital at Coolsingel, after direct hits on the kitchens and engine-house, caught fire and was burnt to the ground Only a few blackened walls remain The evacuation of patients was difficult, for a church which was being used as a refuge also took fire and they had to be moved once more Dr Sekir, an assistant physician of the hospital, died from his injuries the same evening The medical library was a total loss and the town's pathology and bacteriology laboratories, which were attached to the hospital, were wiped out with all their equipment The laboratories have now found shelter in the municipal hospital at Bergweg where their directors are busy on reorganisation The famous hall where all the medical societies of Rotterdam used to meet was also destroyed The infirmary for chronic patients at Raampoortstraat was completely wiped out The ophthalmological hospital at Oostmolenwerf received a direct hit during Whitsun, but the patients and staff were able to take shelter, two days later the remains of the building and the other ophthalmological hospital in Nadorstraat were burnt down The new Zuider Hospital was taken over by the Germans on May 10 and has suffered little damage, and the hospital at Bergweg also escaped

HOW TO BE WELL FED AND PATRIOTIC

Mrs Barbara Callow's pamphlet "Good Health on War-time Food" (O U P Pp 32 6*d*), is based on talks given to working-class folk since the war broke out, and she shows understanding of their point of view and criticisms The last chapter should be read first and then again in its proper place after reading the rest of the book The only criticism is that some verbal woollinesses might be omitted Mrs Callow writes " all of us need a certain amount of body-building food every day" Surely "all of us need body-building food every day" is as true, strong, scientific and understandable But these are minor offences which need worry only the pernicketty scientist, or the paper controller, and if the booklet is read and understood and its precepts practised it should do a lot of good

FEEDING THE MULTITUDES

THE Ministry of Food have published a sixpenny pamphlet (Canteen Catering Pp 84 H M Stationery Office), as a guide to those in charge of canteens, not only as regards quantities of foods essential in making prescribed dishes but as regards the dietetic qualities of foods, dishes and menus Prof J C Drummond, in a foreword, says that "the aim in planning meals in canteens should be to provide in one meal during the day a substantial proportion of all the essential nutrients required by the body If this is ensured, the nature of the other meals becomes correspondingly less important By making good the deficiencies of the home diet, the canteen meals are of greatest benefit to the worker" If the canteen manager faithfully carries out the instructions given in the early pages of the pamphlet the feeding of the people in canteens will reach a high level It is particularly sound advice to increase the quantity of vegetables served, to give more than one vegetable in addition to potatoes, and to serve a second vegetable with fish and chips, and sausage and mashed potatoes The advice on how to introduce new and unfamiliar dishes is also good sense, if Macchiavellian The only snag is that it needs a trained dietitian to carry out the advice, and it is doubtful if there are more than 250 trained dietitians in the whole of Great Britain The training of dietitians has been more or less in abeyance since the war started and we need such for feeding the people during war-time and still more so in the subsequent peace One or two minor grumbles may be permitted What does this sentence from the foreword mean? "They [the protective foods] are called 'protective' because they are in one respect or another rich in the vitamins or other constituents vitally important for health" Are not calories and protein vitally important for health, and are white sugar and salt pork "protective foods"? On the whole the pamphlet can be strongly recommended not only to supervisors of canteens but to everyone who has to cater for large groups of people

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MEDICAL HONOUR—The King has given permission to Flight Lieutenant W P Griffin, M B Dubl, R A F O, to wear the insignia of the order of the White Eagle, fifth class, conferred on him by the King of Jugoslavia for valuable services rendered in connexion with the war

COURSES ON WAR SURGERY—A course on war surgery of the extremities will be held at the British Postgraduate Medical School from Sept 1 to 5 A course on war surgery of the abdomen will begin on Sept 15, and a course on war medicine on Sept 29 Further information may be had from the dean of the school, Ducane Road, London, W 12

A GERMAN COUPON CONCESSION—In the *Deutsche Medizinische Wochenschrift* for July 11 (p 770) the German Food Minister announces that bread coupons marked with an R, which are intended for rye bread (Roggenerzeugnisse), may only be exchanged for white bread coupons if a medical certificate is submitted Doctors may give a certificate for this exchange to those suffering from diseases of the stomach, bowels or gall bladder, to patients who have difficulty in chewing, or to those who are hypersensitive to rye

Appointments

CRAIG, J H, M B Durh medical registrar at Royal Victoria Infirmary, Newcastle on Tyne

GAISFORD W F, M D Lond, F R C P consulting physician to the Warwickshire hospital services

HEATHER, J C, M D Lond M R C P examining factory surgeon for Coventry East

REID J L, B M Oxfd, D L O junior surgical registrar at Royal Victoria Infirmary, Newcastle on Tyne

WALDER, D N M B Brist junior surgical registrar at Royal Victoria Infirmary, Newcastle on Tyne

Colonial Service—The following appointments are announced

BLOK E A, L R C P E, assistant director of medical services, Ceylon

BOWESMAN, CHARLES M D Dubl, F R C S E, D T M & H, medical officer Gold Coast

GOSDEN, MINNIE, M B Lond, D T M & H pathologist, Sierra Leone

REID, J D, M B, D P H, D T M & H medical officer, Sierra Leone

UTTLEY, K H M D Camb, D T M & H senior medical officer, Hong Kong

Births, Marriages, and Deaths

BIRTHS

BIRD—On Aug 17, in Reading the wife of Dr J G Bird—a son

BOWLBY—On Aug 11, at Broad Chalke, Salisbury, the wife of Major John Bowlby, R A M C—a son

CURRANT—On Aug 12, at Haslemere, the wife of Dr E J Currant—a daughter

DE SWIET—On Aug 15, at Ripley Court, Surrey the wife of Dr John de Swiet—a son

FORREST HAY—On Aug 8 at Bewdley, the wife of Captain Graham Forrest Hay, R A M C—a son

HYSLOP—On Aug 14, the wife of Dr W A Hyslop of Settle, Yorks—a son

LE VAY—On Aug 15 at Oxford, the wife of Mr A D Le Vay, F R C S—a son

PRICE—On Aug 12 at Beaconsfield the wife of Major A E Kingsley Price, R A M C—a daughter

MARRIAGES

BEALES—ROSSITTER—On July 26, in London, Philip Hulme Beales, M R C S, to Valerie Maude Rossiter

FEARNLEY—ANDREWS—On Aug 16 at Graffham, Sussex, George Roche Fearnley M B to Joy Andrews

MATHISON—LEES—On July 5, at Darwen Alexander Mathison M R C S, surgeon lieutenant, R N V R, of Bedford to Betty Lees

RAWLINSON—CLAFTON—On Aug 9, in London Peter Goodwin Rawlinson M R C S, to Mary Clafton

SMYTH—RUSHTON—On Aug 12, at Claughton on Brock William Francis Smyth, M B, lieutenant, R A M C, to Phyllis Anne Rushton

YOUNG—CHURCH—On Aug 11 at Limpsfield Chart, William Brewitt Young M B, to Betty Church

DEATHS

JAMESON EVANS—On Aug 13, at Froneithyn Aberdovey John Jameson Evans, M D Birm, M B Edin, F R C S, of Edgbaston

FAWKES—On Aug 14 at Midhurst, Sussex Marmaduke Fawkes, O B E, M B Lond

1941 Students Guide 1942

THE STUDENT AND THE E M S

JOHN A RYLE, M D , F R C P
REGIUS PROFESSOR OF PHYSIC

Two years have now passed since the medical student —and this is particularly true of the student of the London schools—faced an abrupt disorganisation of his educational programme and an enforced rearrangement of his life and habits Good humoured and adaptable for the most part, the earlier days of war found him ready to accept much He grumbled probably no more and, having fewer responsibilities, possibly less than his teachers and others among the general public who stood not fearful but puzzled and anxious on the brink of our new era of world catastrophe Of one responsibility and one decision he was at once relieved for the Government decided to regard him as coming within the category of the reserved occupations Although there must have been some who found it hard to accept and a few—all honour to them—who declined to accept this preferential ruling while the rest of their generation were called upon for the hazardous tests of war, the wisdom of those who made the decision has been well supported by events Already the voracity of the armed forces for doctors and yet more doctors has seriously depleted the civilian services and seems likely before long to claim every fit medical man directly on completion of his six months' qualified apprenticeship as a house-officer

At the outbreak of war, as a new and additional service working apart from the medical services of the armed forces and yet supplying the greater part of their hospital accommodation in this country as well as the war-time needs of the civil population, the Emergency Medical Service came into being and developed simultaneously its association with the medical schools It would seem a fitting moment at the beginning of a new session and of the third year of war to consider what part this service has come to play in the life of the medical student and what contribution the medical student has already made and can continue to make to this vast service which, for all its initial difficulties and all the criticisms levelled at it has now established itself and affirmed its indispensability in our national life

* * *

In the first place the E M S operating in the London sectors made it possible for the clinical education of all the medical students of London to be maintained The parent hospitals were reduced in status and complement to casualty clearing stations in order to prepare for the air-raids which fell upon the metropolis last autumn , but the sectors, whether in county council hospitals or some of the larger mental or other special institutions taken over for the purpose supplied base hospitals wherein ward teaching could continue and where, by degrees, lectures and laboratory classes could be resumed In most sectors now there are, besides the parent hospital in town, one, two or more base hospitals in the country, and between these and the parent school the students in the clinical period are distributed Students in the preclinical period, who at first, in several instances enjoyed the hospitality of the provincial medical schools were later in some cases accommodated in country houses converted for the purpose These are situated for the most part within reasonable reach of London and the base hospitals In the parent hospitals students in their clinical period have had opportunities of seeing acute surgery and medicine and of obtaining the experience of wounds and shock and transfusion technique provided by air-raid casualties while outpatient teaching has continued without interruption Some of the L C C hospitals have been generous in affording teaching facilities to neighbouring London schools Here and at the base there have been opportunities, often better than in peace-time, of seeing a rich variety of material in institutions carrying a large quota of chronic and old-age diseases

Clinical teaching has nevertheless, suffered in many ways There has been a large exodus of members of the teaching staffs to join the medical services of the Army Navy and R A F There has been separation from libraries and laboratories and during the tenure of appointments at the base from the valuable opportunities which the outpatient clinics provide And there has been the continuing sense of unrest and uncertainty militating against reading and calculated to distract the most studious mind In other ways however clinical education has discovered unanticipated boons Thus the student in many places has found himself living at close quarters and in a more democratic association with his teachers and in friendly unofficial ways, whether in the ward or the mess acquiring information and an outlook on the problems of his chosen profession which the formal associations of the peace-time teaching round could seldom supply the value of the whole-time teacher has been made apparent in this way He has found or should have found new chances of self-instruction from hours spent on his own in wards replete with cases and physical signs of a very varied kind He has seen other types of hospital organisation and had glimpses both of the good and the bad in county or municipal administration At the base he has been able to enjoy a healthier environment and, for the most part, has not been too much disturbed by the visitations of the raiders In his London terms he has had both the surgical and the human experience of air-raid nights and the satisfaction of feeling that he was here making a definite contribution to the war effort Nor has this contribution been a mean one What some of the hospitals in heavily raided areas, often themselves the victims of high explosive and of fire would have done without the ready and willing help of students it is hard to imagine Such tasks may not profit the attainment of the examination goal but to have combined the duties of clerk and dresser with those of stretcher-bearer roof-spotter and extinguisher of incendiary bombs is indubitably to have lived and learned and to have found in emergency and risk a new return to make for the privileges of postponed military service

The teaching of pathology and bacteriology has probably suffered more than the teaching of the clinical subjects Museums class-rooms and laboratories are not easily transferred to or improvised in a county infirmary or mental institution, and a falling off in examination efficiency in the laboratory sciences is more excusable on this account By now, however arrangements should be improving and while present stability persists a steady integration of teaching with a better adaptation to its new environments should prove possible

In the early days of the war some schools favoured the principle of dispersal and scattered their students among many institutions This experiment has now been accepted as a failure and the tendency is to concentrate more and more into one or at most two country hospitals The need for a shadow hospital to which an evacuation can take place in the event of the final disruption of the home hospital by enemy action has also become apparent and the provincial medical schools, no less than the London schools, would do well to contemplate this need

* * *

We can thus say of the E M S that when all tradition seemed swept away and the cherished individualities of famous schools were wellnigh lost in the process of disbanding it provided the wherewithal of survival The student who enters the wards of the E M S hospitals on the outskirts of London in the new session will scarcely be able to visualise the discomforts and shortcomings the improvisations and sandbagging fatigues of the earlier days If he can never savour the life and provisions of his school under normal conditions he has instead a war-time tradition to make, maintain and enhance He owes a debt of gratitude to those who have, between them, prepared the way for him during the past two years Let us hope that he and they the senior students, staff, house-men, nurses medical school authorities and sector administrative officers and, above all, the evacuated patients around whom all their work is centred may come to witness an ever-improving order and prospect He should make every possible use of the human situation in which he finds himself for by so doing he will not only be storing impressions which will help him to mould his professional outlook and conduct but will also be making a real contribution to the amelioration of difficult and uncomfortable times and conditions The opportunities for technical study may have deteriorated but the opportunities for the study of mankind and for mutual instruction and assistance were probably never better

Out of new and strange discontents and new sympathies stirred by the pictures and stories of London's sick and wounded exiled from bombed streets and finding a haven in a county council hospital or its hutted annexe, it is likely that many students will extract material to set them thinking of the future of our hospital services and our medical schools Student societies should be more, rather than less, active in war-time When the time for rebuilding comes what contribution will their generation make to the permanent abolition of those slums now widely gutted and shattered, which once helped to provide so much of the disease that gave instruction to their fathers? Where and on what plan will the new hospitals and schools be built—on their own sites or in the country, like the E M S hospitals, where the restoration to health of the sick and injured is so patently expedited? Shall we perhaps maintain our enforced experiment of a city C C S and outpatient centre with a much larger unit in the country for the investigation and treatment of all but the urgent cases, and, even though nothing can condone the evils of the war, shall we be grateful none the less that it gave a final peremptory pointer for countless reforms long overdue? Will the ghost of Sir Thomas More behold at last his hospitals "in the circuite of the citie, a little without the walles so bigge, so wyde, so ample and so large, that they may seeme little townes" and "so wel appointed that though no man be sent thether against his will, yet notwithstandinge there is no sicke persone in al the citie, that had not rather lye there, then at home in his owne house" In war-time even more than in times of peace it is permissible to dream Utopian dreams if only they lead to better actions and ultimate improvement

* * *

How far have the dislocations of the war influenced the actual work and competence of the medical student? This is a hard matter to judge, but it would probably be the opinion of most teachers and examiners that academic attainment and practical efficiency have both suffered in some degree An undue dependence on the instruction of the class and the book, a shortage at times and some places of clinical and pathological material of appropriate type, the dispersal of teachers and the difficulty of concentrated study under existing conditions, particularly during the appointments held in town in the phase of heavy aerial offensive, have had effects for which strong censure would be unfair Examiners are doing their best to be considerate and yet feel it incumbent upon them to expect a reasonable and proper level of competence On those teachers who have remained with their schools and taken on whole-time service in the E M S a special responsibility falls, for they must set the standards, and with such help as their part-time colleagues, often involved in much travelling can give and the assistance of the few remaining registrars and tutors, must seek to supply deficiencies due to the loss of teaching staff and the shortcomings of institutions as a rule but ill-equipped for the advancement of learning

What are the immediate prospects of the student on qualifying? There is now no shortage of house-appointments and every man and woman must serve as a house-officer for six months before seeking duty with the armed and auxiliary forces Thereafter the choice for the men is between the Army, Navy, the Air Force and the E M S, and of these the Army is the most importunate Hitherto the E M S has been able to retain the service of a proportion of the younger men beyond the house-officer period and—since it makes hospital provision on a very large scale for the Services as well as for civilians, and its efficiency depends not a little on its junior medical officers—it would seem right that it should continue to take its quota from the medical man-power pool It could be wished that there were possibilities of interchange between the E M S and the Army The fact that so many Army doctors spend such a high proportion of their time in relative idleness tends to deter some of the young men from applying at once for commissions, but this state of affairs must be accepted as part of the inevitable wastefulness of war For the keen battalion or field ambulance medical officer there is always work to do with human interest and of high military and moral value, if only he will adapt himself to new circumstances and accept that his first duty is not now the care of "interesting cases" but the preservation of health, efficiency and morale among the fighting men

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What lies ahead of us in the coming months none can say, but certainly an intensification of effort is immediately necessary in the field of medicine and medical education as it is in every other field There is still room for improvement in the mutual assistance programmes of the E M S and the medical schools We are probably in the mid-period of the war, a period when staleness and despondency sometimes begin to infiltrate men's minds The beginning of a new session, like the beginning of a new season's campaign, may well be made an occasion in the councils of the schools and in student communities for fresh resolutions and planning Could the medical student require any finer inspiration to hard and eager work than the example set him by the sailors, soldiers and airmen of his own generation and by the uncomplaining civilian sick and air-raid victims with whom and for whom in one capacity or another his turn to serve must shortly come?

DEAN AND CHAPTER

OUR thanks are due to deans and university officers and to government and municipal officials and all others who have helped us to give this account of medical education in war-time Some of what came in the post bag has gone into the orderly account of the schools Some has provided inspiration for leading articles But there are personal touches in the letters, too intimate for exact quotation or acknowledgement, of which the substance must be handed on to all who have the cause of medical education at heart The not quite verbatim passages which follow bring varying aspects of our present experiences into relief There is no drab uniformity about them, indeed they carry the seeds of hearty controversy The war, with its difficulties of transport and its blackout has shut each of us into an immediate circle and has reduced opportunities of outside intercourse It is all the more enlivening to see how experience in medical schools has varied and thus provoked the most diverse opinions

"Students from time to time criticise parts of the curriculum, but this is not a war-time peculiarity We have always invited criticism and discussion and the result, I think, is a greater understanding of difficulties and a greater degree of satisfaction on the part of students"

"It appears to me that you somewhat unduly stress the desirability of obtaining the *students'* opinion on the curriculum! In this changing world I believe that the tail will be compelled to wag the dog in order to obtain long overdue improvements in many instances, but the ordaining of the medical curriculum is not one of these"

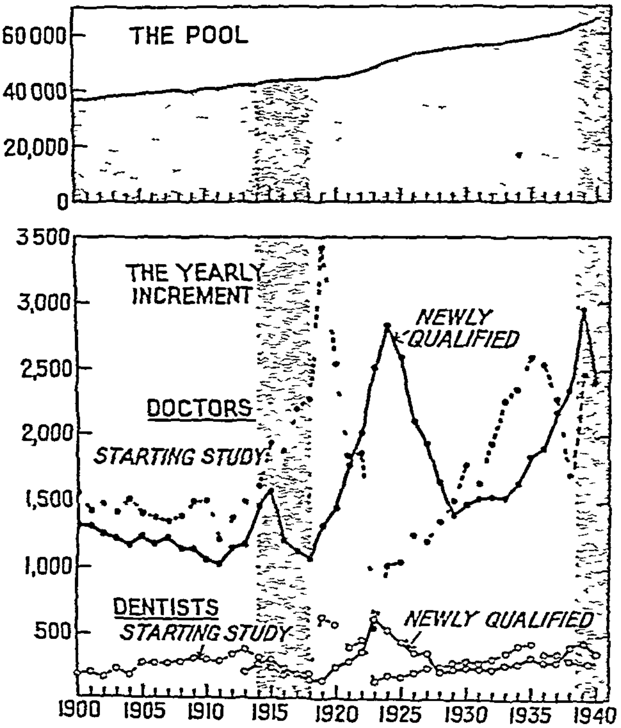
"My own personal view about the curriculum is that its chief defect lies in its (obviously impossible) attempt to make students competent in all departments of the art instead of giving them a general training so that they may turn to various forms of specialist study after graduation Our students, no doubt like others, are required to produce for the final examination certificates of instruction in 23 clinical subjects ”

“ My personal view of the new curriculum is that it lays too much stress on detail and insists too much on special courses in practically every conceivable medical subject Whereas the aim of a curriculum should be to instil a sound knowledge of the principles of medicine surgery and midwifery Once this is done all the rest can easily be added *thereto* ”

“ speeding up finds no favour with me except in abnormal circumstances It would always have been easy to compress the medical course into a shorter time by eliminating vacations , and no doubt some of your correspondents have triumphantly demonstrated this obvious truth But someone said that time is that essential which imparts strength to all things and brings them to maturity—and after all the really important part of medical education is not so much the acquisition of information, though that of course is essential, but rather the development of maturity and judgment in the individual For that time is the very essence of the matter ”

“ I do not think the time is quite ripe for detailed comments on the curriculum, which I am sure could be improved, but reform must come by collaboration between the schools and the examining bodies All educational establishments are largely in the hands of the examiners and I think I may say without undue complacency, that the present arrangements here seem to be fairly adequate for the purpose of getting students through their qualifying examinations This is not necessarily the same thing as making them good doctors but it is useless to attempt the latter without the former ”

THE NUMBERS WHO ENTER THE MEDICAL PROFESSION



“ There is one—and only one—outstanding thing that is responsible for the difficulties of medical education at the present time—the war There is also only one change that will correct matters—winning the war To suggest any change in the curriculum unless it directly increases the war effort would be to direct energy along unprofitable lines ”

“ My own personal attitude towards work outside London is one of irritation The time wasted by travelling is intolerable and opportunities to perform duties I regard as representative are greatly reduced I believe—in spite of all the smug self-satisfaction at being out of London—that the metropolis will act again as the usual magnet and gradually attract people back again to the same old conditions ”

“ You may have seen in the press that some of the hospitals have had definitely to retire into the country (Guy's, the London and St Thomas's have opened annexes) This is of the nature of an experiment, I expect, to see how it works, with a view to patients being taken into the country after the war Personally I believe it will fail The patients' friends will hate having to go into the country, and although the staff may be the present staff in the first instance, in five years time it will deteriorate unless we go in for whole-time staffs—which God forbid ! ”

“ My impression is that students are fairly well content, and this is true even of those who knew the hospital in the happy days before the war I think they realise that they are getting first hand contact with medical patients and more personal teaching and smaller classes and that there are a greater number of teachers ”

‘ Are they satisfied ? Is the modern medical student ever satisfied ? He expects far too much Not content with being in a reserved category he resents any claim upon him for defence duties although I arrange that everybody in the final year is free from anything of this kind with his energies unhandicapped But I think the trouble is *that he regards himself as a very superior* important person He reads continually of the great need for doctors in the Services, from which he concludes that his path towards speedy qualification should be made as smooth as possible, both as regards tuition and examinations ”

“ A R P A.T C S T C duties seem to have had a *beneficial effect on all* medical students who have undertaken them and great *enthusiasm* has prevailed for such work.”

“ the A.R P duties which students have willingly undertaken are a total loss from the point of view of medical education Speaking not as dean, but as M O i c of the hospital, I can only say the efficient reception and treatment of casualties would be practically impossible without the students' aid This refers to strictly non-medical duties such as fire-fighting and stretcher-bearing A certain number of students are of course employed on blood-transfusion and resuscitation teams and also as surgical dressers Here again the experience they obtain is undoubtedly beneficial to general education but practically no help in passing qualifying examinations ’

“ The councils themselves have shown the greatest willingness to coöperate on paper In practice however, almost everything depends on the existing medical superintendent If he is actively keen on teaching the students may do extremely well with the abundant clinical material at their disposal If, on the other hand, he is not actively coöperative it becomes almost impossible to organise teaching though a few students may be pertinacious or tactful enough to obtain teaching through a process of infiltration ’

REGISTRATION

No one is a *legally qualified* medical practitioner unless his name appears on the Medical Register kept by the General Council of Medical Education and Registration of the United Kingdom The Council is a standardising body ensuring that there is a definite minimum of medical education and examination requirements and it is responsible for discipline within the profession Any application to be admitted to a school of medicine on beginning the medical curriculum proper should be addressed to the dean or other appropriate authority of the school to which the applicant desires to be admitted

Students are no longer registered by the General Medical Council before their admission to schools and the number registering in the academical year 1940–41, although known to be large, was not available for insertion on the graph in the middle of this page which has been compiled from figures given in the Medical Register 1941 and Dentists Register 1941 published by Constable & Co Ltd Obviously the supply of doctors is being well maintained in comparison with the first world war provisions of his school under normal conditions he has instead a war-time tradition to make, maintain and enhance He owes a debt of gratitude to those who have, between them, prepared the way for him during the past two years Let us hope that he and they, the senior students, staff, house-men, nurses medical school authorities and sector administrative officers and, above all, the evacuated patients around whom all their work is centred may come to witness an ever-improving order and prospect He should make every possible use of the human situation in which he finds himself for by so doing he will not only be storing impressions which will help him to mould his professional outlook and conduct but will also be making a real contribution to the amelioration of difficult and uncomfortable times and conditions The opportunities for technical study may have deteriorated, but the opportunities for the study of mankind and for mutual instruction and assistance were probably never better

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DEAN AND CHAPTER

OUR thanks are due to deans and university officers and to government and municipal officials and all others who have helped us to give this account of medical education in war-time Some of what came in the post bag has gone into the orderly account of the schools Some has provided inspiration for leading articles But there are personal touches in the letters, too intimate for exact quotation or acknowledgement, of which the substance must be handed on to all who have the cause of medical education at heart The not quite verbatim passages which follow bring varying aspects of our present experiences into relief There is no drab uniformity about them , indeed they carry the seeds of hearty controversy The war, with its difficulties of transport and its blackout has shut each of us into an immediate circle and has reduced opportunities of outside intercourse It is all the more enlivening to see how experience in medical schools has varied and thus provoked the most diverse opinions

" Students from time to time criticise parts of the curriculum, but this is not a war-time peculiarity We have always invited criticism and discussion and the result, I think, is a greater understanding of difficulties and a greater degree of satisfaction on the part of students "

" It appears to me that you somewhat unduly stress the desirability of obtaining the *students'* opinion on the curriculum ! In this changing world I believe that the tail will be compelled to wag the dog in order to obtain long overdue improvements in many instances, but the ordaining of the medical curriculum is not one of these "

" My own personal view about the curriculum is that its chief defect lies in its (obviously impossible) attempt to make students competent in all departments of the art instead of giving them a general training so that they may turn to various forms of specialist study after graduation Our students, no doubt like others, are health are suspended during the war Present regulations for medical examinations may be obtained from the Principal at Richmond College, Surrey

During the session 1940–41 the medical faculty, which is the largest in the university, contained 3605 students Thus there has been little falling off in numbers, and the Government's policy of reservation of medical students will guard against a shortage of doctors in the future The medical schools, which had returned to London last summer, have for the most part decentralised again, as the accounts of the different London teaching hospitals will show The damage to university buildings in London has of course been severe and widespread Many teachers have been released for national service but teachers in the provincial universities have pooled their services with those of London University teachers In spite of difficulties arising from dispersal of schools normal examinations have been held, and there has been no falling off in performance A board of studies in pathology, made up of all the university teachers of this subject, has been appointed Research grants have been continued as far as possible, during the year 7 medical and 17 scientific grants were awarded Examinations have been decentralised, and students have been able to take London University examinations without leaving the universities in which they are war-time guests

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St Mary's Hospital

The action of the Government in restricting the entry at all medical schools to a figure representing the average entry of the last three years will not affect St Mary's There the entry has been restricted for some years to preserve a constant ratio between number of beds and number of students During the past year 68 students preclinical and clinical were admitted and 430 were in training Fees and scholarships are unchanged Students in the clinical years are taught in London at St Mary's and at three large London County Council hospitals, two of which are in the neighbourhood of St Mary's They are also taught at Harefield, a Middlesex County hospital with 1000 beds, 16 miles from London and staffed by St Mary's, which represents a second St Mary's outside London Students live at all five hospitals, and have access to a much larger number of beds than they do in peace-time They all work at St Mary's for some part of their training and take their pathology course there The contact between students and members of the honorary staff has been much more intimate than in the past , five of the staff live in St Mary's and at Harefield several others are living close to the doors of the hospital Students thus see more of their teachers and this innovation—perhaps the only change of moment in medical education during the war years—has probably come to stay The small number of students at each hospital has made the association with teachers even closer

Before the war there were 31 resident posts available , now, 101 appointments are made annually by St Mary's at the various hospitals of the sector The holders work under members of the St Mary's honorary staff, and every man who applies can now get a resident appointment St Mary's itself, the medical school and the sports ground at Teddington have so far been undamaged by the war The medical society and other student activities are going on as usual, and the rugby football club has had a successful season The disadvantages of dispersal have, on the whole, been counterbalanced by the gains

Middlesex Hospital

The school has been able to meet the demands of war without too much disorganisation The preclinical students are guests of the medical school of Leeds University, where by courtesy of the Vice-Chancellor they are taught by their own professors for the London degree in medicine and for the examinations of the Conjoint Board At present some of the clinical students are distributed in the three sector hospitals, Tindal House at Aylesbury, Mount Vernon at Northwood and the Central Middlesex at Willesden, but the greater part of them are at the Middlesex itself There are ample patients in the sector hospitals, and the students are moved between them according to the stage reached in their studies Arrangements have lately been made for some students to receive instruction at the Royal Hospital, Wolverhampton, where there is abundant clinical material , students are grateful to the Royal Hospital staff for their tuition and interest

Royal Free Hospital

The London School of Medicine is open only to women Fees and resident appointments have not been affected by the war and additional house posts are available at the sector hospitals The preclinical students of all three years are now working at University College of the South West, Exeter, and though they are suffering from lack of contact with the more senior years they are finding compensations The clinical students are getting good and varied experience acting as clerks and dressers for periods of three months at a time in the sector hospitals They work at the E M S hospital at Arlesey, at Oster House St Albans and at Wellhouse Hospital Barnet, in addition to the Royal Free itself Their midwifery experience is gained at Shardeloes, Amersham, at the Mothers' Hospital Clapton, and at Exeter The scattering of students in several centres is bound to loosen the corporate bond of the school to some extent, but the varied clinical material has given the students insight into a wide range of conditions

St Thomas's Hospital

St Thomas's suffered early, severely and repeatedly during the air attacks on London In April of this year its new " home in the country " was opened in Surrey, in a hutted hospital originally built for the military authorities The full complement of beds here will be 360 , it is equipped with laboratories and X-ray department, and an ambulance service has been arranged to bring patients down from London Members of the honorary staff who are not in the Services have beds there for their patients, and the usual staff of housemen and registrars have been appointed Batches of clerks and dressers come down to do their medical and surgical appointments in rotation, but the main hospital in London is still able to undertake outpatient teaching, and two wards are being maintained there for civilian acute cases and air-raid casualties , there is also a small but active obstetrical unit Premedical and preclinical students are working at Godalming and have settled down remarkably well there A residential hostel has brought them into happy personal contact with their teachers The clinical course has necessarily altered its shape, but with special tutors and closer supervision of individual students, elementary grounding and instruction in clinical medicine has probably been bettered Outpatient teaching, and teaching in the special departments, has inevitably suffered a little The students appreciate the privilege of belonging to a reserved occupation, and work harder than they did in peace-time All premedical and preclinical students are required to join a national service unit but clinical students working for short periods at different centres, cannot easily do this

University College Hospital

Since last year a medical school has been established at Stanboroughs Hydro, near Watford where systematic teaching is given in medicine and surgery The annexe houses the museum library, lecture-room, bacteriological laboratories and restaurant and rooms have also been assigned to the students' medical society and the women's common room club Sixty students are quartered in the building An introductory course in junior clinical medicine surgery and pathology is held at the beginning of the winter and summer sessions, and at the end of this course students begin their clerking and dressing appointments which cover a period of twelve months. Clinical teaching is carried out partly at Leavesden Emergency Hospital which is close to the medical school, and partly in Stanboroughs Hydro itself While working at Leavesden some students live in a nearby villa which serves as a hostel and has been provided with a library, museum, recreation-room and canteen Every student is seconded to University College Hospital for two periods of about three weeks each, to help in the emergency medical scheme and to act as dresser in the treatment of air-raid casualties Experience in medical, surgical and gynæcological outpatient departments is gained at Watford Peace Memorial Hospital, where members of University College Hospital staff hold clinics are quarters here for sixty students, who sleep in dormitories warmed by gas fires and share the living-rooms, lecture-rooms, tennis-courts, playing-field and domestic service. To limit the financial burden on parents at this time the school is bearing all overhead charges, which makes it possible to give accommodation and board to students at 35s. a week. Outbuildings have been converted into a pathological laboratory 45 feet long; this has been well equipped from the parent hospital, and the museum specimens have also been brought down. The library is housed in the "silence room," which is also used for lectures, and the epidiascope has its place in the games room, which offers other attractions in the form of table-tennis, darts and a piano. Students do their clinical work at Ashridge and at Stanmore Royal National Orthopædic Hospital, to which they are taken by a motor coach of character. Enthusiasm for gardening is evident among Chaulden residents, especially for raising vegetables. They have an active Home Guard section which is attached to the local contingent. At Stanmore they get medical, surgical, orthopædic, gynæcological and special experience in abundance, but feel the lack of outpatients. The Cambridge University Medical Society's analysis shows, however, that with access to 3000 beds students at Charing Cross are getting wider experience than students of any other metropolitan teaching hospital except the London.

St. George's Hospital

St. George's takes about a hundred students, all men. The sector to which it belongs is not perhaps as happily placed as some, because there is no large outlying hospital which could be taken over and staffed for teaching, with adequate grouping of patients and students. One of the sector hospitals is under the control of the local authority and the others are hutted hospitals built by the Ministry of Health and attached to the local public assistance institutions. Thus it has not been easy to control the training of students transferred to them. Dispersal of students to these hospitals became necessary last September, and in spite of lack of suitable cases for teaching, and lack of teachers—since more than half the staff have joined the forces—medical education has been maintained at something like its peace-time level. The hospital is planning, however, to open a country branch of 150 beds of its own within twenty miles of London, where it is proposed to equip a large private house and grounds as a medical school. Students will thus be centralised in excellent surroundings. The bulk of bedside teaching and laboratory work will be done at this branch, which is close enough to London for students to attend the flourishing outpatient department at the parent hospital. Some students, mainly seniors, will have to remain in London to assist in treatment of casualties. A.R.P. duties undertaken by the students have contributed little to their medical education, but the efficient reception and treatment of casualties would hardly have been possible if the students had not undertaken the accessory duties of stretcher-bearing and fire-fighting. Students are also attached to the blood transfusion, resuscitation and surgical teams, where the experience they gain is undoubtedly valuable, but of little help to them in passing examinations.

Guy's Hospital

Students in the preclinical years are still working at Tunbridge Wells near the sector hospital of Pembury. Four large buildings have been equipped and furnished, some as lecture-rooms and laboratories and others as hostels with accommodation for about 300 students. The remaining students are living in lodgings in the district. The largest of the four buildings, Sherwood Park, about a mile and a half from the town, contains the chemistry laboratories and dissecting-rooms, lecture-rooms, dining, reading and common rooms and the offices of the dean. The physiology department is in another of the houses and the biochemistry and physics department in a third; since last year the physics department has been moved to roomier quarters in a neighbouring building. Teachers and students have been brought into closer contact. Athletic facilities are available for rugger, swimming, golf, tennis, squash and even rowing on the Medway. Students in the clinical years are working either at Guy's itself, which has been able to carry on in spite of serious damage, or at the sector hospitals at Farnborough, Pembury and Orpington. At Guy's, ward rounds, outpatients and courses of lectures are being conducted as in peace-time. The number of beds available for teaching has, of course, been reduced, but their loss has been more than balanced by the number of beds available in the sector hospitals, and recently a country branch of the hospital has been opened in the Wildernesse, a country club, at Seal, near Sevenoaks. This is to be called Guy's U.S.A. Hospital because the Hollywood branch of the "Bundles for Britain" organisation is taking a keen interest in it, and is providing much valuable equipment. This new annexe contains about 110 beds, but is unfortunately too small to house any part of the medical school. Teaching rounds are being held there, however, so that it is playing some part in medical education. At Farnborough and Pembury the teaching is undertaken by members of Guy's staff who are living there. After a preliminary period at Pembury, clinical students go to the sector hospitals to begin their appointments as clerks and dressers. After that they return to Guy's for the remainder of their training, with the exception of the obstetric course which is taken either at Farnborough or Pembury where there are large maternity wards. During the past year the examinations for entrance scholarships and most of the prize examinations have been conducted as usual. At present all students qualifying can take appointments as resident officers at Guy's or in various hospitals in the sector.

King's College Hospital

The medical school has now settled down, in so far as that is possible at present. Some students do their preclinical work at King's College (now a guest at Birmingham), others come from Oxford or Cambridge. In peace-time students are only admitted twice a year, but at present they are being admitted as soon as they pass their second M.B. examination. Newcomers to clinical work go at once to Horton Emergency Hospital at Epsom, where they are either housed in the hospital or billeted in the town. During the first three months they take an elementary course in clinical medicine and surgery and a full course in pathology in the laboratories of Epsom College. They spend their second six months at the Blind School Emergency Hospital, at Leatherhead, attached to medical and surgical firms, and during this period they are seconded for a fortnight to King's College Hospital and Croydon General for experience in casualty dressing. At the end of the six months at Leatherhead students return to Horton and continue as ward clerks and dressers for another year. They are attached to various firms for four months at a time. The firms are mixed, each having a physician, a general surgeon and a special surgeon attached to it. In addition to clinical work the students get their anæsthetic experience during this year. Towards the end of it they are seconded in groups to Cuckfield, where they see practice in children's diseases, and to Hayward's Heath Emergency Hospital for study of nervous diseases. They get their obstetric experience, both hospital and district, at the Mayday Hospital, Croydon, and return for their final period to King's College Hospital, where they live in, attend the outpatient department, and assist in the resuscitation room and the wards when air-raid casualties are admitted.

London Hospital

Students can come to the hospital direct, or from one of the universities. The London is responsible for Sectors I and II; it has escaped serious damage and remains the headquarters of the medical school. The beds have been reduced from the pre-war figure of 900 to 350. An annexe has been opened at Brentwood with 360 beds. The organisation of the E.M.S. at the beginning of the war brought the medical school into relation with all the hospitals in Essex and many in London, Middlesex and Hertfordshire. The clinical facilities of the school have thus been greatly extended by the war. Chemistry, physics and biology are taught at Queen Mary College, now transferred to Cambridge. The department of anatomy, physiology and pharmacology of the school were also removed to Cambridge at the beginning of the war with their professorial staffs. Courses for the primary fellowship are held in Cambridge twice a year in conjunction with the medical school of St Bartholomew's Hospital. Junior clinical students are sent first to Chase Farm E.M.S. Hospital at Enfield or to St Andrew's Hospital, Billericay, near the annexe at Brentwood. After six or nine months in the wards under London Hospital teachers they take a pathology course at Chase Farm and then go on either to the Brentwood annexe or to the North Middlesex County Hospital at Edmonton, which has a thousand beds. After a period as student house-officers or E.M.S. dressers at sector hospitals they return to the London or to one of the neighbouring L.C.C. hospitals as senior students to prepare for finals. During this period they live free of charge in the hospital to which they are attached as emergency dressers and come to the London for lectures and clinical teaching in the wards and out-patient departments. Students in the clinical years are excused from civil defence duties; during an emergency their services are needed in the hospital itself.

St. Mary's Hospital

The action of the Government in restricting the entry at all medical schools to a figure representing the average entry of the last three years will not affect St. Mary's. There the entry has been restricted for some years to preserve a constant ratio between number of beds and number of students. During the past year 68 students, preclinical and clinical, were admitted and 430 were in training. Fees and scholarships are unchanged. Students in the clinical years are taught in London at St. Mary's and at three large London County Council hospitals, two of which are in the neighbourhood of St. Mary's. They are also taught at Harefield, a Middlesex County hospital with 1000 beds 16 miles from London and staffed by St. Mary's, which represents a second St. Mary's outside London. Students live at all five hospitals and have access to a much larger number of beds than they do in peace-time. They all work at St. Mary's for some part of their training and take their pathology course there. The contact between students and members of the honorary staff has been much more intimate than in the past: five of the staff live in St. Mary's and at Harefield several others are living close to the doors of the hospital. Students thus see more of their teachers, and this innovation—perhaps the only change of moment in medical education during the war years—has probably come to stay. The small number of students at each hospital has made the association with teachers even closer.

Before the war there were 31 resident posts available; now 101 appointments are made annually by St. Mary's at the various hospitals of the sector. The holders work under members of the St. Mary's honorary staff and every man who applies can now get a resident appointment. St. Mary's itself, the medical school and the sports ground at Teddington have so far been undamaged by the war. The medical society and other student activities are going on as usual, and the rugby football club has had a successful season. The disadvantages of dispersal have, on the whole, been counterbalanced by the gains.

Middlesex Hospital

The school has been able to meet the demands of war without too much disorganisation. The preclinical students are guests of the medical school of Leeds University, where by courtesy of the Vice-Chancellor they are taught by their own professors for the London degree in medicine and for the examinations of the Conjoint Board. At present some of the clinical students are distributed in the three sector hospitals, Tindal House at Aylesbury, Mount Vernon at Northwood and the Central Middlesex at Willesden, but the greater part of them are at the Middlesex itself. There are ample patients in the sector hospitals and the students are moved between them according to the stage reached in their studies. Arrangements have lately been made for some students to receive instruction at the Royal Hospital, Wolverhampton, where there is abundant clinical material; students are grateful to the Royal Hospital staff for their tuition and interest.

Royal Free Hospital

The London School of Medicine is open only to women. Fees and resident appointments have not been affected by the war and additional house posts are available at the sector hospitals. The preclinical students of all three years are now working at University College of the South West, Exeter, and though they are suffering from lack of contact with the more senior years they are finding compensations. The clinical students are getting good and varied experience, acting as clerks and dressers for periods of three months at a time in the sector hospitals. They work at the E.M.S. hospital at Arlesey, at Oster House, St. Albans, and at Wellhouse Hospital, Barnet, in addition to the Royal Free itself. Their midwifery experience is gained at Shardeloes, Amersham, at the Mothers' Hospital, Clapton, and at Exeter. The scattering of students in several centres is bound to loosen the corporate bond of the school to some extent, but the varied clinical material has given the students insight into a wide range of conditions.

St. Thomas's Hospital

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University College Hospital

Since last year a medical school has been established at Stanboroughs Hydro, near Watford, where systematic teaching is given in medicine and surgery. The annexe houses the museum, library, lecture-room, bacteriological laboratories and restaurant, and rooms have also been assigned to the students' medical society and the women's common room club. Sixty students are quartered in the building. An introductory course in junior clinical medicine, surgery and pathology is held at the beginning of the winter and summer sessions and at the end of this course students begin their clerking and dressing appointments which cover a period of twelve months. Clinical teaching is carried out partly at Leavesden Emergency Hospital which is close to the medical school, and partly in Stanboroughs Hydro itself. While working at Leavesden some students live in a nearby villa which serves as a hostel and has been provided with a library, museum, recreation-room and canteen. Every student is seconded to University College Hospital for two periods of about three weeks each, to help in the emergency medical scheme and to act as dresser in the treatment of air-raid casualties. Experience in medical, surgical and gynæcological out-patient departments is gained at Watford Peace Memorial Hospital, where members of University College Hospital staff hold clinics.

are quarters here for sixty students, who sleep in dormitories warmed by gas fires and share the living-rooms, lecture-rooms, tennis-courts, playing-field and domestic service To limit the financial burden on parents at this time the school is bearing all overhead charges, which makes it possible to give accommodation and board to students at 35s a week Outbuildings have been converted into a pathological laboratory 45 feet long, this has been well equipped from the parent hospital, and the museum specimens have also been brought down The library is housed in the "silence room," which is also used for lectures, and the epidiascope has its place in the games room, which offers other attractions in the form of table-tennis, darts and a piano Students do their clinical work at Ashridge and at Stanmore Royal National Orthopædic Hospital, to which they are taken by a motor coach of character Enthusiasm for gardening is evident among Chaulden residents, especially for raising vegetables They have an active Home Guard section which is attached to the local contingent At Stanmore they get medical, surgical, orthopædic, gynæcological and special experience in abundance, but feel the lack of outpatients The Cambridge University Medical Society's analysis shows, however, that with access to 3000 beds students at Charing Cross are getting wider experience than students of any other metropolitan teaching hospital except the London

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Guy's Hospital

Students in the preclinical years are still working at Tunbridge Wells near the sector hospital of Pembury Four large buildings have been equipped and furnished, some as lecture-rooms and laboratories and others as hostels with accommodation for about 300 students The remaining students are living in lodgings in the district The largest of the four buildings, Sherwood Park, about a mile and a half from the town, contains the chemistry laboratories and dissecting-rooms, lecture-rooms, dining, reading and common rooms and the offices of the dean The physiology department is in another of the houses and the biochemistry and physics department in a third, since last year the physics department has been moved to roomier quarters in a neighbouring building Teachers and students have been brought into closer contact Athletic facilities are available for rugger, swimming, golf, tennis, squash and even rowing on the Medway Students in the clinical years are working either at Guy's itself, which has been able to carry on in spite of serious damage, or at the sector hospitals at Farnborough, Pembury and Orpington At Guy's, ward rounds, outpatients and courses of lectures are being conducted as in peace time The number of beds available for teaching has, of course, been reduced, but their loss has been more than balanced by the number of beds available in the sector hospitals, and recently a country branch of the hospital has been opened in the Wildernesse, a country club, at Seal, near Sevenoaks This is to be called Guy's U S A Hospital because the Hollywood branch of the "Bundles for Britain" organisation is taking a keen interest in it, and is providing much valuable equipment This new annexe contains about 110 beds, but is unfortunately too small to house any part of the medical school Teaching rounds are being held there, however, so that it is playing some part in medical education At Farnborough and Pembury the teaching is undertaken by members of Guy's staff who are living there After a preliminary period at Pembury, clinical students go to the sector hospitals to begin their appointments as clerks and dressers After that they return to Guy's for the remainder of their training, with the exception of the obstetric course which is taken either at Farnborough or Pembury where there are large maternity wards During the past year the examinations for entrance scholarships and most of the prize examinations have been conducted as usual At present all students qualifying can take appointments as resident officers at Guy's or in various hospitals in the sector

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The medical school has now settled down, in so far as that is possible at present Some students do their preclinical work at King's College (now a guest at Birmingham), others come from Oxford or Cambridge In peace-time students are only admitted twice a year, but at present they are being admitted as soon as they pass their second M B examination Newcomers to clinical work go at once to Horton Emergency Hospital at Epsom, where they are either housed in the hospital or billeted in the town During the first three months they take an elementary course in clinical medicine and surgery and a full course in pathology in the laboratories of Epsom College They spend their second six months at the Blind School Emergency Hospital, at Leatherhead attached to medical and surgical firms, and during this period they are seconded for a fortnight to King's College Hospital and Croydon General for experience in casualty dressing At the end of the six months at Leatherhead students return to Horton and continue as ward clerks and dressers for another year They are attached to various firms for four months at a time The firms are mixed, each having a physician, a general surgeon and a special surgeon attached to it In addition to clinical work the students get their anæsthetic experience during this year Towards the end of it they are seconded in groups to Cuckfield, where they see practice in children's diseases, and to Hayward's Heath Emergency Hospital for study of nervous diseases They get their obstetric experience, both hospital and district, at the Mayday Hospital, Croydon, and return for their final period to King's College Hospital, where they live in, attend the outpatient department, and assist in the resuscitation room and the wards when air-raid casualties are admitted

London Hospital

Students can come to the hospital direct, or from one of the universities The London is responsible for Sectors I and II, it has escaped serious damage and remains the headquarters of the medical school The beds have been reduced from the pre-war figure of 900 to 350 An annexe has been opened at Brentwood with 360 beds The organisation of the E M S at the beginning of the war brought the medical school into relation with all the hospitals in Essex and many in London, Middlesex and Hertfordshire The clinical facilities of the school have thus been greatly extended by the war Chemistry, physics and biology are taught at Queen Mary College, now transferred to Cambridge The department of anatomy, physiology and pharma-to pass a first examination in physics, biology and chemistry, a second in anatomy and physiology, and finals in pathology, pharmacology and general therapeutics, forensic medicine, toxicology, public health, medicine, surgery and obstetrics All fellowships have been withdrawn and no award will be made while the war lasts Scholarships will still be awarded No changes have been made in the regulations governing medical degrees

Medical graduates are eligible for the degree of M D on presenting a thesis and attending an oral examination on the subject of the thesis , or by passing an examination in medicine together with a selected branch of medicine The degree of Ch M is awarded on the result of an examination only The university also confers the degree of Master of Orthopædic Surgery (M Ch Orth), after examination upon graduates in medicine of Liverpool and other approved universities The university offers diplomas in radiology tropical medicine, tropical hygiene and public health The courses for the degree of M Ch Orth and for diplomas in radiology and public health are suspended at present and it is uncertain whether the courses for the diplomas in tropical medicine and hygiene will be held Full particulars may be obtained from the Dean of the Faculty of Medicine, University of Liverpool *

Medical education in Liverpool during the past year has been somewhat influenced by raids An extra term was introduced during the summer vacation, which enabled students to complete their statutory classes so that they could, in their final year take posts in the hospitals They are being used as housemen in both voluntary and municipal hospitals provided there is a qualified man also in residence, and that some members of the clinical lecturing staff hold appointments there This has worked well on the whole, but the introduction of a vacation term between the second and third year (anatomy and physiology period) was not a success because the compressed teaching gave students too little time to assimilate their subjects Anatomy and physiology, loaded as they are with unfamiliar terminology and new material, must have time to soak into the mind The extra term at this period has therefore been given up, but it is being maintained for students in their clinical years Students in their preclinical years are required to join the U T C Fourth-year students attached to hospitals which were seriously damaged in raids were transferred to firms in undamaged hospitals They undertake fire-watching at hospitals and at the university, and are also attached to hospital teams as dressers, for service during and after raids

It has not been easy to maintain an adequate standard of clinical teaching for fifth- and sixth-year students The depleted staffs have naturally faced increased professional work, and their teaching time has been correspondingly curtailed , but everyone has done the best he can Transport between the university and hospitals evacuated to outlying sites has been difficult for students, but those with cars have used them to give lifts, and others have managed somehow, except when transport services were upset

VICTORIA UNIVERSITY OF MANCHESTER

New regulations have been adopted making it possible for extramural candidates who have fulfilled specified requirements to take the first M B examination Clinical work is carried out at the Royal Infirmary, the Royal Manchester Children's Hospital, the Ancoats Hospital, St Mary s Hospitals for Women and Children, the Skin and Eye Hospitals, the Tuberculosis Clinic and Hospital, and the Babies' Hospital Fees and scholarships have not been altered Students are required to pass four examinations and first or second class honours may be awarded on the results of the finals The first examination includes physics, organic and inorganic chemistry, and biology the second anatomy and physiology, the third pharmacology and pathology and bacteriology and the final which confers the degree of M B Ch B is in forensic medicine, hygiene and preventive medicine, medicine surgery, obstetrics and gynæcology

Medical graduates who wish to take the M D degree may either present a thesis or take an examination For the Ch M degree the graduate must take an examination or he may present a thesis, which, if it be judged of sufficient merit may exempt him from a part or the whole of the written examination Courses and examinations for the diplomas in public health, psychological medicine and bacteriology are at present suspended and no other medical diploma is offered by the university All regulations may be obtained from the Dean of the Medical School University of Manchester *

The war has made little difference to the curriculum training of the preclinical students being conducted in the medical school and university much as it was before the war The university buildings have suffered little in raids Some of the hospitals were damaged and students were for a time unable to get experience in some of the special departments but temporary arrangements were made and turned out well General honours courses in anatomy and physiology, biology and physiology or chemistry and physiology have been arranged for the B Sc degree but it is not expected that there will be many applicants for these courses till the end of the war A Staff and Students Committee (five representatives of each with power to coopt) was appointed last year to discuss changes in the curriculum suggested by the students For some years there has been a liaison between staff and students for this purpose and a standing Curriculum Committee for teachers in the faculty represented by heads of departments was established some years ago Tutorial classes are held whenever possible and are more popular with students than lectures , they would be more numerous but for problems of staff Several teachers are serving with the forces, and their place has been taken by those who had retired or were about to retire Senior students are helping as locums in various hospitals where the staff has been depleted, and are finding the experience and responsibility valuable Defence air-training and S T C duties seem to have had an exhilarating effect on all the medical students who have undertaken them To make the twenty-four hours go as far as possible they have curtailed many of their social activities Indoor and outdoor sports are pursued in the Physical Education Centre and on the playing fields but socials and dances have been cut down The Students' Representative Council has arranged for lectures by well-known people during the year which have proved popular The school has good air-raid shelters in the basement , if a warning is given in the day-time the building can be cleared and the students safely housed in about two minutes At night the university shelters are open to the public who are admitted by ticket Two medical students are on duty each night in addition to caretakers and wardens

UNIVERSITY OF LEEDS

Candidates will be admitted to the medical course if they have obtained a higher school certificate with chemistry, and either physics or botany at principal standard Those who have not obtained this exemption must take a pre-registration year and an examination in inorganic chemistry and physics or must take the pre-registration examination from school Except in cases approved by the Vice-Chancellor students must have reached the age of 17 before coming to the university Two terms of the medical course proper are given up to organic and physical chemistry botany and zoology with an examination in March The third term is spent in introductory anatomy and biochemistry followed by five terms of anatomy and physiology An additional term—during which the student takes pharmacology and introductory pathology and bacteriology—has been interpolated between the examination in anatomy and physiology and the beginning of clinical studies Thus the medical course now lasts 5 years and 9 months but the rearrangement of work is likely to result in a higher percentage of passes and more students should complete the course within the minimum period up to last October when this revised course was introduced less than half the students had been completing their final examination in the minimum time The examinations for the degrees of M B and Ch B are as follows the first in organic and physical chemistry botany and zoology, the second in anatomy and physiology, materia medica and pharmacology and the final in three parts—pathology and bacteriology public health and forensic

West London Hospital

The youngest medical school in London gives preference to women students Until 1937 it was a centre of postgraduate teaching, but when the British Postgraduate Medical School was opened the West London decided to become an undergraduate teaching hospital Many of the staff were called up at the outbreak of war, but there has been time since then to rearrange teaching on a sound basis The hospital has suffered nothing from raids beyond the loss of windows and it has not been necessary to evacuate it or to transfer the school to the country The number of students has fallen to just over half the normal complement, and the number of occupied beds has also been reduced But there is a good turnover of cases since a group of patients are transferred every week to outlying sector hospitals, and the effective teaching material is thus maintained quantitatively and qualitatively at pre-war level One change has been forced on the school by the destruction of the maternity block at the West Middlesex County Hospital where students were wont to take their obstetric course the Middlesex County Council has provided excellent alternative experience at their Bushey Maternity Home The closing of the pathological department of the West London at the outbreak of war made the teaching of pathology difficult but examination results show that attempts to solve this problem have been successful Thanks to the cooperation of the coroner, students have been able to attend post-mortem examinations at the public mortuary and have found the experience to be of great value It is often assumed that such autopsies are chiefly of medicolegal interest, but in fact a high proportion of them provide excellent examples of common pathological conditions The authorities at the British Postgraduate Medical School have also cooperated in pathological teaching and in addition to two annual courses of pathology held at the West London advanced instruction is carried out at the Hammersmith Hospital Most of the students being women, they have suffered no serious loss of study time from defence duties, but many of them did voluntary work in the East End shelters during the worst air-raid periods

Westminster Hospital

Up to the end of 1940 Westminster carried on with little change in medical education Then the hospital was hit, and after this, as a precaution, no patients were admitted for a time As students were faced with an absolute dearth of clinical material plans were made for some of them to work at Staines Emergency Hospital and a hostel was taken there which would accommodate 20 of them at a time Teaching has been conducted by the Westminster staff and by the Middlesex County Council and E M S staff of the hospital It was soon possible to open some of the Westminster wards again and at present students are doing six months' clinical work at Staines and the rest at Westminster, where lectures, demonstrations and tutorials have continued without interruption They get excellent midwifery experience under their own teachers at Ripley attending expectant mothers transferred from the Westminster district There is no lack of applicants to the medical school, which as usual is full to capacity Students in the final year are excused from civil defence duties

UNIVERSITY OF DURHAM

The medical school of the university is at King's College, Newcastle-on-Tyne Before admission to the medical course students must pass or gain exemption from matriculation and the premedical examination in chemistry, physics and biology The course for the premedical examination can be taken at King's College or at other approved institutions The student seeking an M B B S must spend at least three years in residence in the university and must pass in addition to the premedical examination, a second examination in anatomy, physiology, materia medica, pharmacology and pharmacy, a third examination in pathology, bacteriology, public health and medical jurisprudence, and finals in medicine, surgery, midwifery and gynæcology, psychological medicine, ophthalmology, diseases of the skin, ear, nose, and throat, and of children Clinical training is given at the Royal Victoria Infirmary, the Princess Mary Maternity Hospital, the Fleming Memorial Hospital for Sick Children, Newcastle-on-Tyne General Hospital, and the City Hospitals for infectious and mental diseases Resident appointments are available in these hospitals for newly qualified men and women

The degree of M D may be obtained by medical graduates either by taking an examination or submitting a thesis The M S degree is given on the results of an examination only A medical graduate who wishes to take the degree of Doctor of Surgery (D Ch) must have spent at least three years in the study of surgery, one of them in the university, and not less than six months in surgical study abroad, and must present a thesis and pass an examination The university also offers the degrees of bachelor and doctor of hygiene, and diplomas in public health and psychiatry Particulars of regulations for all university examinations may be obtained from the Dean of Medicine, the Medical School, Newcastle-on-Tyne

The war has caused no direct interruption of work at King's College, and A R P, air training or S T C duties seem to have had no ill effects on students' studies Several senior students have taken resident appointments before qualifying and it seems that such appointments add considerably to their knowledge, the gain being reflected in examination results Students' social and athletic activities have continued undisturbed

UNIVERSITY OF BIRMINGHAM

Students at Birmingham are required to pass five professional examinations the first in biology, chemistry and physics, the second in anatomy and physiology, the third in pathology and bacteriology, the fourth (taken at the end of five years' work, of which two have been spent in hospital) in forensic medicine and toxicology, public health and materia medica, pharmacology and therapeutics, and the final, which confers the degree of M B, Ch B, in medicine, surgery, midwifery and diseases of women, mental diseases and ophthalmology Clinical instruction is given in Birmingham United Hospital, comprising the General and the Queen Elizabeth Hospitals Many resident appointments are available, and fees and scholarships are unchanged

An M D degree is granted to graduates who present a thesis and pass an examination Candidates for the degree of Master of Surgery (Ch M) are also required to submit a thesis in addition to taking an examination, if the thesis is of exceptional merit the candidate may be released from the whole or part of the examination The university offers a diploma in public health, but the course for this examination is suspended during the war Particulars of the university regulations may be obtained from the Dean of the Medical Faculty the Medical School, Hospitals Centre, Birmingham, 15 *

The school is finding it possible to give full clinical instruction in the Birmingham United Hospital Several teachers in the anatomy and physiology departments are now on active service and this has meant that teaching in these subjects is now concentrated on the practical aspects A reader in pharmacology has been appointed, who will take up his duties during the coming session There is no evidence that civil defence duties are hindering students in their work, and physically their well-being has increased rather than diminished Athletics are practised, not perhaps quite at pre-war level, but with relatively little falling off in the standard

UNIVERSITY OF LIVERPOOL

Students are required to pass the university matriculation or an equivalent examination before admission They must spend three years in the university, but the remaining three years of the course can be spent at any recognised university or medical school Clinical training is given in the Royal Liverpool United Hospital and in five special and two municipal hospitals Plenty of resident appointments are available to those qualifying To obtain the M B, Ch B degree students are required pass a first examination in physics, biology and emistry, a second in anatomy and physiology, and nals in pathology, pharmacology and general thera-eutics, forensic medicine, toxicology, public health, edicine surgery and obstetrics All fellowships have een withdrawn and no award will be made while the ar lasts Scholarships will still be awarded No hanges have been made in the regulations governing edical degrees

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* The entrance requirements for the Universities of Manchester Liverpool Leeds, Sheffield and Birmingham have been modified since the beginning of war they may be obtained from the Secretary Joint Matriculation Board 315 Oxford Road Manchester The faculty entrance requirements differ in each case from those of the university, they can be obtained from the Dean of the Faculty of Medicine in each university

Medical graduates are eligible for the degree of M D n presenting a thesis and attending an oral examination n the subject of the thesis , or by passing an examina-ion in medicine together with a selected branch of edicine The degree of Ch M is awarded on the result f an examination only The university also confers he degree of Master of Orthopædic Surgery (M Ch Orth), fter examination upon graduates in medicine of Liverpool and other approved universities The university ffers diplomas in radiology, tropical medicine, tropical ygiene and public health The courses for the degree f M Ch Orth and for diplomas in radiology and public ealth are suspended at present and it is uncertain hether the courses for the diplomas in tropical medicine nd hygiene will be held Full particulars may be btained from the Dean of the Faculty of Medicine, niversity of Liverpool *

Medical education in Liverpool during the past year has been somewhat influenced by raids An extra term was introduced during the summer vacation, which enabled students to complete their statutory classes so that they could, in their final year, take posts in the hospitals They are being used as housemen in both voluntary and municipal hospitals provided there is a qualified man also in residence, and that some members of the clinical lecturing staff hold appointments there This has worked well on the whole, but the introduction of a vacation term between the second and third year (anatomy and physiology period) was not a success because the compressed teaching gave students too little time to assimilate their subjects Anatomy and physiology, loaded as they are with unfamiliar terminology and new material, must have time to soak into the mind The extra term at this period has therefore been given up, but it is being maintained for students in their clinical years Students in their preclinical years are required to join the U T C Fourth-year students attached to hospitals which were seriously damaged in raids were transferred to firms in undamaged hospitals They undertake fire-watching at hospitals and at the university, and are also attached to hospital teams as dressers, for service during and after raids

It has not been easy to maintain an adequate standard of clinical teaching for fifth- and sixth-year students The depleted staffs have naturally faced increased professional work, and their teaching time has been correspondingly curtailed , but everyone has done the best he can Transport between the university and hospitals evacuated to outlying sites has been difficult for students, but those with cars have used them to give lifts, and others have managed somehow, except when transport services were upset

VICTORIA UNIVERSITY OF MANCHESTER

New regulations have been adopted making it possible for extramural candidates who have fulfilled specified requirements to take the first M B examination Clinical work is carried out at the Royal Infirmary, the Royal Manchester Children's Hospital, the Ancoats Hospital, St Mary's Hospitals for Women and Children, the Skin and Eye Hospitals, the Tuberculosis Clinic and Hospital, and the Babies' Hospital Fees and scholarships have not been altered Students are required to pass four examinations and first or second class honours may be awarded on the results of the finals The first examination includes physics, organic and inorganic chemistry, and biology the second anatomy and physiology, the third pharmacology, and pathology and bacteriology and the final, which confers the degree of M B , Ch B , is in forensic medicine, hygiene and preventive medicine, medicine, surgery, obstetrics and gynæcology

Medical graduates who wish to take the M D degree may either present a thesis or take an examination For the Ch M degree the graduate must take an examination or he may present a thesis, which, if it be judged of sufficient merit may exempt him from a part or the whole of the written examination Courses and examinations for the diplomas in public health, psychological medicine and bacteriology are at present suspended, and no other medical diploma is offered by the university All regulations may be obtained from the Dean of the Medical School, University of Manchester *

The war has made little difference to the curriculum, training of the preclinical students being conducted in the medical school and university much as it was before the war The university buildings have suffered little in raids Some of the hospitals were damaged and students were for a time unable to get experience in some of the special departments but temporary arrangements were made and turned out well General honours courses in anatomy and physiology, biology and physiology or chemistry and physiology have been arranged for the B Sc degree but it is not expected that there will be many applicants for these courses till the end of the war A Staff and Students Committee (five representatives of each with power to coopt) was appointed last year to discuss changes in the curriculum suggested by the students For some years there has been a liaison between staff and students for this purpose, and a standing Curriculum Committee for teachers in the faculty, represented by heads of departments, was established some years ago Tutorial classes are held whenever possible and are more popular with students than lectures , they would be more numerous but for problems of staff Several teachers are serving with the forces, and their place has been taken by those who had retired or were about to retire Senior students are helping as locums in various hospitals where the staff has been depleted, and are finding the experience and responsibility valuable Defence air-training and S T C duties seem to have had an exhilarating effect on all the medical students who have undertaken them To make the twenty-four hours go as far as possible they have curtailed many of their social activities Indoor and outdoor sports are pursued in the Physical Education Centre and on the playing fields but socials and dances have been cut down The Students' Representative Council has arranged for lectures by well-known people during the year, which have proved popular The school has good air-raid shelters in the basement , if a warning is given in the day-time the building can be cleared and the students safely housed in about two minutes At night the university shelters are open to the public who are admitted by ticket Two medical students are on duty each night in addition to caretakers and wardens

UNIVERSITY OF LEEDS

Candidates will be admitted to the medical course if they have obtained a higher school certificate with chemistry, and either physics or botany at principal standard Those who have not obtained this exemption must take a pre-registration year and an examination in inorganic chemistry and physics, or must take the pre-registration examination from school Except in cases approved by the Vice-Chancellor students must have reached the age of 17 before coming to the university Two terms of the medical course proper are given up to organic and physical chemistry, botany and zoology with an examination in March The third term is spent in introductory anatomy and biochemistry followed by five terms of anatomy and physiology An additional term—during which the student takes pharmacology and introductory pathology and bacteriology—has been interpolated between the examination in anatomy and physiology and the beginning of clinical studies Thus the medical course now lasts 5 years and 9 months but the rearrangement of work is likely to result in a higher percentage of passes, and more students should complete the course within the minimum period up to last October, when this revised course was introduced less than half the students had been completing their final examination in the minimum time The examinations for the degrees of M B and Ch B are as follows the first in organic and physical chemistry botany and zoology, the second in anatomy and physiology, materia medica and pharmacology and the final in three parts—pathology and bacteriology, public health and forensic

West London Hospital

The youngest medical school in London gives preference to women students Until 1937 it was a centre of postgraduate teaching, but when the British Postgraduate Medical School was opened the West London decided to become an undergraduate teaching hospital Many of the staff were called up at the outbreak of war, but there has been time since then to rearrange teaching on a sound basis The hospital has suffered nothing from raids beyond the loss of windows, and it has not been necessary to evacuate it or to transfer the school to the country The number of students has fallen to just over half the normal complement, and the number of occupied beds has also been reduced But there is a good turnover of cases since a group of patients are transferred every week to outlying sector hospitals, and the effective teaching material is thus maintained quantitatively and qualitatively at pre-war level One change has been forced on the school by the destruction of the maternity block at the West Middlesex County Hospital, where students were wont to take their obstetric course, the Middlesex County Council has provided excellent alternative experience at their Bushey Maternity Home The closing of the pathological department of the West London at the outbreak of war made the teaching of pathology difficult, but examination results show that attempts to solve this problem have been successful Thanks to the cooperation of the coroner, students have been able to attend post-mortem examinations at the public mortuary and have found the experience to be of great value It is often assumed that such autopsies are chiefly of medicolegal interest, but in fact a high proportion of them provide excellent examples of common pathological conditions The authorities at the British Postgraduate Medical School have also cooperated in pathological teaching and in addition to two annual courses of pathology held at the West London advanced instruction is carried out at the Hammersmith Hospital Most of the students being women, they have suffered no serious loss of study time from defence duties, but many of them did voluntary work in the East End shelters during the worst air-raid periods

Westminster Hospital

Up to the end of 1940 Westminster carried on with little change in medical education Then the hospital was hit, and after this, as a precaution, no patients were admitted for a time As students were faced with an absolute dearth of clinical material plans were made for some of them to work at Staines Emergency Hospital and a hostel was taken there which would accommodate 20 of them at a time Teaching has been conducted by the Westminster staff and by the Middlesex County Council and E M S staff of the hospital It was soon possible to open some of the Westminster wards again and at present students are doing six months' clinical work at Staines and the rest at Westminster, where lectures, demonstrations and tutorials have continued without interruption They get excellent midwifery experience under their own teachers at Ripley, attending expectant mothers transferred from the Westminster district There is no lack of applicants to the medical school, which as usual is full to capacity Students in the final year are excused from civil defence duties

UNIVERSITY OF DURHAM

The medical school of the university is at King's College, Newcastle-on-Tyne Before admission to the medical course students must pass or gain exemption from matriculation and the premedical examination in chemistry, physics and biology The course for the premedical examination can be taken at King's College or at other approved institutions The student seeking an M B , B S must spend at least three years in residence in the university and must pass, in addition to the premedical examination, a second examination in anatomy, physiology, materia medica, pharmacology and pharmacy, a third examination in pathology, bacteriology, public health and medical jurisprudence , and finals in medicine, surgery, midwifery and gynæcology, psychological medicine, ophthalmology, diseases of the skin, ear, nose, and throat, and of children Clinical training is given at the Royal Victoria Infirmary, the Princess Mary Maternity Hospital, the Fleming Memorial Hospital for Sick Children, Newcastle-on-Tyne General Hospital, and the City Hospitals for infectious and mental disease. Resident appointments are available in these hospitals for newly qualified men and women

The degree of M D may be obtained by medical graduates either by taking an examination or submitting a thesis The M S degree is given on the results of an examination only A medical graduate who wishes to take the degree of Doctor of Surgery (D Ch) must have spent at least three years in the study of surgery, one of them in the university, and not less than six months in surgical study abroad , and must present a thesis and pass an examination The university also offers the degrees of bachelor and doctor of hygiene , and diplomas in public health and psychiatry Particulars of regulations for all university examinations may be obtained from the Dean of Medicine, the Medical School, New castle-on-Tyne

The war has caused no direct interruption of work at King's College and A R P , air training or S T C duties seem to have had no ill effects on students' studies Several senior students have taken resident appointments before qualifying, and it seems that such appointments add considerably to their knowledge, the gain being reflected in examination results Students' social and athletic activities have continued undisturbed

UNIVERSITY OF BIRMINGHAM

Students at Birmingham are required to pass five professional examinations the first in biology, chemistry and physics , the second in anatomy and physiology , the third in pathology and bacteriology , the fourth (taken at the end of five years' work, of which two have been spent in hospital) in forensic medicine and toxicology, public health and materia medica, pharmacology and therapeutics , and the final, which confers the degree of M B , Ch B , in medicine, surgery, midwifery and diseases of women, mental diseases and ophthalmology Clinical instruction is given in Birmingham United Hospital, comprising the General and the Queen Elizabeth Hospitals Many resident appointments are available, and fees and scholarships are unchanged

An M D degree is granted to graduates who present a thesis and pass an examination Candidates for the degree of Master of Surgery (Ch M) are also required to submit a thesis in addition to taking an examination , if the thesis is of exceptional merit the candidate may be released from the whole or part of the examination The university offers a diploma in public health, but the course for this examination is suspended during the war Particulars of the university regulations may be obtained from the Dean of the Medical Faculty, the Medical School, Hospitals Centre, Birmingham, 15 *

The school is finding it possible to give full clinical instruction in the Birmingham United Hospital Several teachers in the anatomy and physiology departments are now on active service and this has meant that teaching in these subjects is now concentrated on the practical aspects A reader in pharmacology has been appointed, who will take up his duties during the coming session There is no evidence that civil defence duties are hindering students in their work, and physically their well-being has increased rather than diminished Athletics are practised, not perhaps quite at pre war level, but with relatively little falling off in the standard

UNIVERSITY OF LIVERPOOL

Students are required to pass the university matriculation or an equivalent examination before admission They must spend three years in the university, but the remaining three years of the course can be spent at any recognised university or medical school Clinical training is given in the Royal Liverpool United Hospital and in five special and two municipal hospitals Plenty of resident appointments are available to those qualifying To obtain the M B , Ch B degree students are required

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* The entrance requirements for the Universities of Manchester, Liverpool Leeds, Sheffield and Birmingham have been modified since the beginning of war, they may be obtained from the Secretary, Joint Matriculation Board, 315 Oxford Road Manchester The faculty entrance requirements differ in each case from those of the university , they can be obtained from the Dean of the Faculty of Medicine in each university

During the past year Bristol has experienced the effects of raids and has had to put into practice plans for the evacuation of patients and dispersal of medical students to outlying hospitals. In some cases this has been inconvenient because of the distances which must be travelled: most of the medical inpatients, for example, have been transferred to Weston-super-Mare. Some of the clinical teachers have entered the Services but the rest are carrying on, and on the whole the work of the medical school is going on satisfactorily. One preclinical department was badly damaged by raids, but thanks to various ingenious makeshifts teaching was carried on almost without interruption. Students have not so far been seriously inconvenienced by A.R.P. duties, though they were kept busy enough during raids. They achieve experience of casualty work on such occasions by serving with first-aid parties attached to the surgical teams in hospital. Apart from this, A.R.P. duties are no doubt something of a hindrance to study. Up to this summer S.T.C. and fire-watching duties have not been compulsory, but from now on they are to be enforced; students doing clinical work, however, will be exempted from joining the S.T.C.

UNIVERSITY OF WALES

Students are admitted to the Welsh National School of Medicine after passing matriculation in the University of Wales or an equivalent examination. The applicants are numerous and the school is always crowded. The suggestion has been made that medical students might be required to pass a junior matriculation followed a year later by a senior matriculation which would include the premedical science subjects. This would mean that students admitted could begin at once with anatomy and physiology. In the ordinary way the Welsh student passing anatomy, physiology and organic chemistry three years after matriculation and at a high standard receives a B.Sc. and then begins his three years of clinical work. As a war measure the university is permitting those who have passed their second M.B. examination at the end of two years to begin their clinical work at once. An additional examination in second M.B. subjects—anatomy and physiology—is to be held in September. This means that the final examination for the degree of M.B., B.Ch. in medicine, surgery and midwifery, can be taken five years after the date of matriculation instead of six.

Graduates in medicine may take an M.D. degree by passing an examination and submitting a thesis to the judgment of the university. For the degree of M.Ch. they must also present a thesis and pass an examination. The university offers diplomas in public health and in tuberculous diseases. Full particulars may be obtained from the Provost, the Welsh National School of Medicine, Cardiff.

Preclinical students work at University College, Cardiff, and clinical students receive their training in Cardiff Royal Infirmary, Llandough Hospital, Whitchurch Mental Hospital and the City Lodge Hospital. The time-table has been subject to some upheavals during the last year, perhaps in sympathy with other things in Cardiff. Damage from raids made it necessary to empty the infirmary for a time, but the outpatient department was soon going again and 150 beds were opened for ordinary patients while others were reserved for casualties. The blackout added further complications, since outpatients—many of whom came from a distance—had to be seen in the mornings instead of the afternoons, which made the morning an extremely busy time. After the damage to the infirmary, medical and surgical units of about 50 beds each were transferred to Whitchurch Mental Hospital. Students have transport available for the three-mile journey, so that they can get their experience with the units in the usual way. Time-tables of lectures and practical work have been made to fit in, and the plan is working well. The new pathological institute of the school is now partly finished and in use, so that the bulk of lectures can be given there; it has suffered only slight damage from raids. The students have settled down well and take their share of fire-watching and defence duties. Some have joined the Home Guard; there is no O.T.C. in Cardiff. Seniors go out with mobile units, and also get regular instruction at the Welsh Blood Transfusion Centre. They have given valuable help in hospitals during air-raids, and in surgery their teachers lay special emphasis on war-injuries. Plans have been made to meet the complete loss, during a raid, of any of the hospitals attached to the school. It is unlikely that all of them would be put out of commission at once, so that reciprocal arrangements should be feasible. If the pharmacology or pathology departments, with their elaborate equipment, were destroyed the problem would be more difficult, but plans for mutual help have been made with University College, Cardiff.

A group of 34 University College Hospital students were received as guests last October; they have been doing medicine at Llandough Hospital and sharing the experience of the Welsh students in surgery and pathology; this has worked well, and both groups of students have been happy in the association. The U.C.H. students are not expecting to return to Cardiff next October, but the picture may be different again by then. The school has also experienced what the Provost aptly calls "evacuated examinations." Under the emergency regulations, the conjoint final examinations have been held at Cardiff, one examiner being a local teacher and one coming from London; this has worked out well. Qualified men and senior students are being appointed as residents in South Wales hospitals; in Cardiff there are enough qualified men to fill the posts available but this would leave the other hospitals short. Efforts are being made to distribute to each hospital a just proportion of qualified and unqualified residents. The Welsh National School is always happy in the number of applicants for admission to the medical course. This year is no exception; the joint academic committee of the school and University College have to adjudicate between 140 applicants for about 40 places.

UNIVERSITY OF ABERDEEN

Candidates for admission to the university must have passed the preliminary examination of the Scottish Universities Entrance Board, or some equivalent examination and must hold the board's certificate of fitness. Students seeking the M.B., Ch.B. degree are required to pass a first examination in physics, chemistry and biology; a second in anatomy and physiology; a third in materia medica, pathology, forensic medicine, and public health and infectious diseases; and finals in medicine, surgery, and midwifery and the diseases peculiar to women and infants. Fees, scholarships and resident appointments are unaffected by the war.

The degree of M.D. may be conferred on medical graduates who pass an examination and submit a thesis. The M.Ch. degree is conferred on similar terms, but if the thesis is of special merit the candidate may be exempted from the whole or part of the examination. The university offers a diploma in public health. Details of university regulations may be obtained from the Dean of the Faculty of Medicine, Aberdeen University.

Medical education has been little changed in Aberdeen. Students have been admitted in their usual numbers, and all the usual departments and hospitals are available to them, though the teaching staff is slightly reduced. A.R.P. and S.T.C. duties do not seem to have affected the standard of work. Students are required to live in the university residence on the hospital site for at least four months during their training—for two months while doing clinical midwifery and two months while doing clinical medicine and surgery. The university has lately had a new hall of residence for students built at Foresterhill, close to the general, maternity and children's hospitals, and the new university medical buildings; this is to be opened to residents in October. Aberdeen differs from the other Scottish universities in having started the new curriculum, based on the recommendations of the General Medical Council, in 1938; all had intended to adopt it, but the other Scottish universities had not begun it when war broke out. The effect of the new curriculum has been to extend the period of university training from 5 years (15 terms) to 5⅔ years (17 terms); the courses and examinations in natural sciences are included, under this arrangement, in the university course, instead of being taken from school as in the case in some other universities. Three years' experience at Aberdeen seems to show that the curriculum is giving satisfaction.

medicine, and medicine, surgery, obstetrics and therapeutics

For the M D degree candidates must present a thesis or pass an examination in a selected subject, or both The degree of Ch M is awarded on the result of an examination The university also offers diplomas in public health and in psychological medicine The course for the D P M has been suspended while the war lasts, but the D P H course was held last session, and will be held again in the coming session if sufficient candidates apply Particulars of the regulations may be obtained from the Dean of the Faculty of Medicine, University of Leeds *

Teaching has continued smoothly in spite of reduced staff and diminished clinical material In the preclinical years the routine work has been almost normal, even though accommodation has had to be found for about eighty students from the Middlesex Hospital with their teaching and technical staffs and equipment The departments of anatomy and physiology have thus been congested but the Middlesex staff and students have been welcome friends and have entered into the life of the Leeds school Courses in pathology and bacteriology have been unaffected and there has been no reduction in post-mortem work at the Leeds Infirmary *on which much pathological teaching depends* In the wards teaching has suffered from lack of clinical material and by the absence of members of the staff on war service , but in the last few months beds have been put into what will later become the new outpatient department Casualty and outpatient work continue as usual The university buildings have suffered no war damage and candidates for admission to the medical course are flooding in The school has rather limited general accommodation It was built to house a much smaller body of students than it now takes Fine new laboratories have been built for pathology, bacteriology and physiology but there has been no increase in space in library, common room or refectory Schemes for new buildings are under consideration but during the war, of course, nothing can be done about them A large part of the department of experimental pathology has been taken over by the Ministry of Health as a regional blood transfusion centre

The effect of the new reservation conditions entailing membership of the U T C , air training squadron or Home Guard cannot yet be forecast While membership of the U T C was voluntary it did not interfere materially with students' studies—but the volunteers have usually been of the type who will get on well in any case

UNIVERSITY OF SHEFFIELD

In Sheffield University medical school regulations, scholarships, fees and resident appointments are little changed Prospective students take a pre-registration examination or an examination of equivalent standing and are then required to pass four professional examinations the first in biology, chemistry and physics , the second in anatomy and physiology , the third in pathology and bacteriology, pharmacology, applied anatomy and applied physiology , and the final examination which confers the M B , Ch B in medicine, therapeutics, surgery and midwifery, forensic medicine and public health It has always been held, at Sheffield, that any abrupt break between the preclinical and the clinical parts of the curriculum is purely artificial—that no part of the student's studies can strictly be called preclinical The curriculum is therefore conducted as a unified study Anatomy and physiology are taught until the student's fifth year, long after he has passed his second professional examination, and he takes his examination in applied anatomy and applied physiology only a year before he qualifies His clinical work begins not with a dressership but with a six months' shepherding course under medical and surgical tutors, starting at a time when he has done only one year of anatomy and physiology , at the same time he is being introduced to bacteriology, pathology and pharmacology Clinical teaching is given at the Sheffield Royal Infirmary, the Sheffield Royal Hospital and the Jessop Hospital for Women

Graduates taking an M D degree must either pass an examination or submit a thesis, those taking an M Ch are required to pass an examination only The University grants no medical diplomas, but offers the degrees of bachelor and master of dental surgery, and the diploma of licentiate in dental surgery Details of the regulations may be obtained from the Dean of the Faculty of Medicine, University of Sheffield *

The war has interfered remarkably little with the normal routine of the medical school Bombing did minor damage, soon repaired, to the university buildings, without interrupting teaching Clinical instruction continues at all the teaching hospitals although the number of inpatients has been reduced For about a month while raids were going on outpatients were few, but numbers have now increased to the average war time level of about half to three-quarters of the peace-time numbers Sheffield has always taken a pride in the high number of beds available to every student, and can still offer a larger number than most schools in the country Plans have been made whereby, if the general hospitals should suffer serious damage, clinical teaching will be carried on at the municipal and auxiliary hospitals in the neighbourhood Maternity cases are now delivered in outlying hospitals, but there is plenty of living-accommodation near these, and students are having no difficulty in getting their proper experience

Each hospital has an A R P and an emergency medical scheme by which clinical students can be called into service in teams when they are needed Senior students are taking resident posts and have profited by the wider experience of clinical work and the increased responsibility Nearly all the students are doing some sort of war work The Ministry of Labour and National Service now requires that students in a reserved category should serve in either the S T C or U A S , and should submit a satisfactory report of progress every six months These requirements may mean that other war service has to be given up The authorities of the medical faculty have decided to apply for exemption from the Ministry's requirement for students entering their fourth year provided they offer their services in the emergency teams of an approved hospital Students have organised among themselves a compulsory service of fire-watchers for the university buildings Judging by examination standards their work has not suffered as a result of the distractions of war

The idea of having an extra term during the summer vacation has not found favour because it would dislocate the curriculum too much Clinical students continue their work throughout the summer in any case, and extra tuition at that time would not help to shorten the course for them In preclinical years an extra term, it is felt, would merely prevent students from doing work of national importance which many of them undertake during the summer—on the land and elsewhere Probably from now onwards most of them will be doing almost full-time training during the summer with the S T C The number of applicants for entry to the medical school has increased considerably, but since the number of men is limited by the official quota, the increase will be made up wholly of women

UNIVERSITY OF BRISTOL

Students who are admitted to the university must have passed a recognised school certificate examination with credit in five subjects, or an equivalent For the degree of M B , Ch B they are required to pass three examinations the first in physics, chemistry and biology , the second in anatomy, physiology, elementary pharmacology and elementary pathology , and the final, section I, in materia medica and pharmacy, pharmacology, pharmacotherapeutics and toxicology, pathology and bacteriology and section II in medicine, surgery and obstetrics

The degree of M D may be conferred on medical graduates who have passed the necessary examination or whose dissertations have been approved The degree of Ch M is offered to graduates who submit a thesis and take an examination in surgery A thesis of exceptional merit may win the candidate exemption from part of the examination The only diploma offered by the faculty of medicine at the university, at present, is in dental surgery The diploma in public health has been in abeyance for some years All regulations may be obtained from the Dean of the Faculty of Medicine, University of Bristol

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* See footnote on p. 244

During the past year Bristol has experienced the effects of raids and has had to put into practice plans for the evacuation of patients and dispersal of medical students to outlying hospitals In some cases this has been inconvenient because of the distances which must be travelled most of the medical inpatients, for example, have been transferred to Weston-super-Mare Some of the clinical teachers have entered the Services but the rest are carrying on, and on the whole the work of the medical school is going on satisfactorily One preclinical department was badly damaged by raids, but thanks to various ingenious makeshifts teaching was carried on almost without interruption Students have not so far been seriously inconvenienced by A R P duties, though they were kept busy enough during raids They achieve experience of casualty work on such occasions by serving with first-aid parties attached to the surgical teams in hospital Apart from this, A R P duties are no doubt something of a hindrance to study Up to this summer S T C and fire-watching duties have not been compulsory, but from now on they are to be enforced , students doing clinical work, however, will be exempted from joining the S T C

UNIVERSITY OF WALES

Students are admitted to the Welsh National School of Medicine after passing matriculation in the University of Wales or an equivalent examination The applicants are numerous and the school is always crowded The suggestion has been made that medical students might be required to pass a junior matriculation followed a year later by a senior matriculation which would include the premedical science subjects This would mean that students admitted could begin at once with anatomy and physiology In the ordinary way the Welsh student passing anatomy, physiology and organic chemistry three years after matriculation and at a high standard receives a B Sc and then begins his three years of clinical work As a war measure the university is permitting those who have passed their second M B examination at the end of two years to begin their clinical work at once An additional examination in second M B subjects—anatomy and physiology—is to be held in September This means that the final examination for the degree of M B , B Ch in medicine, surgery and midwifery, can be taken five years after the date of matriculation instead of six

Graduates in medicine may take an M D degree by passing an examination and submitting a thesis to the judgment of the university For the degree of M Ch they must also present a thesis and pass an examination The university offers diplomas in public health and in tuberculous diseases Full particulars may be obtained from the Provost, the Welsh National School of Medicine, Cardiff

Preclinical students work at University College, Cardiff, and clinical students receive their training in Cardiff Royal Infirmary, Llandough Hospital, Whitchurch Mental Hospital and the City Lodge Hospital The time-table has been subject to some upheavals during the last year, perhaps in sympathy with other things in Cardiff Damage from raids made it necessary to empty the infirmary for a time, but the outpatient department was soon going again and 150 beds were opened for ordinary patients while others were reserved for casualties The blackout added further complications, since outpatients—many of whom came from a distance—had to be seen in the mornings instead of the afternoons which made the morning an extremely busy time After the damage to the infirmary, medical and surgical units of about 50 beds each were transferred to Whitchurch Mental Hospital Students have transport available for the three-mile journey, so that they can get their experience with the units in the usual way Time-tables of lectures and practical work have been made to fit in, and the plan is working well The new pathological institute of the school is now partly finished and in use, so that the bulk of lectures can be given there , it has suffered only slight damage from raids The students have settled down well and take their share of fire-watching and defence duties Some have joined the Home Guard , there is no O T C in Cardiff Seniors go out with mobile units, and also get regular instruction at the Welsh Blood Transfusion Centre They have given valuable help in hospitals during air-raids, and in surgery their teachers lay special emphasis on war-injuries. Plans have been made to meet the complete loss during a raid, of any of the hospitals attached to the school It is unlikely that all of them would be put out of commission at once, so that reciprocal arrangements should be feasible If the pharmacology or pathology departments, with their elaborate equipment, were destroyed the problem would be more difficult but plans for mutual help have been made with University College, Cardiff

A group of 34 University College Hospital students were received as guests last October, they have been doing medicine at Llandough Hospital and sharing the experience of the Welsh students in surgery and pathology , this has worked well, and both groups of students have been happy in the association The U C H students are not expecting to return to Cardiff next October, but the picture may be different again by then The school has also experienced what the Provost aptly calls " evacuated examinations " Under the emergency regulations, the conjoint final examinations have been held at Cardiff, one examiner being a local teacher and one coming from London , this has worked out well Qualified men and senior students are being appointed as residents in South Wales hospitals , in Cardiff there are enough qualified men to fill the posts available, but this would leave the other hospitals short Efforts are being made to distribute to each hospital a just proportion of qualified and unqualified residents The Welsh National School is always happy in the number of applicants for admission to the medical course This year is no exception , the joint academic committee of the school and University College have to adjudicate between 140 applicants for about 40 places

UNIVERSITY OF ABERDEEN

Candidates for admission to the university must have passed the preliminary examination of the Scottish Universities Entrance Board, or some equivalent examination and must hold the board's certificate of fitness Students seeking the M B , Ch B degree are required to pass a first examination in physics, chemistry and biology , a second in anatomy and physiology , a third in materia medica, pathology, forensic medicine, and public health and infectious diseases , and finals in medicine, surgery, and midwifery and the diseases peculiar to women and infants Fees, scholarships and resident appointments are unaffected by the war

The degree of M D may be conferred on medical graduates who pass an examination and submit a thesis The M Ch degree is conferred on similar terms, but if the thesis is of special merit the candidate may be exempted from the whole or part of the examination The university offers a diploma in public health Details of university regulations may be obtained from the Dean of the Faculty of Medicine, Aberdeen University

Medical education has been little changed in Aberdeen Students have been admitted in their usual numbers, and all the usual departments and hospitals are available to them, though the teaching staff is slightly reduced A R P and S T C duties do not seem to have affected the standard of work Students are required to live in the university residence on the hospital site for at least four months during their training—for two months while doing clinical midwifery and two months while doing clinical medicine and surgery The university has lately had a new hall of residence for students built at Foresterhill, close to the general, maternity and children's hospitals, and the new university medical buildings , this is to be opened to residents in October Aberdeen differs from the other Scottish universities in having started the new curriculum, based on the recommendations of the General Medical Council, in 1938 , all had intended to adopt it, but the other Scottish universities had not begun it when war broke out The effect of the new curriculum has been to extend the period of university training from 5 years (15 terms) to 5½ years (17 terms) , the courses and examinations in natural sciences are included, under this arrangement, in the university course, instead of being taken from school as in the case in some other universities Three years' experience at Aberdeen seems to show that the curriculum is giving satisfaction medicine, and medicine, surgery, obstetrics and therapeutics

For the M D degree candidates must present a thesis or pass an examination in a selected subject, or both The degree of Ch M is awarded on the result of an examination The university also offers diplomas in public health and in psychological medicine The course for the D P M has been suspended while the war lasts, but the D P H course was held last session, and will be held again in the coming session if sufficient candidates apply Particulars of the regulations may be obtained from the Dean of the Faculty of Medicine, University of Leeds *

Teaching has continued smoothly in spite of reduced staff and diminished clinical material In the preclinical years the routine work has been almost normal, even though accommodation has had to be found for about eighty students from the Middlesex Hospital with their teaching and technical staffs and equipment The departments of anatomy and physiology have thus been congested but the Middlesex staff and students have been welcome friends and have entered into the life of the Leeds school Courses in pathology and bacteriology have been unaffected and there has been no reduction in post-mortem work at the Leeds Infirmary on which much pathological teaching depends In the wards teaching has suffered from lack of clinical material and by the absence of members of the staff on war service , but in the last few months beds have been put into what will later become the new outpatient department Casualty and outpatient work continue as usual The university buildings have suffered no war damage and candidates for admission to the medical course are flooding in The school has rather limited general accommodation It was built to house a much smaller body of students than it now takes Fine new laboratories have been built for pathology, bacteriology and physiology but there has been no increase in space in library, common room or refectory Schemes for new buildings are under consideration but during the war, of course, nothing can be done about them A large part of the department of experimental pathology has been taken over by the Ministry of Health as a regional blood transfusion centre

The effect of the new reservation conditions entailing membership of the U T C, air training squadron or Home Guard cannot yet be forecast While membership of the U T C was voluntary it did not interfere materially with students' studies—but the volunteers have usually been of the type who will get on well in any case

UNIVERSITY OF SHEFFIELD

In Sheffield University medical school regulations, scholarships, fees and resident appointments are little changed Prospective students take a pre-registration examination or an examination of equivalent standing and are then required to pass four professional examinations the first in biology, chemistry and physics , the second in anatomy and physiology , the third in pathology and bacteriology, pharmacology, applied anatomy and applied physiology , and the final examination which confers the M B , Ch B in medicine, therapeutics, surgery and midwifery, forensic medicine and public health It has always been held, at Sheffield, that any abrupt break between the preclinical and the clinical parts of the curriculum is purely artificial—that no part of the student's studies can strictly be called preclinical The curriculum is therefore conducted as a unified study Anatomy and physiology are taught until the student's fifth year, long after he has passed his second professional examination, and he takes his examination in applied anatomy and applied physiology only a year before he qualifies His clinical work begins not with a dressership but with a six months' shepherding course under medical and surgical tutors, starting at a time when he has done only one year of anatomy and physiology , at the same time he is being introduced to bacteriology, pathology and pharmacology Clinical teaching is given at the Sheffield Royal Infirmary, the Sheffield Royal Hospital and the Jessop Hospital for Women

Graduates taking an M D degree must either pass an examination or submit a thesis, those taking an M Ch are required to pass an examination only The University grants no medical diplomas, but offers the degrees of bachelor and master of dental surgery, and the diploma of licentiate in dental surgery Details of the regulations may be obtained from the Dean of the Faculty of Medicine, University of Sheffield *

The war has interfered remarkably little with the normal routine of the medical school Bombing did minor damage, soon repaired, to the university buildings, without interrupting teaching Clinical instruction continues at all the teaching hospitals although the number of inpatients has been reduced For about a month while raids were going on outpatients were few, but numbers have now increased to the average war-time level of about half to three-quarters of the peace time numbers Sheffield has always taken a pride in the high number of beds available to every student, and can still offer a larger number than most schools in the country Plans have been made whereby, if the general hospitals should suffer serious damage, clinical teaching will be carried on at the municipal and auxiliary hospitals in the neighbourhood Maternity cases are now delivered in outlying hospitals, but there is plenty of living accommodation near these, and students are having no difficulty in getting their proper experience

Each hospital has an A R P and an emergency medical scheme by which clinical students can be called into service in teams when they are needed Senior students are taking resident posts and have profited by the wider experience of clinical work and the increased responsibility Nearly all the students are doing some sort of war work The Ministry of Labour and National Service now requires that students in a reserved category should serve in either the S T C or U A S , and should submit a satisfactory report of progress every six months These requirements may mean that other war service has to be given up The authorities of the medical faculty have decided to apply for exemption from the Ministry's requirement for students entering their fourth year provided they offer their services in the emergency teams of an approved hospital Students have organised among themselves a compulsory service of fire-watchers for the university buildings Judging by examination standards their work has not suffered as a result of the distractions of war

The idea of having an extra term during the summer vacation has not found favour because it would dislocate the curriculum too much Clinical students continue their work throughout the summer in any case, and extra tuition at that time would not help to shorten the course for them In preclinical years an extra term, it is felt, would merely prevent students from doing work of national importance which many of them undertake during the summer—on the land and elsewhere Probably from now onwards most of them will be doing almost full-time training during the summer with the S T C The number of applicants for entry to the medical school has increased considerably, but since the number of men is limited by the official quota, the increase will be made up wholly of women

UNIVERSITY OF BRISTOL

Students who are admitted to the university must have passed a recognised school certificate examination with credit in five subjects, or an equivalent For the degree of M B , Ch B they are required to pass three examinations the first in physics, chemistry and biology , the second in anatomy, physiology, elementary pharmacology and elementary pathology , and the final, section I in materia medica and pharmacy, pharmacology, pharmacotherapeutics and toxicology, pathology and bacteriology and section II in medicine, surgery and obstetrics

The degree of M D may be conferred on medical graduates who have passed the necessary examination or whose dissertations have been approved The degree of Ch M is offered to graduates who submit a thesis and take an examination in surgery A thesis of exceptional merit may win the candidate exemption from part of the examination The only diploma offered by the faculty of medicine at the university, at present, is in dental surgery The diploma in public health has been in abeyance for some years All regulations may be obtained from the Dean of the Faculty of Medicine, University of Bristol

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* See footnote on p 244

During the past year Bristol has experienced the effects of raids and has had to put into practice plans for the evacuation of patients and dispersal of medical students to outlying hospitals. In some cases this has been inconvenient because of the distances which must be travelled: most of the medical inpatients, for example, have been transferred to Weston-super-Mare. Some of the clinical teachers have entered the Services but the rest are carrying on, and on the whole the work of the medical school is going on satisfactorily. One preclinical department was badly damaged by raids, but thanks to various ingenious makeshifts teaching was carried on almost without interruption. Students have not so far been seriously inconvenienced by A.R.P. duties, though they were kept busy enough during raids. They achieve experience of casualty work on such occasions by serving with first-aid parties attached to the surgical teams in hospital. Apart from this, A.R.P. duties are no doubt something of a hindrance to study. Up to this summer S.T.C. and fire-watching duties have not been compulsory, but from now on they are to be enforced; students doing clinical work, however, will be exempted from joining the S.T.C.

UNIVERSITY OF WALES

Students are admitted to the Welsh National School of Medicine after passing matriculation in the University of Wales or an equivalent examination. The applicants are numerous and the school is always crowded. The suggestion has been made that medical students might be required to pass a junior matriculation followed a year later by a senior matriculation which would include the premedical science subjects. This would mean that students admitted could begin at once with anatomy and physiology. In the ordinary way the Welsh student passing anatomy, physiology and organic chemistry three years after matriculation and at a high standard receives a B.Sc. and then begins his three years of clinical work. As a war measure the university is permitting those who have passed their second M.B. examination at the end of two years to begin their clinical work at once. An additional examination in second M.B. subjects—anatomy and physiology—is to be held in September. This means that the final examination for the degree of M.B., B.Ch. in medicine, surgery and midwifery, can be taken five years after the date of matriculation instead of six.

Graduates in medicine may take an M.D. degree by passing an examination and submitting a thesis to the judgment of the university. For the degree of M.Ch. they must also present a thesis and pass an examination. The university offers diplomas in public health and in tuberculous diseases. Full particulars may be obtained from the Provost, the Welsh National School of Medicine, Cardiff.

Preclinical students work at University College, Cardiff, and clinical students receive their training in Cardiff Royal Infirmary, Llandough Hospital, Whitchurch Mental Hospital and the City Lodge Hospital. The time-table has been subject to some upheavals during the last year, perhaps in sympathy with other things in Cardiff. Damage from raids made it necessary to empty the infirmary for a time, but the outpatient department was soon going again and 150 beds were opened for ordinary patients while others were reserved for casualties. The blackout added further complications, since outpatients—many of whom came from a distance—had to be seen in the mornings instead of the afternoons which made the morning an extremely busy time. After the damage to the infirmary, medical and surgical units of about 50 beds each were transferred to Whitchurch Mental Hospital. Students have transport available for the three-mile journey, so that they can get their experience with the units in the usual way. Time-tables of lectures and practical work have been made to fit in, and the plan is working well. The new pathological institute of the school is now partly finished and in use, so that the bulk of lectures can be given there; it has suffered only slight damage from raids. The students have settled down well and take their share of fire-watching and defence duties. Some have joined the Home Guard; there is no O.T.C. in Cardiff. Seniors go out with mobile units, and also get regular instruction at the Welsh Blood Transfusion Centre. They have given valuable help in hospitals during air-raids, and in surgery their teachers lay special emphasis on war-injuries. Plans have been made to meet the complete loss, during a raid, of any of the hospitals attached to the school. It is unlikely that all of them would be put out of commission at once, so that reciprocal arrangements should be feasible. If the pharmacology or pathology departments, with their elaborate equipment, were destroyed the problem would be more difficult, but plans for mutual help have been made with University College, Cardiff.

A group of 34 University College Hospital students were received as guests last October; they have been doing medicine at Llandough Hospital and sharing the experience of the Welsh students in surgery and pathology; this has worked well, and both groups of students have been happy in the association. The U.C.H. students are not expecting to return to Cardiff next October, but the picture may be different again by then. The school has also experienced what the Provost aptly calls "evacuated examinations." Under the emergency regulations, the conjoint final examinations have been held at Cardiff, one examiner being a local teacher and one coming from London; this has worked out well. Qualified men and senior students are being appointed as residents in South Wales hospitals; in Cardiff there are enough qualified men to fill the posts available, but this would leave the other hospitals short. Efforts are being made to distribute to each hospital a just proportion of qualified and unqualified residents. The Welsh National School is always happy in the number of applicants for admission to the medical course. This year is no exception; the joint academic committee of the school and University College have to adjudicate between 140 applicants for about 40 places.

UNIVERSITY OF ABERDEEN

Candidates for admission to the university must have passed the preliminary examination of the Scottish Universities Entrance Board, or some equivalent examination and must hold the board's certificate of fitness. Students seeking the M.B., Ch.B. degree are required to pass a first examination in physics, chemistry and biology; a second in anatomy and physiology; a third in materia medica, pathology, forensic medicine, and public health and infectious diseases; and finals in medicine, surgery, and midwifery and the diseases peculiar to women and infants. Fees, scholarships and resident appointments are unaffected by the war.

The degree of M.D. may be conferred on medical graduates who pass an examination and submit a thesis. The M.Ch. degree is conferred on similar terms, but if the thesis is of special merit the candidate may be exempted from the whole or part of the examination. The university offers a diploma in public health. Details of university regulations may be obtained from the Dean of the Faculty of Medicine, Aberdeen University.

Medical education has been little changed in Aberdeen. Students have been admitted in their usual numbers, and all the usual departments and hospitals are available to them, though the teaching staff is slightly reduced. A.R.P. and S.T.C. duties do not seem to have affected the standard of work. Students are required to live in the university residence on the hospital site for at least four months during their training—for two months while doing clinical midwifery and two months while doing clinical medicine and surgery. The university has lately had a new hall of residence for students built at Foresterhill, close to the general, maternity and children's hospitals, and the new university medical buildings; this is to be opened to residents in October. Aberdeen differs from the other Scottish universities in having started the new curriculum, based on the recommendations of the General Medical Council, in 1938; all had intended to adopt it, but the other Scottish universities had not begun it when war broke out. The effect of the new curriculum has been to extend the period of university training from 5 years (15 terms) to 5½ years (17 terms); the courses and examinations in natural sciences are included, under this arrangement, in the university course, instead of being taken from school as in the case in some other universities. Three years' experience at Aberdeen seems to show that the curriculum is giving satisfaction.

The ultimate test will be, as the dean points out, the final product which should be ready by 1944. If the war goes on the authorities propose to speed up the course at the end of the summer term of 1942 by introducing vacation courses, which will enable those who began the new curriculum in 1938 to qualify by September, 1943. This will be an interesting experiment, the new course being completed in 5 years instead of 5 years and 2 terms; it may even lead to a shortening of the long vacation when peace returns. But it is unlikely that the principle of speeding up will be approved except to meet an emergency like the present one.

UNIVERSITY OF EDINBURGH

Students are admitted when they have passed a preliminary or other examination recognised by the Scottish Universities Entrance Board and a pre-registration examination in physics and chemistry. Fees and scholarships are unchanged and the number of medical students has not been seriously affected by the war. The first examination is in chemistry, zoology, physics and botany; the second in anatomy and physiology, taken at the end of the second year; the third examination is in pathology, bacteriology, materia medica and therapeutics, and the final which confers the degree of M.B., Ch.B. in forensic medicine, public health, midwifery, surgery and medicine. During his fourth and fifth years the student spends six months at one of the city dispensaries, when he has an opportunity of visiting the sick poor in their own homes. Hospital work is carried out at the Royal Infirmary and at various municipal and special hospitals in the city.

Candidates for the M.D. degree must be medical graduates and must submit a thesis and pass an examination; they may be exempted from the examination by an exceptionally meritorious thesis. For the Ch.M. degree they must fulfil similar conditions. The university offers diplomas in public health, radiology, psychiatry, and tropical medicine and hygiene. Full particulars may be obtained from the Dean of the Faculty of Medicine, University of Edinburgh.

No parts of the curriculum have suffered specially as the result of war. The main courses have been carried on as usual but a few voluntary courses—such as that on the history of medicine—have been discontinued for the present. In 1939 the university authorities were working on the details of a new curriculum which was to increase the period of study from five years to six; but the war has prevented this from being put into operation. A number of short courses on subjects bearing on civil defence and medical work in the Forces have been introduced for senior students; those on medical aspects of A.R.P. and the treatment of gas injuries are now compulsory. In the clinical courses special instruction is given on first aid and the treatment of war wounds. Students have shown great keenness over these courses, and are anxious to prove useful in an emergency. Nearly all are attached to some organisation which will give service in air-raids. The senior students form part of fixed or mobile surgical teams, while junior students are attached to first-aid posts, hospital reception posts or stretcher-bearer parties. In the coming year all male first and second year students will be required to join the Senior Training Corps; those in the third, fourth and fifth years will probably be formed into special medical units and attached to the Home Guard. Civil defence duties do not seem to have hindered study; on the contrary, some duties of the kind have provided valuable experience.

Surgeons' Hall

The School of Medicine of the Royal Colleges of Edinburgh holds no professional examinations of its own but prepares students for the degrees of Edinburgh, London, and other universities, or more commonly for the qualifying examinations of the English, Irish or Scottish Conjoint Boards. Till the outbreak of war there were 700 students in attendance. The systematic classes are held in Surgeons' Hall and the New School, and clinical teaching is provided mainly in the Royal Infirmary, where students may gain resident appointments on qualifying. Particulars are to be had from the Dean, Surgeons' Hall, Edinburgh.

UNIVERSITY OF GLASGOW

Students are admitted who have passed the preliminary of the Scottish Universities Entrance Board or an equivalent examination, and who hold the board's certificate of fitness. There are four professional examinations for the M.B., Ch.B. degree, the first in botany, zoology, chemistry and physics, the second in anatomy and physiology, the third in materia medica and pathology, and the fourth in medical jurisprudence and public health, medicine, surgery and midwifery. Owing to the war a proposal to extend the course to six years has not yet been adopted. The Institute of Medicine caters not only for elementary instruction but for higher studies and research.

The degree of M.D. is conferred on graduates who submit a thesis and pass an examination; a specially good thesis will exempt a candidate from examination. Submission of a thesis and success in an examination are also required for the degree of Ch.M. The university offers a diploma in public health. Particulars of university regulations may be obtained from the Dean of the Faculty of Medicine, University of Glasgow.

On the whole it has been possible to continue medical teaching on normal lines. Many of the younger teachers are on active service, and the patients—particularly medical cases—are fewer, so that teaching facilities have been a little reduced; but it has not been necessary to discontinue any of the special courses. The main hospitals are undamaged and the routine of the students in the various years is not substantially altered. The demands made on students for civil defence service have not been burdensome. Service in the Senior Training Corps has hitherto been voluntary, but in the coming year will be compulsory for first, second and third year students. This may make some teaching difficulties, since the numbers are large, and some of the training will have to be given during the day. The senior students have been giving service in the E.M.S. hospitals during vacations and there are more applying for these posts than can be used. At present there are 1058 students in the medical school—850 men and 208 women.

Anderson College and St Mungo's College

These Glasgow medical schools have separate foundations. Anderson College, dating from the year 1800, receives about 700 students a year, both men and women. Courses are given in all preclinical subjects and clinical training is carried out in all the hospitals open to university students. No modifications of training have been made necessary by war conditions. The course prepares candidates for the examinations of all the licensing boards and for the university examinations of London, Edinburgh, Glasgow and Durham, provided the matriculation requirements of each are met. Hospital posts are now available for students who have completed their fourth year of study. Many distinguished men have been students of the college and it has given twenty professors to the University of Glasgow.

St Mungo's is the medical school of Glasgow Royal Infirmary, the largest general hospital in the city. The buildings are in the infirmary grounds and can accommodate 300 students, men and women. The courses in preclinical work are carried on in the college and clinical training is received in the wards of the infirmary and at the special hospitals of the city. The teaching staff has been little depleted by the claims of the Services and though clinical material has been diminished there has been no serious shortage of cases because the students, too, are fewer; many American students, for example, were prevented by the outbreak of war from returning after the summer vacation of 1939. The curriculum prepares students for examinations of the English, Scottish and Irish Conjoint Boards and, if certain conditions are fulfilled, for the examinations of the universities.

UNIVERSITY OF ST ANDREWS

Applicants always exceed vacancies at this medical school. About 55 are taken yearly, both men and women, and only those willing to take the full course are accepted. Students must hold the certificate of fitness of the Scottish Universities Entrance Board and are required to take four qualifying examinations for the degree of M.B., Ch.B., the first in botany, zoology, chemistry and physics; the second in anatomy and

physiology at the end of the second year, the third in materia medica, bacteriology, pathology, forensic medicine and public health, and the fourth and final in medicine, surgery and midwifery The student begins clinical work after completing the second examination and is trained in the Dundee Royal Infirmary and at various municipal hospitals and institutions Fees, scholarships and resident appointments have not been affected by the war No changes have been made in the regulations governing medical degrees and diplomas, but St Andrews, like other universities, has power under the Emergency Regulations to make any changes which become necessary

The M D and M Ch degrees may be conferred on graduates who present a thesis and take an examination The university offers a diploma in public health, now temporarily suspended, and a diploma in dental surgery Full details may be obtained from the Dean of the Medical Faculty, University of St Andrews, Dundee

Medical education has suffered scarcely at all from the impact of war There has been little damage to the university or infirmaries, and though many of the medical staff are on active service their duties have been taken over by others so that teaching has not suffered There have been no major changes in the courses held or in the number of hours spent in the different parts of clinical training The supply of cases has been well maintained, partly by using the facilities offered by institutions other than the main teaching hospitals Students have played their part in A R P , and hitherto membership of the O T C has been voluntary Next year, however, membership will be compulsory except for those in the later clinical years, and it will be necessary to modify teaching to fit in with these extra activities

. QUEEN'S UNIVERSITY OF BELFAST

This large medical school accommodates over 600 students After fulfilling the admission requirements of the university they must work for five years from the date of registration, and must pass the following examinations the first in chemistry, physics, zoology and botany; the second in anatomy, physiology and biochemistry, the third in pharmacology, pathology and bacteriology, the fourth in hygiene, medical jurisprudence and toxicology, and the final at the end of the fifth year in medicine, surgery, obstetrics and gynæcology This confers the degree of M B , B Ch , B A O Clinical teaching is given at the Royal Victoria and Mater Infirmorum hospitals and the maternity and special hospitals of the city

The M D and M Ch degrees may be conferred on graduates either on passing an examination or on submission of a thesis The degree of Master of Obstetric Science (M A O) is given to graduates who pass an examination, or submit a thesis Details of university regulations may be obtained from the Dean of the Faculty of Medicine, Queen's University of Belfast

Northern Ireland is not included in the conscription area, so that the medical faculty of the university has not so far been much affected The main difficulty has been the absence on war service of those who would otherwise be engaged in teaching Many of the students and the younger men on the staff have joined the forces, but older teachers have undertaken extra work, including some of those who had retired

UNIVERSITY OF DUBLIN

Students are admitted to Trinity College when they have passed an entrance examination in general subjects or an examination of equivalent standard They are required to take an arts course and the degree of B A before medical degrees can be conferred on them, but the course is so modified that they can take it concurrently with their medical studies Fees are unaffected by the war, there are numerous scholarships and prizes open to students and graduates and no change has been made in the regulations governing medical degrees and diplomas To obtain the degree of M B , B Ch , B A.O students must work for five years and pass a preliminary scientific and three professional examinations

An M D thesis may be conferred on a graduate who passes an examination and submits a thesis For the degree of M Ch graduates must pass a special examination, and the degree of Master in Obstetric Science (M A O) is also conferred on the results of examination The university grants diplomas in public health, psychological medicine, and gynæcology and obstetrics Details of the university regulations * may be obtained from the Dean, Trinity College, Dublin

Trinity College has been little affected by the war There have been no serious raids though casual bombs have been dropped on two occasions, doing considerable damage Citizens, however, do not live in expectation of raids, and there has been little evacuation. Education proceeds unperturbed Most of the hospitals have prepared themselves to deal with casualties if this becomes necessary, and many students have joined the Local Defence Force and taken courses in gas-instruction and fire-fighting These activities have not interfered with their attendance at lectures and practical classes

Schools of Surgery

The schools of surgery, including Carmichael and Ledwich schools, are attached by charter to the Royal College of Surgeons in Ireland They are carried on within the college buildings at St Stephen's Green, and are supervised and controlled by the council of the college There are spacious dissecting-rooms and biology, chemistry, physiology, pathology, bacteriology and pharmaceutical laboratories All lectures and courses of practical instruction may be attended by medical students who are otherwise unconnected with the college Women students are admitted Particulars of the course may be obtained from the Registrar, Royal College of Surgeons in Ireland, Dublin

NATIONAL UNIVERSITY OF IRELAND

In the three University Colleges of Dublin, Cork and Galway the war has not materially influenced the medical schools In University College, Dublin, many students are giving help as volunteers in the medical services or in A R P units These duties do not seem to have interfered with attendance at lectures or examination results Fees, scholarships and regulations remain unchanged Students working for the degree of M B , B Ch , B A O must pass a premedical and four professional examinations

To obtain an M D degree, graduates must pass an examination , at University College, Cork, the candidate must also present a thesis but in Galway and Dublin the thesis is optional For the degree of M Ch a graduate must pass an examination and either submit a thesis or furnish evidence that he has been a member of the surgical staff of a hospital for at least two years The university offers diplomas in public health and psychological medicine Details of the university regulations * may be obtained from the Registrar, the National University of Ireland, 49, Merrion Square, Dublin

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* The position of the practitioner qualifying in Eire is that (1) if he intends to practise only in Eire he need only register in the Register for Eire (2) if he intends to practise in Great Britain or Northern Ireland he will register in the Register kept by the General Medical Council and (3) if he is in doubt where he will practise he will register in both registers He will as he registers in one register, or in both registers, put himself under the disciplinary control of the one council or of both councils

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On the whole it has been possible to continue medical teaching on normal lines Many of the younger teachers are on active service, and the patients—particularly medical cases—are fewer, so that teaching facilities have been a little reduced , but it has not been necessary to discontinue any of the special courses The main hospitals are undamaged and the routine of the students in the various years is not substantially altered The demands made on students for civil defence service have not been burdensome Service in the Senior Training Corps has hitherto been voluntary, but in the coming year will be compulsory for first, second and third year students This may make some teaching difficulties, since the numbers are large, and some of the training will have to be given during the day The senior students have been giving service in the E M S hospitals during vacations and there are more applying for these posts than can be used At present there are 1058 students in the medical school—850 men and 208 women

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physiology at the end of the second year, the third in materia medica, bacteriology, pathology, forensic medicine and public health, and the fourth and final in medicine, surgery and midwifery The student begins clinical work after completing the second examination and is trained in the Dundee Royal Infirmary and at various municipal hospitals and institutions Fees, scholarships and resident appointments have not been affected by the war No changes have been made in the regulations governing medical degrees and diplomas, but St Andrews, like other universities, has power under the Emergency Regulations to make any changes which become necessary

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Medical education has suffered scarcely at all from the impact of war There has been little damage to the university or infirmaries, and though many of the medical staff are on active service their duties have been taken over by others so that teaching has not suffered There have been no major changes in the courses held or in the number of hours spent in the different parts of clinical training The supply of cases has been well maintained, partly by using the facilities offered by institutions other than the main teaching hospitals Students have played their part in A R P, and hitherto membership of the O T C has been voluntary Next year, however, membership will be compulsory except for those in the later clinical years, and it will be necessary to modify teaching to fit in with these extra activities

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This large medical school accommodates over 600 students After fulfilling the admission requirements of the university they must work for five years from the date of registration, and must pass the following examinations the first in chemistry, physics, zoology and botany, the second in anatomy, physiology and biochemistry, the third in pharmacology, pathology and bacteriology, the fourth in hygiene, medical jurisprudence and toxicology, and the final at the end of the fifth year in medicine, surgery, obstetrics and gynæcology This confers the degree of M B, B Ch, B A O Clinical teaching is given at the Royal Victoria and Mater nfirmorum hospitals and the maternity and special hospitals of the city

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Northern Ireland is not included in the conscription area, so that the medical faculty of the university has not so far been much affected The main difficulty has been the absence on war service of those who would otherwise be engaged in teaching Many of the students and the younger men on the staff have joined the forces, but older teachers have undertaken extra work, including some of those who had retired

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Students are admitted to Trinity College when they have passed an entrance examination in general subjects or an examination of equivalent standard They are required to take an arts course and the degree of B A before medical degrees can be conferred on them, but the course is so modified that they can take it concurrently with their medical studies Fees are unaffected by the war, there are numerous scholarships and prizes open to students and graduates and no change has been made in the regulations governing medical degrees and diplomas To obtain the degree of M B, B Ch, B A O students must work for five years and pass a preliminary scientific and three professional examinations

An M D thesis may be conferred on a graduate who passes an examination and submits a thesis For the degree of M Ch graduates must pass a special examination, and the degree of Master in Obstetric Science (M A O) is also conferred on the results of examination The university grants diplomas in public health, psychological medicine, and gynæcology and obstetrics Details of the university regulations * may be obtained from the Dean Trinity College, Dublin

Trinity College has been little affected by the war There have been no serious raids though casual bombs have been dropped on two occasions, doing considerable damage Citizens, however, do not live in expectation of raids, and there has been little evacuation Education proceeds unperturbed Most of the hospitals have prepared themselves to deal with casualties if this becomes necessary, and many students have joined the Local Defence Force and taken courses in gas-instruction and fire-fighting These activities have not interfered with their attendance at lectures and practical classes

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The schools of surgery, including Carmichael and Ledwich schools, are attached by charter to the Royal College of Surgeons in Ireland They are carried on within the college buildings at St Stephen's Green, and are supervised and controlled by the council of the college There are spacious dissecting-rooms and biology, chemistry, physiology, pathology, bacteriology and pharmaceutical laboratories All lectures and courses of *practical instruction may be attended* by medical students who are otherwise unconnected with the college Women students are admitted Particulars of the course may be obtained from the Registrar, Royal College of Surgeons in Ireland, Dublin

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UNIVERSITY OF GLASGOW

Students are admitted who have passed the preliminary of the Scottish Universities Entrance Board or an equivalent examination, and who hold the board's certificate of fitness. There are four professional examinations for the M.B., Ch.B. degree, the first in botany, zoology, chemistry and physics, the second in anatomy and physiology, the third in materia medica and pathology and the fourth in medical jurisprudence and public health, medicine, surgery and midwifery. Owing to the war a proposal to extend the course to six years has not yet been adopted. The Institute of Medicine caters not only for elementary instruction but for higher studies and research.

The degree of M.D. is conferred on graduates who submit a thesis and pass an examination; a specially good thesis will exempt a candidate from examination. Submission of a thesis and success in an examination are also required for the degree of Ch.M. The university offers a diploma in public health. Particulars of university regulations may be obtained from the Dean of the Faculty of Medicine, University of Glasgow.

On the whole it has been possible to continue medical teaching on normal lines. Many of the younger teachers are on active service, and the patients—particularly medical cases—are fewer, so that teaching facilities have been a little reduced, but it has not been necessary to discontinue any of the special courses. The main hospitals are undamaged and the routine of the students in the various years is not substantially altered. The demands made on students for civil defence service have not been burdensome. Service in the Senior Training Corps has hitherto been voluntary, but in the coming year will be compulsory for first, second and third year students. This may make some teaching difficulties, since the numbers are large, and some of the training will have to be given during the day. The senior students have been giving service in the E.M.S. hospitals during vacations and there are more applying for these posts than can be used. At present there are 1058 students in the medical school—850 men and 208 women.

Anderson College and St Mungo's College

These Glasgow medical schools have separate foundations. Anderson College, dating from the year 1800, receives about 700 students a year, both men and women. Courses are given in all preclinical subjects and clinical training is carried out in all the hospitals open to university students. No modifications of training have been made necessary by war conditions. The course prepares candidates for the examinations of all the licensing boards and for the university examinations of London, Edinburgh, Glasgow and Durham, provided the matriculation requirements of each are met. Hospital posts are now available for students who have completed their fourth year of study. Many distinguished men have been students of the college and it has given twenty professors to the University of Glasgow.

St Mungo's is the medical school of Glasgow Royal Infirmary, the largest general hospital in the city. The buildings are in the infirmary grounds and can accommodate 300 students, men and women. The courses in preclinical work are carried on in the college and clinical training is received in the wards of the infirmary and at the special hospitals of the city. The teaching staff has been little depleted by the claims of the Services and though clinical material has been diminished there has been no serious shortage of cases because the students, too, are fewer; many American students, for example, were prevented by the outbreak of war from returning after the summer vacation of 1939. The curriculum prepares students for examinations of the English, Scottish and Irish Conjoint Boards and, if certain conditions are fulfilled, for the examinations of the universities.

UNIVERSITY OF ST ANDREWS

Applicants always exceed vacancies at this medical school. About 55 are taken yearly, both men and women, and only those willing to take the full course are accepted. Students must hold the certificate of fitness of the Scottish Universities Entrance Board and are required to take four qualifying examinations for the degree of M.B., Ch.B., the first in botany, zoology, chemistry and physics, the second in anatomy and

physiology at the end of the second year, the third in materia medica, bacteriology, pathology, forensic medicine and public health, and the fourth and final in medicine, surgery and midwifery The student begins clinical work after completing the second examination and is trained in the Dundee Royal Infirmary and at various municipal hospitals and institutions Fees, scholarships and resident appointments have not been affected by the war No changes have been made in the regulations governing medical degrees and diplomas, but St Andrews, like other universities, has power under the Emergency Regulations to make any changes which become necessary

The M D and M Ch degrees may be conferred on graduates who present a thesis and take an examination The university offers a diploma in public health, now temporarily suspended and a diploma in dental surgery Full details may be obtained from the Dean of the Medical Faculty, University of St Andrews, Dundee

Medical education has suffered scarcely at all from the impact of war There has been little damage to the university or infirmaries, and though many of the medical staff are on active service their duties have been taken over by others so that teaching has not suffered There have been no major changes in the courses held or in the number of hours spent in the different parts of clinical training The supply of cases has been well maintained, partly by using the facilities offered by institutions other than the main teaching hospitals Students have played their part in A R P, and hitherto membership of the O T C has been voluntary Next year however, membership will be compulsory except for those in the later clinical years, and it will be necessary to modify teaching to fit in with these extra activities

. QUEEN'S UNIVERSITY OF BELFAST

This large medical school accommodates over 600 students After fulfilling the admission requirements of the university they must work for five years from the date of registration, and must pass the following examinations the first in chemistry, physics, zoology and botany; the second in anatomy, physiology and biochemistry, the third in pharmacology, pathology and bacteriology, the fourth in hygiene, medical jurisprudence and toxicology, and the final at the end of the fifth year in medicine, surgery, obstetrics and gynæcology This confers the degree of M B, B Ch, B A O Clinical teaching is given at the Royal Victoria and Mater Infirmorum hospitals and the maternity and special hospitals of the city

The M D and M Ch degrees may be conferred on graduates either on passing an examination or on submission of a thesis The degree of Master of Obstetric Science (M A.O) is given to graduates who pass an examination, or submit a thesis Details of university regulations may be obtained from the Dean of the Faculty of Medicine, Queen's University of Belfast

Northern Ireland is not included in the conscription area, so that the medical faculty of the university has not so far been much affected The main difficulty has been the absence on war service of those who would otherwise be engaged in teaching Many of the students and the younger men on the staff have joined the forces, but older teachers have undertaken extra work, including some of those who had retired

UNIVERSITY OF DUBLIN

Students are admitted to Trinity College when they have passed an entrance examination in general subjects or an examination of equivalent standard They are required to take an arts course and the degree of B A before medical degrees can be conferred on them, but the course is so modified that they can take it concurrently with their medical studies Fees are unaffected by the war, there are numerous scholarships and prizes open to students and graduates and no change has been made in the regulations governing medical degrees and diplomas To obtain the degree of M B, B Ch, B A.O students must work for five years and pass a preliminary scientific and three professional examinations

An M D thesis may be conferred on a graduate who passes an examination and submits a thesis For the degree of M Ch graduates must pass a special examination, and the degree of Master in Obstetric Science (M A O) is also conferred on the results of examination The university grants diplomas in public health, psychological medicine, and gynæcology and obstetrics Details of the university regulations * may be obtained from the Dean Trinity College, Dublin

Trinity College has been little affected by the war There have been no serious raids though casual bombs have been dropped on two occasions, doing considerable damage Citizens, however, do not live in expectation of raids, and there has been little evacuation. Education proceeds unperturbed Most of the hospitals have prepared themselves to deal with casualties if this becomes necessary, and many students have joined the Local Defence Force and taken courses in gas-instruction and fire-fighting These activities have not interfered with their attendance at lectures and practical classes

Schools of Surgery

The schools of surgery, including Carmichael and Ledwich schools, are attached by charter to the Royal College of Surgeons in Ireland They are carried on within the college buildings at St Stephen's Green, and are supervised and controlled by the council of the college There are spacious dissecting-rooms and biology, chemistry, physiology, pathology, bacteriology and pharmaceutical laboratories All lectures and courses of practical instruction may be attended by medical students who are otherwise unconnected with the college Women students are admitted Particulars of the course may be obtained from the Registrar, Royal College of Surgeons in Ireland, Dublin

NATIONAL UNIVERSITY OF IRELAND

In the three University Colleges of Dublin, Cork and Galway the war has not materially influenced the medical schools In University College, Dublin, many students are giving help as volunteers in the medical services or in A R P units These duties do not seem to have interfered with attendance at lectures or examination results Fees, scholarships and regulations remain unchanged Students working for the degree of M B, B Ch, B A O must pass a premedical and four professional examinations

To obtain an M D degree, graduates must pass an examination at University College, Cork, the candidate must also present a thesis but in Galway and Dublin the thesis is optional For the degree of M Ch a graduate must pass an examination and either submit a thesis or furnish evidence that he has been a member of the surgical staff of a hospital for at least two years The university offers diplomas in public health and psychological medicine Details of the university regulations * may be obtained from the Registrar, the National University of Ireland, 49, Merrion Square, Dublin

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* The position of the practitioner qualifying in Eire is that (1) if he intends to practise only in Eire he need only register in the Register for Eire (2) if he intends to practise in Great Britain or Northern Ireland he will register in the Register kept by the General Medical Council and (3) if he is in doubt where he will practise he will register in both registers He will as he registers in one register or in both registers put himself under the disciplinary control of the one council or of both councils

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ECONOMY IN LIVER EXTRACTS —The Ministry of Health have issued an order under the defence regulations, limiting, as a war time measure, the use of liver extracts The order provides that liver extracts shall only be administered to patients suffering from pernicious anæmia or other megalocytic anæmias and then only by injection These restrictions will not apply to preparations manufactured before Aug 31, 1941 Until now liver for medicinal preparations has been imported, as home supplies are used for food and shipping refrigeration space is urgently required for other needs Further, glycerin and alcohol, which are in immense demand for munitions, are used in the preparation of extracts of liver to be taken by mouth It is possible to achieve economy in the use of liver extracts without patients suffering any hardship Liver extract is a specific in the treatment of pernicious anæmia and other megalocytic anæmias only, and it has been proved that by far the most effective and economical way of administering it is by injection (*Lancet*, 1941, i, 672) It does not, however, have the same specific effect on the other more common forms of anæmias, which can be effectively treated in other ways These patients, therefore, need not suffer, while ample supplies of liver will be assured for those who really need it

The ultimate test will be, as the dean points out, the final product, which should be ready by 1944 If the war goes on the authorities propose to speed up the course at the end of the summer term of 1942 by introducing vacation courses, which will enable those who began the new curriculum in 1938 to qualify by September, 1943 This will be an interesting experiment, the new course being completed in 5 years instead of 5 years and 2 terms , it may even lead to a shortening of the long vacation when peace returns But it is unlikely that the principle of speeding up will be approved except to meet an emergency like the present one

UNIVERSITY OF EDINBURGH

Students are admitted when they have passed a preliminary or other examination recognised by the Scottish Universities Entrance Board and a pre-registration examination in physics and chemistry Fees and scholarships are unchanged and the number of medical students has not been seriously affected by the war The first examination is in chemistry, zoology, physics and botany, the second in anatomy and physiology, taken at the end of the second year , the third examination is in pathology, bacteriology, materia medica and therapeutics, and the final which confers the degree of M B , Ch B in forensic medicine, public health, midwifery, surgery and medicine During his fourth and fifth years the student spends six months at one of the city dispensaries, when he has an opportunity of visiting the sick poor in their own homes Hospital work is carried out at the Royal Infirmary and at various municipal and special hospitals in the city

Candidates for the M D degree must be medical graduates and must submit a thesis and pass an examination , they may be exempted from the examination by an exceptionally meritorious thesis For the Ch M degree they must fulfil similar conditions The university offers diplomas in public health, radiology, psychiatry, and tropical medicine and hygiene Full particulars may be obtained from the Dean of the Faculty of Medicine, University of Edinburgh

No parts of the curriculum have suffered specially as the result of war The main courses have been carried on as usual, but a few voluntary courses—such as that on the history of medicine—have been discontinued for the present In 1939 the university authorities were working on the details of a new curriculum which was to increase the period of study from five years to six , but the war has prevented this from being put into operation A number of short courses on subjects bearing on civil defence and medical work in the Forces have been introduced for senior students , those on medical aspects of A R P and the treatment of gas injuries are now compulsory In the clinical courses special instruction is given on first aid and the treatment of war wounds Students have shown great keenness over these courses, and are anxious to prove useful in an emergency Nearly all are attached to some organisation which will give service in air-raids The senior students form part of fixed or mobile surgical teams, while junior students are attached to first-aid posts, hospital reception posts or stretcher-bearer parties In the coming year all male first and second year students will be required to join the Senior Training Corps , those in the third, fourth and fifth years will probably be formed into special medical units and attached to the Home Guard Civil defence duties do not seem to have hindered study on the contrary, some duties of the kind have provided valuable experience

Surgeons' Hall

The School of Medicine of the Royal Colleges of Edinburgh holds no professional examinations of its own but prepares students for the degrees of Edinburgh, London, and other universities, or more commonly for the qualifying examinations of the English, Irish or Scottish Conjoint Boards Till the outbreak of war there were 700 students in attendance The systematic classes are held in Surgeons' Hall and the New School, and clinical teaching is provided mainly in the Royal Infirmary, where students may gain resident appointments on qualifying Particulars are to be had from the Dean, Surgeons' Hall, Edinburgh

UNIVERSITY OF GLASGOW

Students are admitted who have passed the preliminary of the Scottish Universities Entrance Board or an equivalent examination, and who hold the board's certificate of fitness There are four professional examinations for the M B , Ch B degree, the first in botany, zoology, chemistry and physics, the second in anatomy and physiology, the third in materia medica and pathology, and the fourth in medical jurisprudence and public health, medicine, surgery and midwifery Owing to the war a proposal to extend the course to six years has not yet been adopted The Institute of Medicine caters not only for elementary instruction but for higher studies and research

The degree of M D is conferred on graduates who submit a thesis and pass an examination , a specially good thesis will exempt a candidate from examination Submission of a thesis and success in an examination are also required for the degree of Ch M The university offers a diploma in public health Particulars of university regulations may be obtained from the Dean of the Faculty of Medicine University of Glasgow

On the whole it has been possible to continue medical teaching on normal lines Many of the younger teachers are on active service, and the patients—particularly medical cases—are fewer, so that teaching facilities have been a little reduced , but it has not been necessary to discontinue any of the special courses The main hospitals are undamaged and the routine of the students in the various years is not substantially altered The demands made on students for civil defence service have not been burdensome Service in the Senior Training Corps has hitherto been voluntary, but in the coming year will be compulsory for first, second and third year students This may make some teaching difficulties, since the numbers are large, and some of the training will have to be given during the day The senior students have been giving service in the E M S hospitals during vacations, and there are more applying for these posts than can be used At present there are 1058 students in the medical school—850 men and 208 women

Anderson College and St Mungo's College

These Glasgow medical schools have separate foundations Anderson College, dating from the year 1800, receives about 700 students a year, both men and women Courses are given in all preclinical subjects and clinical training is carried out in all the hospitals open to university students No modifications of training have been made necessary by war conditions The course prepares candidates for the examinations of all the licensing boards and for the university examinations of London, Edinburgh, Glasgow and Durham, provided the matriculation requirements of each are met Hospital posts are now available for students who have completed their fourth year of study Many distinguished men have been students of the college and it has given twenty professors to the University of Glasgow

St Mungo's is the medical school of Glasgow Royal Infirmary, the largest general hospital in the city The buildings are in the infirmary grounds and can accommodate 300 students, men and women The courses in preclinical work are carried on in the college and clinical training is received in the wards of the infirmary and at the special hospitals of the city The teaching staff has been little depleted by the claims of the Services and though clinical material has been diminished there has been no serious shortage of cases because the students, too, are fewer , many American students, for example, were prevented by the outbreak of war from returning after the summer vacation of 1939 The curriculum prepares students for examinations of the English, Scottish and Irish Conjoint Boards and, if certain conditions are fulfilled, for the examinations of the universities

UNIVERSITY OF ST ANDREWS

Applicants always exceed vacancies at this medical school About 55 are taken yearly, both men and women, and only those willing to take the full course are accepted Students must hold the certificate of fitness of the Scottish Universities Entrance Board and are required to take four qualifying examinations for the degree of M B , Ch B , the first in botany, zoology, chemistry and physics , the second in anatomy and

physiology at the end of the second year, the third in materia medica, bacteriology, pathology, forensic medicine and public health, and the fourth and final in medicine, surgery and midwifery. The student begins clinical work after completing the second examination and is trained in the Dundee Royal Infirmary and at various municipal hospitals and institutions. Fees, scholarships and resident appointments have not been affected by the war. No changes have been made in the regulations governing medical degrees and diplomas, but St. Andrews, like other universities, has power under the Emergency Regulations to make any changes which become necessary.

The M.D. and M.Ch. degrees may be conferred on graduates who present a thesis and take an examination. The university offers a diploma in public health, now temporarily suspended, and a diploma in dental surgery. Full details may be obtained from the Dean of the Medical Faculty, University of St. Andrews, Dundee.

Medical education has suffered scarcely at all from the impact of war. There has been little damage to the university or infirmaries, and though many of the medical staff are on active service their duties have been taken over by others so that teaching has not suffered. There have been no major changes in the courses held or in the number of hours spent in the different parts of clinical training. The supply of cases has been well maintained, partly by using the facilities offered by institutions other than the main teaching hospitals. Students have played their part in A.R.P., and hitherto membership of the O.T.C. has been voluntary. Next year, however, membership will be compulsory except for those in the later clinical years, and it will be necessary to modify teaching to fit in with these extra activities.

QUEEN'S UNIVERSITY OF BELFAST

This large medical school accommodates over 600 students. After fulfilling the admission requirements of the university they must work for five years from the date of registration, and must pass the following examinations: the first in chemistry, physics, zoology and botany; the second in anatomy, physiology and biochemistry; the third in pharmacology, pathology and bacteriology; the fourth in hygiene, medical jurisprudence and toxicology; and the final at the end of the fifth year in medicine, surgery, obstetrics and gynæcology. This confers the degree of M.B., B.Ch., B.A.O. Clinical teaching is given at the Royal Victoria and Mater Infirmorum hospitals and the maternity and special hospitals of the city.

The M.D. and M.Ch. degrees may be conferred on graduates either on passing an examination or on submission of a thesis. The degree of Master of Obstetric Science (M.A.O.) is given to graduates who pass an examination, or submit a thesis. Details of university regulations may be obtained from the Dean of the Faculty of Medicine, Queen's University of Belfast.

Northern Ireland is not included in the conscription area, so that the medical faculty of the university has not so far been much affected. The main difficulty has been the absence on war service of those who would otherwise be engaged in teaching. Many of the students and the younger men on the staff have joined the forces, but older teachers have undertaken extra work, including some of those who had retired.

UNIVERSITY OF DUBLIN

Students are admitted to Trinity College when they have passed an entrance examination in general subjects or an examination of equivalent standard. They are required to take an arts course and the degree of B.A. before medical degrees can be conferred on them, but the course is so modified that they can take it concurrently with their medical studies. Fees are unaffected by the war, there are numerous scholarships and prizes open to students and graduates and no change has been made in the regulations governing medical degrees and diplomas. To obtain the degree of M.B., B.Ch., B.A.O. students must work for five years and pass a preliminary scientific and three professional examinations.

An M.D. thesis may be conferred on a graduate who passes an examination and submits a thesis. For the degree of M.Ch. graduates must pass a special examination, and the degree of Master in Obstetric Science (M.A.O.) is also conferred on the results of examination. The university grants diplomas in public health, psychological medicine, and gynæcology and obstetrics. Details of the university regulations* may be obtained from the Dean, Trinity College, Dublin.

Trinity College has been little affected by the war. There have been no serious raids though casual bombs have been dropped on two occasions, doing considerable damage. Citizens, however, do not live in expectation of raids, and there has been little evacuation. Education proceeds unperturbed. Most of the hospitals have prepared themselves to deal with casualties if this becomes necessary, and many students have joined the Local Defence Force and taken courses in gas-instruction and fire-fighting. These activities have not interfered with their attendance at lectures and practical classes.

Schools of Surgery

The schools of surgery, including Carmichael and Ledwich schools, are attached by charter to the Royal College of Surgeons in Ireland. They are carried on within the college buildings at St. Stephen's Green, and are supervised and controlled by the council of the college. There are spacious dissecting-rooms and biology, chemistry, physiology, pathology, bacteriology and pharmaceutical laboratories. All lectures and courses of practical instruction may be attended by medical students who are otherwise unconnected with the college. Women students are admitted. Particulars of the course may be obtained from the Registrar, Royal College of Surgeons in Ireland, Dublin.

NATIONAL UNIVERSITY OF IRELAND

In the three University Colleges of Dublin, Cork and Galway the war has not materially influenced the medical schools. In University College, Dublin, many students are giving help as volunteers in the medical services or in A.R.P. units. These duties do not seem to have interfered with attendance at lectures or examination results. Fees, scholarships and regulations remain unchanged. Students working for the degree of M.B., B.Ch., B.A.O. must pass a premedical and four professional examinations.

To obtain an M.D. degree, graduates must pass an examination; at University College, Cork, the candidate must also present a thesis but in Galway and Dublin the thesis is optional. For the degree of M.Ch. a graduate must pass an examination and either submit a thesis or furnish evidence that he has been a member of the surgical staff of a hospital for at least two years. The university offers diplomas in public health and psychological medicine. Details of the university regulations* may be obtained from the Registrar, the National University of Ireland, 49, Merrion Square, Dublin.

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ECONOMY IN LIVER EXTRACTS.—The Ministry of Health have issued an order under the defence regulations, limiting, as a war time measure, the use of liver extracts. The order provides that liver extracts shall only be administered to patients suffering from pernicious anæmia or other megalocytic anæmias and then only by injection. These restrictions will not apply to preparations manufactured before Aug. 31, 1941. Until now liver for medicinal preparations has been imported, as home supplies are used for food and shipping refrigeration space is urgently required for other needs. Further, glycerin and alcohol, which are in immense demand for munitions, are used in the preparation of extracts of liver to be taken by mouth. It is possible to achieve economy in the use of liver extracts without patients suffering any hardship. Liver extract is a specific in the treatment of pernicious anæmia and other megalocytic anæmias only, and it has been proved that by far the most effective and economical way of administering it is by injection (*Lancet*, 1941, 1, 672). It does not, however, have the same specific effect on the other more common forms of anæmias, which can be effectively treated in other ways. These patients, therefore, *need not suffer*, while ample supplies of liver will be assured for those who really need it.

Degrees and Diplomas

EXAMINING BOARDS

English, Scottish and Irish Conjoint Boards

The Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England examines candidates for the qualifying diplomas of M R C S , L R C P Candidates satisfying the board's regulations in regard to the preliminary examination in general education, are eligible for admission to the premedical examination in chemistry, physics and biology , and are required to complete subsequently, at a recognised medical school, the professional curriculum of 57 months, including 33 months of clinical work Some war-time concessions have been authorised in the regulations . for example, examinations are being conducted at provincial centres as well as London , and clinical study may be undertaken at any hospital provided the dean of the candidate's school is satisfied as to the instruction available and signs the certificate of study Other modifications will be found in the Emergency Regulations which have been published and are to remain in force until the beginning of the academic year following the termination of the war Copies of these regulations, and a calendar showing the dates of examinations, may be obtained, free of charge from the Secretary to the Examining Board in England, the Examination Hall, Queen Square, London, W C 1

The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow have an arrangement by which, after one series of examinations, held in Edinburgh, or Glasgow, or both, the student may obtain the diplomas—designated by the letters L R C P E , L R C S E , L R F P S G —of all three bodies Candidates may work for the examination of the Scottish Conjoint Board at any of the recognised medical schools of Great Britain and Ireland In 1938 the Triple Qualification committee of management adopted the suggestions of the General Medical Council for an extended medical curriculum, and since then the course has consisted of a year of premedical work followed by a five-year medical course The committee have now decided to revert to the 1937 regulations as a temporary war measure The course under these regulations lasts five years and includes, in addition to the pre-registration examination, four professional examinations the first examination in natural sciences (biology, chemistry and physics) , the second in anatomy and embryology, physiology, biochemistry and biophysics , the third in pathology and bacteriology, and pharmacology , and the final in medicine, surgery, midwifery, medical jurisprudence and public health The regulations in recent years have required students to complete the preliminary examination in natural sciences before beginning the five years of professional work , thus reversion to the 1937 regulations has the effect of bringing the whole preliminary and medical course within the period of five years The regulations may be obtained from the Registrar, 18, Nicolson Street, Edinburgh

The Conjoint Board of the Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland accept candidates for the L R C P I and L M , L R C S I and L M from most of the recognised medical schools at home and abroad There have been no changes in the regulations since the outbreak of war Full details can be obtained from the Registrar, Royal College of Surgeons in Ireland, Dublin

Apothecaries' Licences

The Society of Apothecaries of London grants the L M S S A Lond to candidates who pass in the premedical and primary examinations (which are held quarterly) and the final examination Final examinations are held monthly except in September The minimum period of study is normally 5 years, but as a war-time measure candidates will be allowed to sit for the primary examination in anatomy and physiology after 46 weeks' study, provided that this covers a period of not less than 15 months , that is to say, the candidate can sit after four terms work instead of five, and this will save him a term on the whole course The three parts of the final examination may be taken together or in any order Further information may be obtained from the Registrar, Apothecaries' Hall, Blackfriars Lane, E C 4

The Apothecaries' Hall of Ireland grants the L A H Dubl to students who pass the three professional examinations No changes have been made in the regulations, which can be obtained from the Registrar, 95, Merrion Square, Dublin

UNIVERSITY DEGREES

Bachelor of Medicine and Surgery

All the universities in the United Kingdom offer baccalaureate degrees in medicine and surgery They are conferred on the results of examinations which have been mentioned in the accounts already given of the various universities

HIGHER QUALIFICATIONS

Those who have graduated in medicine and surgery are at liberty to seek higher qualifications if they wish

Doctor of Medicine and Master of Surgery

Graduates holding a bachelor's degrees can take the degrees of Doctor of Medicine or Master of Surgery All the universities in Great Britain and Ireland confer such degrees The requirements, which vary, are noted in the accounts of the different universities At the University of Durham the degree of Doctor of Surgery (D Ch) is offered in addition to degree of Master of Surgery (M S)

Master in the Science of Obstetrics and Master of Midwifery

The Irish universities grant the degree M A O , the requirements for which are mentioned in the accounts of the universities concerned The Society of Apothecaries of London offers the qualification of Mastery of Midwifery (M M S A) The degree is given on the results of an examination, the requirements for which can be obtained from the Registrar, Apothecaries' Hall, Blackfriars Lane, E C 4

MEMBERSHIP AND FELLOWSHIP

The Royal College of Physicians of London confers the Membership (M R C P) which is obtained by examination and the Fellowship (F R C P) which is an honorary distinction Medical graduates over the age of 23 are at liberty to enter for the Membership examination, details of which can be obtained from the Secretary, Royal College of Physicians, Pall Mall East, London, S W 1

Fellows are selected annually, from the ranks of members, by the council of the college

The Royal College of Surgeons of England grants a Fellowship to Members or to graduates of recognised universities who pass the primary and final F R C S examinations Candidates for the final examination who, owing to war work, have been unable to comply with the regulation that requires six months' residence as house surgeon in a recognised hospital may, if they can produce certificates showing comparable experience either in the Services or in the E M S , apply for special consideration There are no other war-time concessions in the regulations, copies of which may be obtained from the Director of Examinations, the Examination Hall, Queen Square, London, W C 1

Medical graduates who have been registered, or eligible for registration, for at least three years, may apply for examination for Membership of the Royal College of Obstetricians and Gynæcologists (M R C O G) Particulars of the regulations may be obtained from the Secretary, Royal College of Obstetricians and Gynæcologists, 58, Queen Anne Street, London, W 1

The Fellowship (F R C O G) is granted to Members who are judged to have advanced the science and art of obstetrics and gynæcology

Graduates may become Members of the Royal College of Physicians of Edinburgh (M R C P E) on passing an examination, particulars of which may be obtained from the Secretary, 9, Queen Street, Edinburgh 2

The Fellows are selected annually from among the Members by the council of the college, and receive the degree of F R C P E

Fellowship of the Royal College of Surgeons of Edinburgh (F R C S E) is granted to medical graduates who pass the required examination , particulars of the regulations may be obtained from the Clerk of the College, Surgeons Hall, 18, Nicolson Street, Edinburgh

The Royal Faculty of Physicians and Surgeons of Glasgow grants, after examination, a Fellowship which is registrable by the General Medical Council as an additional qualification (R F P S G) The candidate is examined in either medicine or surgery, as he chooses, and in an additional subject selected from a list of seventeen Those who pass the examination are eligible for election to Fellowship by ballot The faculty may also elect without examination three candidates yearly who have been qualified at least twenty years, have reached the age of forty-five, and whose professional status is of a high order , and two others of high professional standing who have not reached the age of forty-five

Membership of the Royal College of Physicians of Ireland (M R C P I) is granted on the result of an examination, the details of which may be obtained from the Registrar of the College, 6, Kildare Street, Dublin

Fellows are elected by ballot, and receive the degree of F R C P I

Graduates seeking the Fellowship of the Royal College of Surgeons in Ireland (F R C S I) must pass in two examinations, a primary in anatomy and physiology and a final in surgery Further particulars may be obtained from the Registrar, the Royal College of Surgeons in Ireland, Dublin

The Faculty of Radiologists offers a Fellowship (F F R) to medical graduates of five years standing who have spent at least one year in general clinical work at an approved hospital, have practised radiology for three years and have held a radiological diploma for at least two years Candidates are required to pass an examination and submit a thesis Candidates who hold higher medical or surgical qualifications may be exempted from the examinations in general medicine, general surgery or pathology Full particulars may be obtained from the Warden, the Faculty of Radiologists, 32, Welbeck Street, London, W 1

SPECIAL DEGREES AND DIPLOMAS

The regulations for the following diplomas can be obtained by applying to the examining bodies concerned [1]

Public Health

A diploma in public health (D P H) is granted by the English and Scottish Conjoint Boards and, usually, by all the universities of the United Kingdom except Oxford, Cambridge and Sheffield The diplomas in public health usually granted by the Universities of Manchester and Bristol and the Irish Conjoint Board are at present in abeyance, and the D P H courses at the Universities of Liverpool and Birmingham have been suspended The courses at Leeds and Durham will be held if sufficient candidates apply Durham, in addition to the diploma in public health, offers the degree of bachelor of hygiene to medical graduates of any approved university who attend courses for part I of the examination at Durham , the degree of doctor of hygiene is conferred on those holding the B Hy who submit an approved thesis and pass in an oral examination

Psychological Medicine

The Universities of Durham, Edinburgh, Dublin, Ireland (National University), Belfast (Queen's University), and the English and Irish Conjoint Boards grant diplomas in psychological medicine The University of London grants an academic diploma in psychology The courses and examinations for the diplomas usually granted by the Universities of Leeds and Manchester are at present suspended A D P M course is held annually at the Maudsley Hospital in the early months of the year , although the Central Pathological Laboratory has been transferred to West Park Hospital, Epsom, and the Maudsley has been emptied of patients and the staff divided between Sutton and Mill Hill emergency hospitals, it has been possible to arrange an adequate period of training for D P M candidates at these three centres, and it is hoped that the course will be held next year as usual Information can be obtained from the Honorary Director of the Medical School, Central Pathological Laboratory, West Park Hospital, Epsom, Surrey

Radiology

The Faculty of Radiologists grants a Fellowship (F F R) which has already been mentioned The diploma of Cambridge (D M R E) will probably be discontinued after Oct 31 1942 The Universities of London, Liverpool and Edinburgh also grant diplomas (D M R) and the English Conjoint grants the D M R R C P & S Courses for the diploma at Liverpool University are at present suspended

Tropical Medicine

A diploma in tropical medicine is almost indispensable for those seeking medical appointments in the tropics Courses of instruction are given at the University of Edinburgh, the Liverpool School of Tropical Medicine[2] and the London School of Hygiene and Tropical Medicine [3] At the beginning of the war it was decided by the London and Liverpool schools and by the Colonial Office that courses should be held alternately in London and Liverpool for the present The London school has arranged a course to begin in September, so the Liverpool course will probably begin in January, 1942, but this has not yet been finally settled London University grants a diploma in tropical medicine (D T M) and tropical hygiene (D T H) and the University of Edinburgh and the London Conjoint Board each grant a D T M and H

Gynæcology and Obstetrics

The Royal College of Obstetricians and Gynæcologists grants a diploma (D R C O G) to practitioners who have had special postgraduate experience in obstetrics The University of Dublin also offers a diploma (D G O) for which a course is held at Trinity College and the Rotunda Hospital The degree of M M S A granted by the Society of Apothecaries of London has already been mentioned

Ophthalmology

Three examining bodies issue diplomas in ophthalmology—the University of Oxford (granting the D O), the English Conjoint Board (granting the D O M S) and the Irish Conjoint Board (granting the D O M S R C P and S I)

Laryngology and Otology

The English Conjoint Board offers a diploma (D L O) for those who have made a special study of the ear, nose, pharynx and larynx

Anæsthetics

The English Conjoint Board also offers a diploma in anæsthetics (D A) Candidates must have special experience in giving anæsthetics

Child Health

Diplomas in child health (D C H) are now well established The English Conjoint Board grants one and the Irish Conjoint has lately followed suit

Tuberculous Diseases

The University of Wales grants a diploma in tuberculous diseases (T D D) and offers a course of instruction. A limited number of appointments for part-time assistant tuberculosis physicians are advertised annually in September by the Welsh National Memorial Association, enabling suitably qualified and selected candidates to study for the diploma

Bacteriology

Diplomas in bacteriology are ordinarily granted by the Universities of London and Manchester The course for the London University examination would normally be held at the London School of Hygiene and Tropical Medicine, but has been suspended during the war At Manchester both the course and the examination have been suspended

Clinical Pathology

The University of London offers a diploma in clinical pathology (D C P) A year's course of study is required

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[1] Addresses of university officials are given in the section on Medical Schools , addresses of the Conjoint Boards on p 250

[2] Details may be obtained from the Laboratory Secretary, Liverpool School of Tropical Medicine, Pembroke Place

[3] Details may be obtained from the Dean, London School of Hygiene and Tropical Medicine, Keppel Street, W C 1

POSTGRADUATE STUDY IN LONDON

THE war has interfered with provisions for postgraduate study by reducing the number of beds available for teaching and by scattering the teaching staffs, but there are still facilities available for those who need them The undergraduate medical schools still provide opportunities of work for higher examinations for their own graduates, although the division of both hospitals and staffs has made this more difficult Most schools which normally take postgraduate students fall into one of three groups —

(A) Those hospitals which are carrying on much the same teaching facilities as before the war

(B) Those hospitals which, as a result of bomb damage or the need for reserving beds for the E M S , have little or no facilities for inpatient teaching, but which continue to teach in outpatient departments, and still offer resident appointments , in some of these selected students can be taken on as clinical assistants and in most of them hospital practice is available by arrangement with the dean

(C) Those hospitals which have had to suspend postgraduate teaching altogether, but which still appoint resident officers and in some cases clinical assistants

The refresher courses for insurance practitioners organised by the Ministry of Health before the war are still suspended, but equivalent instruction is still provided in London by a programme selected from the activities of the various departments of the British Postgraduate Medical School, and to a large extent by practice at the Prince of Wales's, Hampstead General, and Metropolitan Hospitals

GENERAL HOSPITALS

At the British Postgraduate Medical School (group A), although the number of beds is reduced and the full-time staff depleted by the Services, teaching is continuing on pre-war lines The ordinary programmes are being carried on in medicine, surgery, obstetrics and gynæcology, and pathology, and the principle is maintained of continuous teaching by the ordinary British methods of bedside tuition and lectures rather than by specific courses The teaching is of a high standard, suitable both for those who merely wish to improve their knowledge and for candidates for higher examinations Special courses on war medicine, fractures, war surgery of the chest, the nervous system, the extremities and abdomen, and on operative surgery, are held in rotation on alternate weeks These intensive courses last a week, to suit the needs of officers in the Services They are advertised in advance in the medical papers , fees are 1 guinea a week for ordinary students and for special courses, except for the fracture course for which the fee is 5 guineas Officers of the forces and of the E M S can be admitted free It is proposed, if circumstances permit, to start the special course for the London University diploma in clinical pathology in October A limited number of students can be given a fortnight's special tuition in anæsthetics, the fee being 3 guineas

The Prince of Wales's, Hampstead General and Metropolitan Hospitals fall into group B, and the Royal Northern, the National Temperance and Queen Mary's Hospital, Stratford, into group C

SPECIAL COURSES

Public health —At the Royal Institute of Public Health and Hygiene all work, including the course for the D P H , is being carried on normally The annual congress, however, is not being held Since the beginning of war emergency accommodation has been kept available in case of need, but so far it has not been necessary to use it The course in public health usually held at the London School of Hygiene has been suspended

Psychological medicine —As already noted (p 251) most of the activities of the Maudsley Hospital (A) have been moved to the emergency hospitals at Mill Hill and Sutton

At the Tavistock Clinic so many of the staff have joined the Services that large-scale teaching has had to be suspended There are hopes that the postgraduate course in psychopathology and psychotherapy will be held at the clinic's war-time premises at Westfield College, Kidderpore Avenue, Hampstead , this course consists of lectures and tutorials together with clinical work under supervision from senior members of the staff Short courses for general practitioners will shortly held if possible , these will be advertised in the medic journals Sunday discussion group meetings will probably be resumed in the autumn

Tropical medicine —The course for the D T M & of the English Conjoint Board will be held as usual t year at the London School of Hygiene and Tropic Medicine , it begins on Sept 22 and lasts five month A number of short courses, each lasting a fortnight, i tropical medicine and parasitology are being held fro time to time at the school, for the benefit of medi officers in our own Services and those of our Allies civilians may also attend Considerable damage to th school building has not interrupted work

Neurology —At the National Hospital, Queen Squar (B) hospital practice is available to selected clinica clerks (5 guineas for three months, 7 guineas for s months), and outpatient clinics are held each mornin at 11 A M , on Monday to Friday (1 guinea for one month, 2 guineas for three months) The West End Hospital (B) holds special classes—consisting of demonstrations of cases with commentaries—for a month four times a year, before each M R C P examination The Maida Vale Hospital (B) provides hospital practice, and may be continuing D P M teaching if it is needed

Heart and lungs —At the Brompton Hospital (B) limited hospital practice is available, and courses are held in preparation for the M R C P and conjoint examinations The Royal Chest Hospital (B) provides outpatient practice and special courses on heart diseases in conjunction with the Fellowship of Medicine The London Chest Hospital, Victoria Park (B) has been damaged, but is reorganising and providing increasing facilities for hospital practice

Children —The Hospital for Sick Children, Great Ormond Street (B) is providing instruction only for selected candidates for the diploma of child health The Queen's (C) and Princess Elizabeth of York (C) Hospitals have suspended postgraduate teaching

Maternity —Queen Charlotte's (A) is continuing to offer facilities at Ravenscourt Park The City of London Hospital (C) has been damaged, and teaching is suspended Hospital practice in the maternity department of the British Postgraduate Medical School is available

Cancer and radiology —At the Royal Cancer Hospital (A) teaching continues as before the war Special courses are held for the final F R C S , both in surgery and in operative surgery, and postgraduate courses are held qualifying for the diplomas in medical radiology of London University and of the Conjoint Board The Mount Vernon Hospital (B) offers hospital practice in its hospital at Northwood , 50 beds are reserved for cancer cases and this number is likely to be increased Additional cancer cases are received under the E M S scheme

Ophthalmology —The Royal London Ophthalmic Hospital (A) is carrying on as usual at Moorfields The Central London (B) continues as usual, except that no special courses are being held

Ear, nose and throat —At the Central London Hospital (B) hospital practice and coaching classes by the registrars are available, but no special courses are held The Metropolitan Hospital (A) is continuing its teaching and classes on outpatients in London and Watford, but all inpatients are transferred to the E M S base hospital Golden Square Hospital (B) provides hospital practice

Orthopædics —The Royal National Orthopædic Hospital (B) has suspended teaching, but the outpatient department is open to postgraduates

Genito urinary and rectal diseases —The London Lock Hospital (A) continues to provide instruction for postgraduates who wish to obtain the 130 hours' instruction required by the Ministry of Health for a special certificate, and teaching facilities generally continue unaltered Hospital practice is available in the outpatient department of All Saints (B), St Paul's (B), and St. Peter's (B) Hospitals and the latter holds a special course at Colindale Hospital in September Hospital practice is available at St Mark's (B), where the staff is prepared to give a week's intensive course in proctology

Skins —Hospital practice is available in the outpatient department at the London School of Dermatology (B), and there is a regular teaching session in outpatients at the British Postgraduate School on Thursdays at 2 P M

THE LANCET

LONDON SATURDAY AUGUST 30 1941

Inquest on a Curriculum

KNOWLEDGE of medicine is handed from seniors to beginners, according to the Hippocratic rule and perhaps in no other profession is learning so generously and directly shared But medicine stands alone in that the leaders and teachers live and practise in a different world from the great body of the profession It is an old cry that the aim of the medical curriculum should be to turn out good general practitioners how do we set about it ? From the moment of registration the student is taught by specialists, most of whom have no experience of general practice At the end of the course and of a few resident appointments, he is well—even brilliantly—equipped to start specialising He has a sound general background of all that is rare in medicine and surgery but he has learned to think of common diseases as humdrum He can discuss points of technique in all the specialties , but he has had no chance to treat the minor ailments, because these do not reach the hospital clinic In the one direction—obstetrics—where specialisation would not come amiss he is underexperienced He has usually delivered about twenty normal maternity cases (without analgesia) and has watched the R O O dealing with abnormals in general practice normal cases will usually fall to the midwife while he is summoned often late, to the abnormal case He has had no instruction whatever in certification or the management of a panel practice , he is usually shaky on prescribing , he may or may not be a competent anæsthetist · he thinks the business of making the patient comfortable is work for the nurse , preventive medicine seems to him to be the province of the public-health service , his ideas about the social and industrial responsibilities of medicine are vague and general , and he does not even realise that to sign a patient off as " fit for work " is an act of faith unless he is clear what strains that work applies He begins his life's work as a fumbler lacking half the tools of his trade and he learns skill at the expense of his patients Every general practitioner remembers his first week in the surgery, the confusion of mind produced by the rich variety of certificates, the growing sense of disappointment as " just another rheumatism came in, the guesswork which supplemented his ignorance when the patient asked for the details of some nursing procedure To the patient he was a young chap not quite up to it , to himself he was a young chap far beyond it and both were true—he could have dealt competently with an obscure or alarming condition, he was only at a loss with chronic and minor illness But these are to be his life's work if he is ill-informed about them at the outset he is at a disadvantage , and if he is conditioned to find them boring he is handicapped indeed

There is another way in which the medical student's training fails him he has worked where it was always possible to give the patient something like the best in the way of examination, investigation, treatment feeding and environment He now finds that he is continually driven to makeshifts and compromises which seem, at first, to stamp him as a hypocrite He discovers not only that he cannot do the best for his patients but that he has not even been taught to do the best he can Of course he learns He picks up a hint from a colleague here, a trick from the district nurse there , he supplements inadequate diets with costly vitamins because he must not prescribe food he gives tonics where he would like to give blankets cod-liver oil where he should order a sojourn in the country He begins to realise that he can only patch up where, given proper equipment, he could restore Here the fault lies not wholly in his training , it is right that he should know the best in treatment and learn to apply it The defect is in a medical service still unequipped in many directions to command the essentials of healthy living And it is not our duty, any more than it is the duty of the crowner's quest, to give praise or blame, to bring any of the agents to judgment, but rather to find out by patient inquiry how the prewar curriculum came to be the poor frustrated thing it was and to share in the glorious task denied to the coroner of infusing new life into the old framework

In Quest of a Curriculum

THERE are grave difficulties about training a man to be a doctor and it would be all too easy in the present emergency to emphasise the utilitarian side at the expense of his fundamental education Witness the reaction against experimental method, contemptuously called *Kaninchen-medizin* in Central Europe This danger is naturally more vivid to the minds of teachers than of students Teachers see clearly that if practice is not based on a sound appreciation of scientific method and thought it will deteriorate rapidly when the student leaves his medical school They seek to provide a better grounding the suggestion reaching us from many deans is that physiology should be an integral part of the whole curriculum and that, in the teaching of anatomy, structure should be continually related to function At Sheffield anatomy and physiology are taught throughout the five years of training and an examination in these subjects has been introduced after the second M B a year before the finals Some feel that the time adjustment between preclinical and clinical work and between the start of clinical work and finals is wrong From St Thomas s comes the view that time is wasted by the student in cramming the minutiæ of anatomy and that the premedical subjects might well be disposed of by the attainment of an acceptable standard in matriculation or school certificate The student could then go to a central school of anatomy—there might be two for the London area—for 9–12 months He would concentrate on the essentials of anatomy and enough relevant physiology, taught by the anatomists, to explain function At the end of the course he would take an examination in which attainment of honours standard could qualify for the primary fellowship He would then join his clinical medical school, which would be equipped with a department of physiology For a year he would study normal physiology, physiological chemistry and clinical methods, including the use of stethoscope, auroscope and ophthalmoscope, and would learn to interpret radiograms , he would also learn the technique of urine-testing, blood-examination and other laboratory tricks He would take another examination at the end of a year before passing on to clinical work and the study of morbid physiology

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The Defence Services

The Central Medical War Committee of the British Medical Association is responsible for the supply of all doctors for the defence services

Royal Naval Medical Service

The usual regulations governing entry of medical and dental officers to the Royal Naval Medical Service are suspended during the war and the only medical officers being admitted are those granted temporary commissions in the Royal Naval Volunteer Reserve After the war any vacancies will probably be filled by selection of officers from among those who have served in the R N V R during the war

Candidates for the Royal Naval Dental Service must be under 28 and registered under the Medical or Dental Acts and must also have a registrable qualification in dental surgery Particulars of conditions of service of naval dental officers can be obtained from the Medical Director-General of the Navy Queen s House 64, St James's Street London, S W 1

So far only one woman medical officer has been appointed for service in the W R N S She holds the relative rank of a Surgeon Lieutenant R N V R and serves as medical superintendent attached to the W R N S headquarters at the Admiralty

Royal Army Medical Corps

No applications for regular commissions will be invited during the war for the Royal Army Medical Corps It is expected that after the war regular commissions to make up the establishment of regular officers of the corps will be granted first to those who served as emergency commissioned officers during hostilities All war-time appointments are emergency commissions for the duration of the war , no short-service appointments are being made at present

Recently qualified doctors wishing to be appointed to an emergency commission in the R A M C should apply to the secretary of the Central War Committee at B M A House or if resident in Scotland to the secretary of the Scottish Medical War Committee 7, Drumsheugh Gardens Edinburgh 3 Applicants should have held an appointment either as house-surgeon or house-physician for 6 months

Some women medical officers have already been accepted for general medical duties with the A T S Vacancies exist for more Women must be under 40 and fit for general service There are no vacancies for specialists at present Applications must be made through the Central Medical War Committee

ARMY DENTAL CORPS

No applications for regular commissions will be invited during the war, and it is expected that after the war any regular officers required will be made up at first from among those who have served as emergency commissioned officers No short-service appointments are being made at present, and all war-time appointments are for the duration of the war Recently qualified dental surgeons who wish to be appointed to an emergency commission in the A D C should apply to the Central Dental War Committee, 13 Hill Street London W 1, or if resident in Scotland to the Scottish Central War Committee c o the Department of Health for Scotland, Edinburgh 1

Royal Air Force Medical Branch

Commissions in the medical branch of the R A F are now given only to those appointed to the Royal Air Force Volunteer Reserve for duration of the war Short service and permanent commissions are at present in abeyance

Newly qualified medical officers are considered for service in the medical branch of the Royal Air Force after having completed six months house appointment in a civil hospital No appointments to commissions are made direct by the Air Ministry , candidates must register with the Central Medical War Committee, which allocates doctors for interview and medical examination at the Medical Directorate, Air Ministry Entry of doctors to commissions in the Medical Branch of the Royal Air Force Volunteer Reserve is normally in the rank of Flying Officer (corresponding to Lieutenant in the R A M C) and promotion to Flight Lieutenant is automatic after one year's service providing recommendation for the rank is satisfactory There are from time to time a very limited number of vacancies for doctors holding specialist qualifications and in selected cases a higher rank on entry is given Medical officers on entry are given a short course of instruction at the Medical Training Establishment and on completion of the course become available for posting Such postings may be to operational units training units recruits centres, general hospitals and station hospitals In addition to ordinary general medical work there are the important branches of aviation medicine and general preventive medicine and hygiene Medical officers are encouraged to make a special study of these

Owing to the large number of women now recruited into the W A A F the medical branch is appointing a certain number of women doctors to commissions in the branch under terms of service similar to those applying to male doctors , these women doctors are mainly employed in the care of W A A F personnel but are also available to replace male medical officers as and when necessary Women doctors entered with the Royal Air Force Medical Branch are not W A A F officers but medical officers of the Royal Air Force , they wear uniform of the same pattern and design as officers of the W A A F and in addition the badge of the Medical Branch of the Royal Air Force

There is a separate dental branch of the R A F and dental officers are not appointed to the medical branch During the war dental officers are being appointed through the Central Dental War Committee which has been organised by the British Dental Association Entry into regular service has been suspended and all accepted candidates are at present commissioned in the R A F Volunteer Reserve for the duration of the war

Home Guard

The Home Guard Medical Service was officially constituted on April 2 1941 and consists of senior medical officers with the rank of Lieutenant-Colonel, battalion medical officers who are Majors and under them company and platoon officers with the ranks of Captain and Lieutenant The services of these officers are entirely voluntary and they are appointed by the commanding officers of battalions, subject to the approval of the local medical war committee which has to give its certificate that their employment will not prejudice the efficiency of the civilian services In practice the appointment is usually recommended by the senior medical officer or battalion medical officer concerned with the consent of the committee Duties are clearly defined " the Medical Officer is to be regarded as a Medical Adviser to the Battalion Commanders, whose main functions are to arrange the medical facilities within sub-units in accordance with their probable operational needs and to organise and assist in the training of the personnel He is not to be expected to undertake the duties such as are normally carried out by the Regimental Medical Officer of an Infantry Battalion " The care of Home Guard casualties is the responsibility of local civilian authorities from the moment that they are placed in the ambulances provided by those authorities These ambulances are instructed to collect Home Guard casualties only from points at which they have been assembled by the arrangement of the H G Medical Service Since it is obvious that ambulances may not be available while invasion and attack from the air is actually in progress and that the hospitals to which casualties would normally be sent may be incapable of dealing with them, the arrangement of suitable casualty collecting posts is one of the chief duties of the H G medical officer His duties with regard to training are not arduous and he can if he does not feel equal to giving lectures and instructions himself call upon local R A M C units to provide officers for these purposes The most remarkable thing about his duties is that they do not include any form of medical treatment He has to arrange that such treatment will be available, and he may in fact if invasion comes, have to carry out much of this treatment in his civilian

which is medicine He would not be eligible to sit for finals until he had completed 36 months of clinical work, but to keep him mettled up there might be sessional examinations at the medical school At present students are able to sit for part of the finals within 30 months of the second M B , and thus the average student is cramming for a part of the final within 24 months of beginning clinical work This suggested curriculum, admirable as it is, lays emphasis chiefly on groundwork and is not directed towards the special needs of general practice

Students and general practitioners have different suggestions to make On the whole students see more of general practice than do their teachers , many of them are the children of general practitioners and many hear the opinions of recently qualified friends Moreover that concern for social conditions which springs from imaginative appreciation of a neighbour's hardships—socialism in the basic sense—flourishes among the young If we are not willing to put the world right in our early twenties we are poor citizens The British Medical Students Association (p 259) ask that the student should receive better training in preventive medicine and gain more experience of chronic and minor ailments and the simpler gynæcological conditions , that he should have a wider knowledge of public health, of national health insurance, of compensation and rehabilitation They see the general practitioner, in short, as part of the social welfare organisation of the country and would have him competent to undertake that duty Nor are they oblivious of the groundwork on which such training must rest They ask for greater integration in the curriculum, and for orientation courses which would bring the various subjects into proper relationship at the outset One subject in which an orientation course would be particularly valuable is anatomy , a teacher suggests that the whole body might be dissected rapidly before the class, by an expert, before students are allowed to begin on a part All who remember the bewilderment of their first month in the dissecting-room will agree with him Some of the detail might be cut out and he suggests that anatomy should be taught on younger subjects, preferably beginning with the fœtus, so that students may see the organs at various stages of development, not only in the degeneration or atrophy of old age

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The Home Guard Medical Service was officially constituted on April 2 1941 and consists of senior medical officers with the rank of Lieutenant-Colonel, battalion medical officers who are Majors and under them company and platoon officers with the ranks of Captain and Lieutenant The services of these officers are entirely voluntary and they are appointed by the commanding officers of battalions subject to the approval of the local medical war committee which has to give its certificate that their employment will not prejudice the efficiency of the civilian services In practice the appointment is usually recommended by the senior medical officer or battalion medical officer concerned with the consent of the committee Duties are clearly defined ' the Medical Officer is to be regarded as a Medical Adviser to the Battalion Commanders whose main functions are to arrange the medical facilities within sub-units in accordance with their probable operational needs and to organise and assist in the training of the personnel He is not to be expected to undertake the duties such as are normally carried out by the Regimental Medical Officer of an Infantry Battalion ' The care of Home Guard casualties is the responsibility of local civilian authorities from the moment that they are placed in the ambulances provided by those authorities These ambulances are instructed to collect Home Guard casualties only from points at which they have been assembled by the arrangement of the H G Medical Service Since it is obvious that ambulances may not be available while invasion and attack from the air is actually in progress and that the hospitals to which casualties would normally be sent may be incapable of dealing with them the arrangement of suitable casualty collecting posts is one of the chief duties of the H G medical officer His duties with regard to training are not arduous and he can if he does not feel equal to giving lectures and instructions himself call upon local R A M C units to provide officers for these purposes The most remarkable thing about his duties is that they do not include any form of medical treatment He has to arrange that such treatment will be available and he may in fact if invasion comes have to carry out much of this treatment in his civilian which is medicine He would not be eligible to sit for finals until he had completed 36 months of clinical work, but to keep him mettled up there might be sessional examinations at the medical school At present students are able to sit for part of the finals within 30 months of the second M B, and thus the average student is cramming for a part of the final within 24 months of beginning clinical work This suggested curriculum, admirable as it is, lays emphasis chiefly on groundwork and is not directed towards the special needs of general practice

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The foregoing opinions—whether from teachers, students or practising doctors—are home and Empire produce they are what we can learn from each other But the experience of other countries is also instructive, especially when it forms a comment, spoken or unspoken, on our own practice The accounts of medical education in various parts of the world set out on p 260 will repay study We have something to learn, for example, from the Spanish system of selection, by which the best opportunities go to the best students, from the high standard of general education expected of students in France, from the student discussion groups of Norway, from the German tradition of experience in several universities, from the keenness, diligence and team spirit found in Russian clinics, and from the American principle that medicine deals not with the disease alone but with its effects on the patient, the patient's family and the community Russia, travellers tell us, finds us backward in our treatment of women, Spain thinks the golden age of English medicine is over, Germans are politely astonished when they find an English institution efficiently run, and Americans have to stop and think when they are asked to name the advantages of English medical education It is time to make changes Remembering the old maxim for examination candidates—“do the easy ones first”—let us begin by introducing experience of general practice into the curriculum, and a higher standard of obstetric training among those deciding to become family doctors

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Owing to the large number of women now recruited into the W A A F, the medical branch is appointing a certain number of women doctors to commissions in the branch under terms of service similar to those applying to male doctors, these women doctors are mainly employed in the care of W A A F personnel but are also available to replace male medical officers as and when necessary Women doctors entered with the Royal Air Force Medical Branch are *not* W A A F officers, but medical officers of the Royal Air Force, they wear uniform of the same pattern and design as officers of the W A A F and in addition the badge of the Medical Branch of the Royal Air Force

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Health Services at Home

EMERGENCY MEDICAL SERVICE

Last year we traced the development of the E M S from the paper scheme drawn up by the Ministry of Health before the war to an actively functioning service London had been divided into its sectors and the rest of the country into regions The hospitals had been classified and affiliated to each other, twelve hospital officers had been appointed to serve the various regions and to work out details of the scheme, and the hospitals in affiliated groups had appointed group officers who planned the distribution of personnel into teams and allocated them to hospitals in the group Rates of pay were

Group officer	£1300
Officer in charge of surgical or medical division (hospital of 500 beds and over)	950
Surgeon or physician specialist	800
Medical officers	550

These rates of pay have remained unchanged, but many consultants, who had suffered serious financial loss by becoming whole-time officers at £800 a year were allowed to become part-time officers at £500 a year and to carry on private practice in their spare time, this plan has been maintained and in addition some consultants have been appointed to serve on a sessional basis The system followed varies in different parts of the country London depends largely on part-time consultants, the provinces more on consultants giving sessional attendance House officers, who at the outset were astonished to find themselves receiving £350 a year, have been reduced to the less spectacular annual salary of £120 for junior housemen and £200 for senior housemen

POOLING

It would be an advantage, of course, if medical personnel could be freely interchangeable between the defence services and the E M S Schemes are now under discussion by the Shakespeare Committee and a considerable degree of pooling has already been achieved The Army and Navy lend the E M S the services of their consultants and senior surgeons, and " command neurologists " are borrowed by the Services from the E M S The bulk of Service patients are treated in E M S hospitals Pooling is only practicable within Great Britain the B E F of course must get all the medical personnel they ask for, and the Navy cannot in the nature of things cooperate very freely in a pooling scheme The R A F share their medical officers as much as possible If invasion should occur, plans for pooling are complete Ambulances, casualty clearing stations, and all the front line services, will be interchangeable Behind these the E M S hospitals will receive all patients Pooling of information is achieved through the M R C committees—on war wounds, shock, burns, peripheral nerve injuries, brain injuries and other conditions—whose findings are at the disposal of all the Services The M R C also has an interservice editorial committee

NEW OPPORTUNITIES FOR STUDENTS

Special centres in the E M S have increased in number and students are finding in them opportunities to gain first-class experience The centres deal with hea injuries, chest injuries, peripheral nerve injuries, fract and neuroses, students have access to all except the for the neuroses The treatment of fractures has advanced at a rate which has achieved, in the past two years, as much as could have been hoped for in ten years of peace At the outbreak of war there were 16 orthopædic centres available and by the beginning of this year they were all full At that time any large influx of casualties would have been accommodated with difficulty, and many patients would necessarily have been sent to centres not equipped to deal with them The Minister of Health, moreover, had decided that the E M S should treat not only war casualties but fractures in miners, munition workers and others engaged in war work Orthopædic personnel was too scarce to allow of fresh orthopædic hospitals being established, instead the E M S set up fracture clinics and fracture departments in hospitals all over the country One experienced surgeon could serve two or three of these centres, which were of three types 56 fracture departments (type A) for long term cases, 200 fracture departments (type B) for ambulant or short term cases, and a large number of fracture clinics (type C) where civilian patients could get massage and supervision as outpatients after leaving hospital Occupational therapy is available in all the orthopædic centres and in the A departments, and all these special departments are open to students

The E M S is gradually arranging convalescent care for all patients, but this has not been easy At the beginning of the war the Red Cross and the Order of St John of Jerusalem set up convalescent homes for Service patients in country houses lent for the purpose Acceptance of civil casualties in such houses is a matter for arrangement between the hospital officer and the commandant of the home, who may be its owner Many of those who willingly lent their homes for the reception of Service casualties have been less enthusiastic about receiving civil defenders, and few are ready to accept convalescent civilian sick But there is evidence that they are beginning to warm to the idea

" A HOME IN THE COUNTRY "

The E M S has encouraged the big teaching schools to adopt a country hospital to which cases can be transferred and at which teaching can be carried on Sometimes this is one of the outlying hospitals, voluntary or municipal, in the sector, and many of the London hospitals had already made such arrangements last year This year more have followed suit and several have moved their teaching centres into the country Now hospitals in Liverpool, Leeds, Cardiff and Birmingham are getting their homes in the country This principle, it is hoped, will be maintained after the war, and it is to the interest of the patients to ensure that large hospitals are not rebuilt in cities but in more healthy surroundings

The E M S authorities have done all they can to help the teaching hospitals to find suitable country quarters and to provide everything needed to make the transfer a success Sometimes the new home has been found in a country house or club and sometimes in a hutted hospital in the grounds of one of the outlying municipal hospitals Those teaching hospitals which can boast a determined dean of the medical school have fared best The E M S authorities are willing to help in every way they can, but they are naturally more inclined to do their best for those who make their needs plainly and repeatedly clear The linkage between the voluntary and the municipal hospitals is growing continually stronger and the student will profit perhaps more than anyone else by such a liaison, for it brings him into contact not only with the rare in medicine but with common and chronic conditions which it will later be his lot to meet daily

Some hospitals in cities have been put completely out of commission by bombing—even to the extent of being reduced to a pile of rubble It has been asked whether such a blitzed hospital can retain its identity If the foundation is rich enough it can survive by transferring the entire hospital to a country home, provided a satisfactory building can be found But few hospitals can afford such removal, and it then becomes the task of the E M S authorities to decide whether in a given case the Government is justified in providing money to maintain a hospital—whether, in short, that particular hospital shall survive. Any hospital which has to do with medical education is likely to be aided at once, but in the case of hospitals without educational or national importance the question is sometimes *difficult to decide*. The fact that the decision rests with the Emergency Hospital Scheme of the Ministry of Health is some indication of the stature to which this infant giant has already grown and foreshadows the issues which will come within the scope of the medical service of the future.

INDUSTRIAL MEDICAL SERVICES

Owing to the Factory (Medical and Welfare Services) Order of the Ministry of Labour (1940) there has been a rapid increase in the number of industrial medical officers appointed to factories within the past year. The Minister of Labour now has power to compel employers to make such appointments, being guided in this matter by the recommendations of the factory inspectorate. Already most of larger firms in the country (those employing 7500 persons or more) have appointed whole-time medical officers. The greatest increase, however, has been in the number of appointments of general practitioners as part-time factory medical officers.

It is estimated that there are approximately 120–150 whole-time doctors employed in factories throughout the country; the number of these may increase before the end of this year but it is unlikely that they will exceed 200 because of the limited number of large industrial organisations. This type of service must be expanded in the future to meet the requirements of smaller firms either by the appointment of an increasing number of part-time medical officers who will mainly be general practitioners, or by the institution of a special industrial medical service in which a doctor gives the whole of his time to industry, but instead of working in one large firm supervises a number of smaller units. There is certainly a gap in the present health services of the country which can be bridged best by appointing doctors whose sphere of work brings them within the factory walls. The needs are three: medical supervision of the first treatment of cases of injury and sickness occurring at work; supervision of the final stages of rehabilitation and of the return to work of sick and injured persons; and a wider knowledge of working conditions on the part of the medical profession generally. Hitherto lack of such knowledge has made it difficult for anyone to prevent ill health caused by industrial environment.

Facilities for training potential and newly appointed industrial medical officers have been provided in a sporadic fashion by weekend courses at the Universities of Birmingham, Manchester and Sheffield, but these facilities might well be improved and increased. Education should link up with research in some coordinated plan if this new branch of medicine is to flourish. The health of the worker has never been more important than it is in these days. The Government are demanding better health and welfare provisions in factories as an essential part of industrial policy; and there is evidence that both employers and workers are becoming increasingly interested in such schemes. Industrial health service will doubtless play a large part in the reconstruction of the health services after the war. The British Medical Association has set up an Industrial Health Committee and information on terms of appointment and conditions of service can be obtained from the Secretary at B M A House, Tavistock Square, London, W C 1.

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capacity , but his duties as H G medical officer do not involve his being mobilised for whole-time service and in most cases he has prior obligations to the local authorities or hospitals which would make such service impossible for him All M O 's in the Home Guard are issued with battle dress including forage caps with the badge of the county regiment , their only distinguishing mark is a Red Cross brassard which, it is supposed, would secure to them the protection of the Geneva convention in face of the enemy Entrants must not be over sixty-five years of age and must of course be registered practitioners Although their duties may at first sight appear to be relatively unimportant, it is worth while remembering that no other authority is making arrangements for the disposal of casualties should ambulance traffic be suspended by enemy action

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Health Services at Home

EMERGENCY MEDICAL SERVICE

Last year we traced the development of the E M S from the paper scheme drawn up by the Ministry of Health before the war to an actively functioning service London had been divided into its sectors and the rest of the country into regions The hospitals had been classified and affiliated to each other , twelve hospital officers had been appointed to serve the various regions and to work out details of the scheme, and the hospitals in affiliated groups had appointed group officers who planned the distribution of personnel into teams and allocated them to hospitals in the group Rates of pay were

Group officer	£1300
Officer in charge of surgical or medical division (hospital of 500 beds and over)	950
Surgeon or physician specialist	800
Medical officers	550

These rates of pay have remained unchanged, but many consultants, who had suffered serious financial loss by becoming whole-time officers at £800 a year were allowed to become part-time officers at £500 a year and to carry on private practice in their spare time , this plan has been maintained and in addition some consultants have been appointed to serve on a sessional basis The system followed varies in different parts of the country London depends largely on part-time consultants, the provinces more on consultants giving sessional attendance House officers, who at the outset were astonished to find themselves receiving £350 a year, have been reduced to the less spectacular annual salary of £120 for junior housemen and £200 for senior housemen

POOLING

It would be an advantage, of course, if medical personnel could be freely interchangeable between the defence services and the E M S Schemes are now under discussion by the Shakespeare Committee and a considerable degree of pooling has already been achieved The Army and Navy lend the E M S the services of their consultants and senior surgeons, and " command neurologists " are borrowed by the Services from the E M S The bulk of Service patients are treated in E M S hospitals Pooling is only practicable within Great Britain the B E F of course must get all the medical personnel they ask for , and the Navy cannot in the nature of things cooperate very freely in a pooling scheme The R A F share their medical officers as much as possible If invasion should occur, plans for pooling are complete Ambulances, casualty clearing stations, and all the front line services, will be interchangeable Behind these the E M S hospitals will receive all patients Pooling of information is achieved through the M R C committees—on war wounds, shock, burns, peripheral nerve injuries, brain injuries and other conditions—whose findings are at the disposal of all the Services The M R C also has an interservice editorial committee

NEW OPPORTUNITIES FOR STUDENTS

Special centres in the E M S have increased in number and students are finding in them opportunities to gain first-class experience The centres deal with injuries, chest injuries, peripheral nerve injuries, fr and neuroses , students have access to all except t for the neuroses The treatment of fractures advanced at a rate which has achieved, in the past years, as much as could have been hoped for in ten of peace At the outbreak of war there were 16 ort pædic centres available and by the beginning of this they were all full At that time any large influx casualties would have been accommodated with culty, and many patients would necessarily have sent to centres not equipped to deal with them Minister of Health, moreover, had decided that E M S should treat not only war casualties but frac in miners, munition workers and others engaged in war work Orthopædic personnel was too scarce to of fresh orthopædic hospitals being established , instead the E M S set up fracture clinics and fracture departments in hospitals all over the country One experienced surgeon could serve two or three of these centres, which were of three types 56 fracture departments (type A) for long term cases , 200 fracture departments (type B) for ambulant or short term cases , and a large number of fracture clinics (type C) where civilian patients could get massage and supervision as outpatients after leaving hospital Occupational therapy is available in all the orthopædic centres and in the A departments , and all these special departments are open to students

The E M S is gradually arranging convalescent care for all patients, but this has not been easy At the beginning of the war the Red Cross and the Order of St John of Jerusalem set up convalescent homes for Service patients in country houses lent for the purpose Acceptance of civil casualties in such houses is a matter for arrangement between the hospital officer and the commandant of the home, who may be its owner Many of those who willingly lent their homes for the reception of Service casualties have been less enthusiastic about receiving civil defenders , and few are ready to accept convalescent civilian sick But there is evidence that they are beginning to warm to the idea

" A HOME IN THE COUNTRY "

The E M S has encouraged the big teaching schools to adopt a country hospital to which cases can be transferred and at which teaching can be carried on Sometimes this is one of the outlying hospitals, voluntary or municipal, in the sector, and many of the London hospitals had already made such arrangements last year This year more have followed suit and several have moved their teaching centres into the country Now hospitals in Liverpool, Leeds, Cardiff and Birmingham are getting their homes in the country This principle, it is hoped, will be maintained after the war, and it is to the interest of the patients to ensure that large hospitals are not rebuilt in cities but in more healthy surroundings

The E M S authorities have done all they can to help the teaching hospitals to find suitable country quarters and to provide everything needed to make the transfer a success Sometimes the new home has been found in a country house or club and sometimes in a hutted hospital in the grounds of one of the outlying municipal hospitals Those teaching hospitals which can boast a determined dean of the medical school have fared best The E M S authorities are willing to help in every way they can, but they are naturally more inclined to do their best for those who make their needs plainly and repeatedly clear The linkage between the voluntary and the municipal hospitals is growing continually stronger and the student will profit perhaps more than anyone else by such a liaison, for it brings him into contact not only with the rare in medicine, but with common and chronic conditions which it will later be his lot to meet daily

Some hospitals in cities have been put completely out of commission by bombing—even to the extent of being reduced to a pile of rubble It has been asked whether such a blitzed hospital can retain its identity If the foundation is rich enough it can survive by transferring the entire hospital to a country home, provided a satisfactory building can be found But few hospitals can afford such removal, and it then becomes the task of the E M S authorities to decide whether in a given case the Government is justified in providing money to maintain hospital—whether, in short, that particular hospital shall survive. Any hospital which has to do with medical education is likely to be aided at once, but in the case of hospitals without educational or national importance the question is sometimes difficult to decide. The fact that the decision rests with the Emergency Hospital Scheme of the Ministry of Health is some indication of the stature to which this infant giant has already grown and foreshadows the issues which will come within the scope of the medical service of the future.

INDUSTRIAL MEDICAL SERVICES

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LONDON COUNTY COUNCIL HOSPITALS

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Treatment is provided in these hospitals for all kinds of acute and chronic illnesses, including fevers, tuberculosis, mental and nervous disorders

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Medical superintendents of the hospitals, who are expected to be experienced hospital administrators, receive £850 to £1650 a year, in hospitals varying in accommodation from 160 to 1300 patients In addition, medical superintendents are provided with an unfurnished house or quarters with payment by the Council of local and water rates The other full-time medical staff are classified as follows

Grade	*Annual salary*
Deputy medical superintendent, class I	£650—£50—£800
Deputy medical superintendent, class II	£600—£30—£750
Deputy medical superintendent, class III	£550—£25—£650
Deputy medical superintendent, class IV	£500—£25—£600
Senior resident surgeon physician, or obstetrician, and senior assistant medical officer	£500—£25—£600
Assistant medical officer, class I	£350—£25—£425
Assistant medical officer class II	£250
House physicians and house surgeons	£120

These officers are provided with board, lodging and washing Clinical assistants, who are non-resident, receive £150 a year with meals when on duty Vacancies in the higher grades are filled as far as possible by promotion from the existing staff In addition, a large number of part-time consultants and specialists are employed in the various hospitals and the establishment provides for a certain number of whole-time non-resident specialists at a salary of £1250—£50—£1500

There was some disorganisation of the consultant service at the outbreak of war, but by February, 1940, it was again working normally, though with reduced numbers of sessions A comprehensive pathological service has been established There are seven group laboratories, each of which serves a number of hospitals, a central histological laboratory, and an antitoxin establishment Attached to the group laboratories are subsidiary laboratories situated in the various hospitals Normally a medical staff of 27 is attached to these laboratories, but some of them are at present working at other laboratories under the E M S

TEACHING FACILITIES

During the war, courses for the diploma in public health are held in the council's hospitals , other postgraduate facilities have remained as they were The British Postgraduate School is located in the Council's Hammersmith Hospital

Patients under treatment in the Council's hospitals have not been much reduced in number and increased use is being made of them for teaching purposes Maternity wards of many of the voluntary hospitals have been closed, and arrangements have been made whereby maternity students have had training and experience in the maternity departments of the Council's general hospitals Most of the students are resident and attend for a fortnight at a time In addition, students have been allocated to a number of the general and special hospitals under the Emergency Medical Scheme to act as dressers The Council has agreed that medical training and experience shall be provided whenever possible , in most cases the students, some of whom are resident, receive systematic instruction from the resident medical staff of the hospital The fever hospitals provide special facilities for undergraduate instruction, and when patients are available, for demonstrations in the diagnosis and treatment of smallpox for both undergraduate and postgraduate students

Most of the general hospitals are recognised training centres for candidates for the University of London M D examination , 18 of them for the Diploma and Membership of the Royal College of Obstetricians and Gynæcologists and for the final F R C S examination and the Diploma in Anæsthetics Service at Queen Mary's Hospital for Children, Carshalton, is recognised by the Royal Colleges of Physicians and Surgeons as a part qualification for the Diploma in Child Health

MENTAL HOSPITALS BRANCH

The mental health services of the L C C are responsible for a large medical service, vacancies in which are normally advertised at short intervals No new permanent appointments are being made at present, indeed the staffs of the various hospitals have been reduced as a war measure In peace-time those appointed to the service may be sent to any of the Council's mental hospitals and may be transferred from one hospital to another should circumstances require it An applicant enters the service as assistant medical officer at a salary of £470 a year, rising by annual increments of £25 to £570 Salaries are graded through the various ranks to £1450 paid to superintendents of large hospitals , a superintendent is also provided with an unfurnished house on the hospital premises Assistant medical officers may be required to live in the institution which they are serving and to pay fixed rates for board, lodging and washing Officers contribute to a superannuation fund They are required to take a Diploma in Psychological Medicine within three years of entering the service and the diploma carries with it a payment, in addition to salary, of £50 a year Promotion is reasonably rapid for men The mental health services are actively concerned in the E M S. Three hospitals are used entirely as emergency hospitals and at eight others there is an emergency hospital section Treatment is provided for all types of acute, medical and surgical cases and the hospitals are staffed and equipped to give specialised treatment The medical staff for these hospitals is drawn mainly from the emergency medical service

MENTAL HOSPITALS OUTSIDE THE LONDON AREA

Posts for medical officers in the provinces are similar in scope and remuneration to those in London They are advertised regularly in the medical journals

Services Abroad

INDIAN MEDICAL SERVICE

Recruitment to the Indian Medical Service, which is designed primarily to meet the needs of the Indian Army, has been modified by the war, and officers are now appointed to emergency commissions in the military branch for the duration of the war A large number of emergency commissioned officers are required at present, and the appointments are particularly suitable for young doctors who wish to serve in India Officers who have held such commissions will, if qualified under the conditions then in force, be given preference when the grant of permanent commissions is resumed after the war The age-limit for emergency commissions has been raised from 32 to 45 An antedate may be granted on appointment to an officer who has held an approved whole-time appointment in a recognised civil hospital or who possesses higher qualifications and professional experience All previous full pay commissioned service with the armed forces as a medical officer counts towards rank and seniority Appointment carries a free passage to India for the officer and an allowance for uniform, but if qualified and selected for a specialist post an emergency commissioned officer will be given the appropriate temporary rank with pay and allowances for the appointment Passages are not granted to wives and families resident out of India when the officer is selected for the grant of an emergency commission, unless, on the termination of his service, the officer elects to reside in India, when conveyance to the selected place of residence in India is admissible

The pay of a European lieutenant in India is £585 per annum, and of a captain £750 per annum on promotion , on his release an emergency commissioned officer receives a gratuity at the rate of one month's pay for each year of Army service If invalided out for a disability due to service he receives retired pay appropriate to his rank and degree of disablement If he dies as a result of military service during the war, provision is made for his widow and children Full information about the conditions of service may be obtained from the Military Secretary, India Office, 4 Central Buildings London, S W 1 The Medical Adviser to the Secretary of State for India India Office, Whitehall, is always willing to interview prospective officers

WOMEN'S MEDICAL SERVICE FOR INDIA

Admission to the service is by selection in India and England, preference being given to women with Indian experience , appointment is open to English and Indian qualified women and the number of full medical officers is 44 There are 6–10 temporary officers and a training reserve of about 14 recently qualified women from Indian universities Vacancies are few, usually only three or four in each year, and there is little recruitment from England Since the outbreak of war no members of the training reserve have been sent to England for postgraduate study Leave out of India has also been restricted and vacancies in the service are being filled by doctors in India as need arises The office of the Dufferin Association in London is closed for the duration of the war, and the post of medical adviser is in abeyance Those seeking information about the Association should apply to the High Commissioner for India, India House, Aldwych London, W C 2

COLONIAL MEDICAL SERVICE

The Colonial Office is anxious that young doctors should realise that recruitment for the Colonial Medical Service at the present time has been officially approved and that service in the Colonial Empire is of as much national importance as service in the Forces Vacancies occur most frequently in tropical Africa and Malaya Specialist appointments are usually reserved for officers already in the service who have shown outstanding merit in a particular branch A few vacancies may occur for women with experience in maternity and child welfare work Selected candidates are generally required to attend a course in tropical medicine and hygiene before going overseas or during their first leave period The colonial empire covers about 2,000 000 square miles and contains a population of over 60 millions The various Government medical departments employ about 700 European medical officers, including some 30 women and about the same number of locally appointed medical officers Medical experience may include—among other diseases associated with the tropics—malaria yaws, leprosy sleeping sickness, plague yellow fever cholera, as well as the common diseases of medical practice An officer in the Colonial Medical Service has special opportunities for the practice of his profession in preventive medicine as well as in other branches, there are also opportunities for research Full particulars of the terms and conditions of service may be obtained from the Director of Recruitment (Colonial Service), Colonial Office, 29, Queen Anne's Gate, London, S W 1

SUDAN MEDICAL SERVICE

This service is responsible for civil medical and public health work in the Sudan, and for the health of the Sudan Defence Force Recruitment has ceased for the time being but it is possible that it will be resumed before the end of this year Those seeking further particulars should write to the Consulting Physician to the Sudan Government, 93, Harley Street, London, W 1

SOUTHERN RHODESIAN MEDICAL SERVICE

The Government maintains a medical and public health service in which whole-time and part-time officers are employed Full particulars may be obtained from the High Commissioner for Southern Rhodesia, 429, Strand, London, W C 2

B M A AND B H A —The British Medical Association and the British Hospitals Association have set up a liaison committee to meet when required to discuss subjects of mutual interest The committee will consist of three representatives from each association

BRITISH MEDICAL STUDENTS ASSOCIATION

THE National Union of Students includes students from all faculties Before the war a medical subcommittee existed chiefly to organise pleasant but rather extravagant meetings , and when war broke out this committee was disbanded on grounds of expense At that time medical students particularly those in London were experiencing the effects on teaching of the first dispersal of patients and medical schools Dislocation of their work led them to form the London Medical Committee to which most of the London schools sent delegates This committee drew up schemes for emergency training and for the utilisation of preclinical students in civil defence and in a number of hospitals the schemes were adopted

Realising that the problems of London students were likely to be shared by students in the provinces the committee called a conference in Manchester in May 1940 to which delegates from all medical schools were invited Nineteen schools—nearly two-thirds of the total—were represented At this meeting the British Medical Students Association was founded Later a pamphlet (" B M S A —the Plan ") was issued in which the aims of the association were set out It was proposed that a national scheme for medical students should be put into operation under the Ministry of Health and other responsible bodies by which teaching facilities and clinical opportunities might be fairly shared and financial loss—due to evacuation billeting and travelling costs—be compensated by the Ministry The curriculum was also discussed the following principles gaining general support ability to use knowledge being the basis of education there should be a preliminary cultural and scientific background , the subjects of medical training must form an interrelated whole , staff and students should be represented on curriculum committees to plan orientation of teaching and teachers should be selected for their ability to teach rather than their experience as specialists or research workers It was also felt that discussion groups should replace formal lectures that medicine should be taught with greater emphasis on its social aspects and that there should be a single national qualification conducted by a central medical authority

Those who had been hoping for a united medical student movement were largely disappointed but with the onset of heavy bombing the need for an active organisation became more pressing and thanks to the energy of a small group of students chiefly from Manchester a large meeting of the B M S A was held at the N U S congress at Cambridge in April 1941 The proceedings were reported in our columns [1] Some of the original aims were reaffirmed—for example there was still a general demand for greater integration of training for orientation courses especially as an introduction to general biology , and for a curriculum which gave more attention to social medicine There was also a desire for more emphasis on common and minor ailments such as provide the bulk of the work in general practice for much more training in preventive medicine and for greater knowledge of public health machinery and of insurance compensation and rehabilitation Student health and health insurance schemes were discussed

Since that conference the B M S A has been invited by the Medical Planning Commission of the British Medical Association to prepare a memorandum on medical education This was discussed at a council meeting at Cambridge in July only ten of the thirty-odd medical schools in England Wales and Scotland sent delegates and it was felt that not even the broad principles of a memorandum representative of student opinion could be attempted at that stage A committee of three—two men and one woman—was therefore appointed to invite the views of all medical schools and an outline for discussion was drawn up The committee asks that every school whatever its relations with the N U S or the B M S A should take a full part in helping to draw up this memorandum Students who have individual suggestions to offer or who wish to criticise the existing curriculum should send their views to Mr K C Willett Middlesex Hospital London W 1

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[1] *Lancet* April 12 1941, p 489

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Grade	*Annual salary*
Deputy medical superintendent, class I	£650—£50—£800
Deputy medical superintendent, class II	£600—£30—£750
Deputy medical superintendent, class III	£550—£25—£650
Deputy medical superintendent, class IV	£500—£25—£600
Senior resident surgeon physician, or obstetrician, and senior assistant medical officer	£500—£25—£600
Assistant medical officer, class I	£350—£25—£425
Assistant medical officer, class II	£250
House physicians and house surgeons	£120

These officers are provided with board, lodging and washing Clinical assistants, who are non-resident, receive £150 a year with meals when on duty Vacancies in the higher grades are filled as far as possible by promotion from the existing staff In addition a large number of part-time consultants and specialists are employed in the various hospitals and the establishment *provides for a certain number of whole-time non-resident* specialists at a salary of £1250—£50—£1500

There was some disorganisation of the consultant service at the outbreak of war, but by February, 1940, it was again working normally, though with reduced numbers of sessions A comprehensive pathological service has been established There are seven group laboratories, each of which serves a number of hospitals, a central histological laboratory, and an antitoxin establishment Attached to the group laboratories are subsidiary laboratories situated in the various hospitals Normally a medical staff of 27 is attached to these laboratories, but some of them are at present working at other laboratories under the E M S

TEACHING FACILITIES

During the war, courses for the diploma in public health are held in the council's hospitals, other postgraduate facilities have remained as they were The British Postgraduate School is located in the Council's Hammersmith Hospital

Patients under treatment in the Council's hospitals have not been much reduced in number, and increased *use is being made of them for teaching purposes* Maternity wards of many of the voluntary hospitals have been closed, and arrangements have been made whereby maternity students have had training and experience in the maternity departments of the Council's general hospitals Most of the students are resident and attend for a fortnight at a time In addition, students have been allocated to a number of the general and special hospitals under the Emergency Medical Scheme to act as dressers The Council has agreed that medical training and experience shall be provided whenever possible, in most cases the students, some of whom are resident, receive systematic instruction from the resident medical staff of the hospital The fever hospitals provide special facilities *for undergraduate instruction*, and when patients are available, for demonstrations in the diagnosis and treatment of smallpox for both undergraduate and postgraduate students

Most of the general hospitals are recognised training centres for candidates for the University of London M D examination, 18 of them for the Diploma and Membership of the Royal College of Obstetricians and Gynæcologists and for the final F R C S examination and the Diploma in Anæsthetics Service at Queen Mary's Hospital for Children, Carshalton, is recognised by the Royal Colleges of Physicians and Surgeons as a part qualification for the Diploma in Child Health

MENTAL HOSPITALS BRANCH

The mental health services of the L C C are responsible for a large medical service, vacancies in which are normally advertised at short intervals No new permanent appointments are being made at present, indeed the staffs of the various hospitals have been reduced *as a war measure In peace time those appointed* to the service may be sent to any of the Council's mental hospitals and may be transferred from one hospital to another should circumstances require it An applicant enters the service as assistant medical officer at a salary of £470 a year, rising by annual increments of £25 to £570 Salaries are graded through the various ranks to £1450 paid to superintendents of large hospitals, a superintendent is also provided with an unfurnished house on the hospital premises Assistant medical officers may be required to live in the institution which they are serving and to pay fixed rates for board, lodging and washing Officers contribute to a superannuation fund They are required to take a *Diploma* in Psychological Medicine within three years of entering the service and the diploma carries with it a payment, in addition to salary, of £50 a year Promotion is reasonably rapid for men The mental health services are actively concerned in the E M S, Three hospitals are used entirely as emergency hospitals and at eight others there is an emergency hospital section Treatment is provided for all types of acute, medical and surgical cases and the hospitals are staffed and equipped to give specialised treatment The medical staff for these hospitals is drawn mainly from the emergency medical service

MENTAL HOSPITALS OUTSIDE THE LONDON AREA

Posts for medical officers in the provinces are similar in scope and remuneration to those in London They are advertised regularly in the medical journals

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Services Abroad

INDIAN MEDICAL SERVICE

Recruitment to the Indian Medical Service, which is designed primarily to meet the needs of the Indian Army, has been modified by the war, and officers are now appointed to emergency commissions in the military branch for the duration of the war A large number of emergency commissioned officers are required at present, and the appointments are particularly suitable for young doctors who wish to serve in India Officers who have held such commissions will, if qualified under the conditions then in force, be given preference when the grant of permanent commissions is resumed after the war The age-limit for emergency commissions has been raised from 32 to 45 An antedate may be granted on appointment to an officer who has held an approved *whole-time appointment* in a recognised civil hospital or who possesses higher qualifications and professional experience All previous full pay commissioned service with the armed forces as a medical officer counts towards rank and seniority Appointment carries a free passage to India for the officer and an allowance *for uniform*, but if qualified and selected for a specialist post an emergency commissioned officer will be given the appropriate temporary rank with pay and allowances for the appointment Passages are not granted to wives and families resident out of India when the officer is selected for the grant of an emergency commission, unless, on the termination of his service, the officer elects to reside in India, when conveyance to the selected place of residence in India is admissible

The pay of a European lieutenant in India is £585 per annum, and of a captain £750 per annum on promotion, on his release an emergency commissioned officer receives the most successful of its students to fill its resident posts , the appointments are for a year and during this time four months are spent on medicine four months on surgery, and four months on casualty or some specialty like anæsthesia All men fortunate enough to get a hospital appointment are thus given a wide experience without the necessity for spending too much time at it, or the recurrent bother of searching for a new job every six months At the end of the year registrars are chosen from the residents for a further year and the unsuccessful may pass on to appointments at special hospitals, such as those for women and children

The distances between towns in Australia made it imperative formerly, that every man should have a reasonable training in operative surgery This was certainly so before 1930 when a house-surgeon was expected to do operations a registrar would be grateful for now Distance however is being annihilated and so the necessity for such a high general standard is diminishing A more important influence has been the rise of the Royal College of Surgeons of Australasia The last war brought many Australian doctors to France and on demobilisation many of them stayed on in England and took the F R C S If this led to a rather narrow prejudice against the Edinburgh Fellowship, it also stimulated those who returned to improve surgical training and status in Australasia This has meant the limitation of the training of the many in order that the few might be better trained, and was met with some criticism at first The relationship to medical education of the College of Surgeons, and of the newly founded College of Medicine, is now settling to that of the English model This trend brings the deeper aims of the profession in Australia still more in line with those of the country from which it sprung, and guarantees that the standards of the past will be steadily raised Australian medical education can well bear comparison with the best available elsewhere, as the increasing number of her notable medical men bears witness

NEW ZEALAND

New Zealand has one medical school at the University of Otago in Dunedin The yearly admission of students fluctuates between 40 and 100 Teaching and hospital work are carried on for three terms in every year, a term lasting 12–13 weeks, and professional examinations conform roughly to the pattern of those in the Scottish schools, from which the New Zealand tradition derives The first year is spent on physics, chemistry and biology, the second and third years on anatomy and physiology Pathology, bacteriology, and materia medica are studied in the fourth year, at the end of which there is a professional examination in those subjects At the same time lectures in medicine and surgery are given, and the student works in the wards of the Dunedin Hospital In the fifth year he continues his course in medicine, and has classes and clinical work in obstetrics and gynæcology and in the usual special subjects, as well as short courses preparing him for part I of the final examination at the end of the year this consists of public health and medical jurisprudence together with an examination in applied anatomy and applied physiology That concludes the formal part of the student's training In the sixth or final year, the class is divided into four groups, one of which works in each of the country's four large general hospitals (Auckland, Wellington Christchurch and Dunedin) There the student makes a complete round of the wards and departments, medical, surgical and special, spending about six weeks in each , he studies the patients, assists the house-physicians and house surgeons in minor procedures and receives clinical teaching from the members of the honorary staff The four hospitals contain over 2000 beds among them At the end of that clinical year the student returns to Dunedin for part II of his final examination (medicine surgery, obstetrics and gynæcology), the passing of which gives him the M B , Ch B degree of the University of New Zealand There is little organised postgraduate teaching, but before the war 30–50% of New Zealand students came to England or Scotland within a year or two of graduation for postgraduate experience and higher qualifications, and a smaller number were beginning to seek the same advantages in Australia

MEDICAL EDUCATION IN THE UNITED STATES

Medical students beginning anatomy and physiology in American schools must have done a minimum of two years' university work which includes prescribed courses in physics, chemistry and biology Some medical schools require three years' work and some a baccalaureate degree, and in practice nearly all students taking up medicine are university graduates who have been four years at college, have taken a degree in the premedical sciences and have reached the age of twenty-two They study for a further four years beginning with an intensive course in anatomy, physiology, pharmacology, pathology, bacteriology and biochemistry lasting through the first two years Though they do not ordinarily start clinical work until their second year in some schools they attend clinical demonstrations given by the most able of their teachers during the first year Set lectures become fewer as they go on At Harvard during their early years no official lecture courses may be fixed for Tuesday, Thursday and Saturday afternoons, though lectures at which attendance is optional and no credit given may be scheduled on those days About 30% of students use the free afternoons for research , their professors advise and encourage them, but the work done is their own affair In the third year of training there is only one lecture a day—often at 8 30 in the morning—and in the fourth year none Clinical classes in small groups are common however, and students and teachers often meet for informal discussion in the evening, learning at such gatherings to know each other well Few fail to do a year or two as interns after qualifying and those who intend to specialise subsequently take resident posts or appointments as registrars just as they would in England

Graduation from medical school does not give the right to practise The graduate must also pass the state examinations to those states in which he wishes to work, or a national examination which qualifies him to practise in any state There is a growing tendency for all students to take the national examination About five years ago examining boards to certify qualification in the various specialties were organised within the profession itself , these boards have gained strength and are now able to insist on an appropriate standard of experience and training among examination candidates who intend to specialise There are 77 medical schools in the United States and all except three are recognised as reaching class A This high standard has been achieved in the last generation , the Carnegie Foundation drew attention to defects in the medical schools at the beginning of this century and the American Medical Association undertook the task of raising the standard by establishing a system of inspection and control through their Council on Medical Education

Teaching of Preventive Medicine —About a quarter of the schools have a full-time department of preventive medicine and the great majority give organised instruction Where independent departments do not exist this is usually done in connexion with the department of bacteriology, often termed the department of bacteriology and preventive medicine In a number of schools this subject is taught throughout the four years of medical training The view is taken that every doctor must practise preventive medicine , and that those who wish to specialise in it will go into the public health service The whole medical course is built on the study of the three directions in which disease can act , on the patient, on the patient's family and on the society in which the patient lives Thus the problem of disease is treated as a group problem Newcomers to the medical school at Harvard are taken on their first day to the Peter Bent Brigham Hospital where they are actually shown a patient—a revolutionary step on the first day of medical training The professor explains the case as he might explain it to intelligent laymen , and having discussed the disease, shows how it has affected the patient, his family and the community Thus from their first lecture students grasp the principle that medicine must be approached from these three aspects , and their subsequent education insists on that principle again and again In their fourth year of training, when they are responsible for cases of their own, they are expected to go to the patient's home, to the office or factory where he works

Grand Tour

MEDICAL EDUCATION IN THE DOMINIONS

SOUTH AFRICA

Fully trained graduates of medicine first emerged from the Universities of Cape Town and Johannesburg little more than twenty years ago They showed a high standard of training, served the people of South Africa with enthusiasm and keenness, and are now in many instances holding posts of distinction in England and other countries Thus it proved that a long tradition was not essential to a medical school a new school even had advantages The men who shaped its course came from different schools, and different lands with varying ideas and practice, they were in a position to choose the best and avoid the mistakes of others

The South African medical degree can only be taken at a university—there are no colleges It takes six years, half of which are spent in the wards The student completes his anatomy and physiology by the end of his second year, and though the time spent on anatomy is a little short compared with the time the older surgeons spent on it, it is a sound full course, and extended in the third year by the study of embryology and anthropology During his courses in bacteriology, pathology and pharmacology the student is not able to undertake any serious study of clinical cases lectures and laboratory work make too many demands on his time, but since he is by now hankering for "real doctoring," it might be an advantage if he had the opportunity of attending demonstrations on well-known diseases during this period of training

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In both universities the system of co-education works handsomely, despite the prejudice against it in some of the London medical schools All South African hospitals provide ample accommodation for women doctors and students They have also recognised the importance of providing good quarters for students In England and elsewhere students often have to live in grimy squalid lodgings near the hospital, which is often situated in a slum area, neither the company nor the atmosphere is good for their health In South Africa large hostels have been built, and these are supervised by the professorial staffs It is recognised that the doctor plays an important rôle in educating the public, and his own education must therefore be a generous one To live among different groups of men, to see, hear and discuss their views is the best way to acquire a broad view of life It might be a good plan to arrange short vacation visits for students from one university to the other, so that they could gain new friends and encounter new teachers and fresh ideas

The South African Government is alive to the importance of its public health services Large tuberculosis hospitals are being established and the problem of venereal disease among the natives is being tackled The white population of South Africa is a limited one and the government has therefore realised the importance of training, for the coloured and the native populations, their own doctors, nurses, midwives and ord Special hospitals have been set aside for this pu There will be much work for the doctor in the c years The Workmen's Compensation Act an increased wage-earning capacity of coloured w brings them within the scope of private and spec medical practice The field of specialist pract protected by a committee which allows no-one to pr as a specialist unless he has been approved graduate educational demands are already being and before the war there were regular refresher c at both universities for medical officers practising country districts It is perhaps not too much to ho the whole-time professorial units, envisaged by Nuffield, in which the professor and his assistant devote their time to the students We may look for the interchange of registrars and lecturers bet countries, which had been begun before the war bet England, America and Canada Now is the tin dream and plan for such things

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When this war broke out, a balance between the supply and demand had just been reached among Australia's doctors after the disturbances of the last war The present crisis will hardly affect medical education in Australia as much as the last one, and any changes are likely to be gradual, conforming to those which have proved successful elsewhere Medical education is in the hands of young and progressive men there, and of recent years minor alterations to the curriculum have betokened dissatisfaction with present methods The New Zealand experiment, if successful, will not be without influence, while any changes made in England are bound to have their reflection in Australia

Australians have been described as half-way between Americans and Englishmen and a superficial observer might make the same generalisation about their medical faculty Closer examination shows that resemblance to the American schools is skin deep, and comes from the organisation of a university and medical faculty side by side in the large cities The design of hospitals, anatomy schools, and affiliated institutions—unhampered as they are by any restrictions of space or need to conform to existing buildings—does remind one of America on a smaller scale The medical needs of the population of 7½ millions are served by four medical schools in the cities of Sydney, Melbourne, Adelaide and Brisbane, the last being the most recently established Premedical subjects may be taken in the universities of Hobart and Perth, the second-year course being continued in one of the larger universities The subjects of the course correspond in all essentials with the English curriculum Second and third years are spent entirely at the university in the study of anatomy, physiology, bacteriology and biochemistry Clinical training begins in the fourth year, with the appropriate resident periods for casualty dressers and midwifery students Association with the university is maintained, during these years, by the central teaching of pathology, public health, surgical anatomy, materia medica, and kindred subjects Examinations being under the control of the university in each city, only one qualification—M B, B S—can be obtained it is also the only degree which can be registered, which makes for simplicity and uniformity The close association of university and hospital has been encouraged, and in all four universities at least one hospital is to be found in the university grounds or just beside them Hospital are chosen by students largely on a sectarian basis, and as there is no overcrowding of the courses there are no disappointments Association with the university i close throughout training, and hospital loyalties are thus subject to the more unifying influence of loyalty to a university

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New Zealand has one medical school at the University of Otago in Dunedin The yearly admission of students fluctuates between 40 and 100 Teaching and hospital work are carried on for three terms in every year, a term lasting 12–13 weeks, and professional examinations conform roughly to the pattern of those in the Scottish schools, from which the New Zealand tradition derives The first year is spent on physics chemistry and biology, the second and third years on anatomy and physiology Pathology, bacteriology, and materia medica are studied in the fourth year, at the end of which there is a professional examination in those subjects At the same time lectures in medicine and surgery are given, and the student works in the wards of the Dunedin Hospital In the fifth year he continues his course in medicine and has classes and clinical work in obstetrics and gynæcology and in the usual special subjects, as well as short courses preparing him for part I of the final examination at the end of the year this consists of public health and medical jurisprudence together with an examination in applied anatomy and applied physiology That concludes the formal part of the student's training In the sixth or final year, the class is divided into four groups, one of which works in each of the country's four large general hospitals (Auckland, Wellington, Christchurch and Dunedin) There the student makes a complete round of the wards and departments, medical, surgical and special, spending about six weeks in each, he studies the patients, assists the house-physicians and house-surgeons in minor procedures and receives clinical teaching from the members of the honorary staff The four hospitals contain over 2000 beds among them At the end of that clinical year the student returns to Dunedin for part II of his final examination (medicine surgery, obstetrics and gynæcology), the passing of which gives him the M B, Ch B degree of the University of New Zealand There is little organised postgraduate teaching, but before the war 30-50% of New Zealand students came to England or Scotland within a year or two of graduation for postgraduate experience and higher qualifications, and a smaller number were beginning to seek the same advantages in Australia

MEDICAL EDUCATION IN THE UNITED STATES

Medical students beginning anatomy and physiology in American schools must have done a minimum of two years' university work which includes prescribed courses in physics chemistry and biology Some medical schools require three years' work and some a baccalaureate degree, and in practice nearly all students taking up medicine are university graduates who have been four years at college, have taken a degree in the premedical sciences and have reached the age of twenty-two They study for a further four years, beginning with an intensive course in anatomy, physiology, pharmacology, pathology bacteriology and biochemistry, lasting through the first two years Though they do not ordinarily start clinical work until their second year in some schools they attend clinical demonstrations given by the most able of their teachers during the first year Set lectures become fewer as they go on At Harvard during their early years no official lecture courses may be fixed for Tuesday, Thursday and Saturday afternoons, though lectures at which attendance is optional and no credit given may be scheduled on those days About 30% of students use the free afternoons for research, their professors advise and encourage them, but the work done is their own affair In the third year of training there is only one lecture a day—often at 8 30 in the morning—and in the fourth year none Clinical classes in small groups are common however, and students and teachers often meet for informal discussion in the evening, learning at such gatherings to know each other well Few fail to do a year or two as interns after qualifying and those who intend to specialise subsequently take resident posts or appointments as registrars, just as they would in England

Graduation from medical school does not give the right to practise The graduate must also pass the state examinations to those states in which he wishes to work or a national examination which qualifies him to practise in any state There is a growing tendency for all students to take the national examination About five years ago examining boards to certify qualification in the various specialties were organised within the profession itself these boards have gained strength and are now able to insist on an appropriate standard of experience and training among examination candidates who intend to specialise There are 77 medical schools in the United States and all except three are recognised as reaching class A This high standard has been achieved in the last generation the Carnegie Foundation drew attention to defects in the medical schools at the beginning of this century and the American Medical Association undertook the task of raising the standard by establishing a system of inspection and control through their Council on Medical Education

Teaching of Preventive Medicine—About a quarter of the schools have a full-time department of preventive medicine and the great majority give organised instruction Where independent departments do not exist this is usually done in connexion with the department of bacteriology, often termed the department of bacteriology and preventive medicine In a number of schools this subject is taught throughout the four years of medical training The view is taken that every doctor must practise preventive medicine, and that those who wish to specialise in it will go into the public health service The whole medical course is built on the study of the three directions in which disease can act, on the patient on the patient's family and on the society in which the patient lives Thus the problem of disease is treated as a group problem Newcomers to the medical school at Harvard are taken on their first day to the Peter Bent Brigham Hospital where they are actually shown a patient—a revolutionary step on the first day of medical training The professor explains the case as he might explain it to intelligent laymen, and having discussed the disease, shows how it has affected the patient his family and the community Thus from their first lecture students grasp the principle that medicine must be approached from these three aspects, and their subsequent education insists on that principle again and again In their fourth year of training, when they are responsible for cases of their own, they are expected to go to the patient's home, to the office or factory where he works

Grand Tour

MEDICAL EDUCATION IN THE DOMINIONS

SOUTH AFRICA

Fully trained graduates of medicine first emerged from the Universities of Cape Town and Johannesburg little more than twenty years ago They showed a high standard of training, served the people of South Africa with enthusiasm and keenness, and are now in many instances holding posts of distinction in England and other countries Thus it proved that a long tradition was not essential to a medical school a new school even had advantages The men who shaped its course came from different schools, and different lands with varying ideas and practice, they were in a position to choose the best and avoid the mistakes of others

The South African medical degree can only be taken at a university—there are no colleges It takes six years, half of which are spent in the wards The student completes his anatomy and physiology by the end of his second year, and though the time spent on anatomy is a little short compared with the time the older surgeons spent on it, it is a sound full course, and extended in the third year by the study of embryology and anthropology During his courses in bacteriology, pathology and pharmacology the student is not able to undertake any serious study of clinical cases lectures and laboratory work make too many demands on his time , but since he is by now hankering for "real doctoring," it might be an advantage if he had the opportunity of attending demonstrations on well-known diseases during this period of training

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In both universities the system of co-education works handsomely, despite the prejudice against it in some of the London medical schools All South African hospitals provide ample accommodation for women doctors and students They have also recognised the importance of providing good quarters for students In England and elsewhere students often have to live in grimy squalid lodgings near the hospital, which is often situated in a slum area , neither the company nor the atmosphere is good for their health In South Africa large hostels have been built, and these are supervised by the professorial staffs It is recognised that the doctor plays an important rôle in educating the public, and his own education must therefore be a generous one To live among different groups of men, to see, hear and discuss their views is the best way to acquire a broad view of life It might be a good plan to arrange short vacation visits for students from one university to the other, so that they could gain new friends and encounter new teachers and fresh ideas

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When this war broke out, a balance between the supply and demand had just been reached among Australia's doctors after the disturbances of the last war The present crisis will hardly affect medical education in Australia as much as the last one, and any changes are likely to be gradual, conforming to those which have proved successful elsewhere Medical education is in the hands of young and progressive men there, and of recent years minor alterations to the curriculum have betokened dissatisfaction with present methods The New Zealand experiment, if successful, will not be without influence, while any changes made in England are bound to have their reflection in Australia

Australians have been described as half-way between Americans and Englishmen, and a superficial observer might make the same generalisation about their medical faculty Closer examination shows that resemblance to the American schools is skin deep, and comes from the organisation of a university and medical faculty side by side in the large cities The design of hospitals, anatomy schools, and affiliated institutions—unhampered as they are by any restrictions of space or need to conform to existing buildings—does remind one of America on a smaller scale The medical needs of the population of 7½ millions are served by four medical schools in the cities of Sydney, Melbourne, Adelaide and Brisbane, the last being the most recently established Premedical subjects may be taken in the universities of Hobart and Perth, the second-year course being continued in one of the larger universities The subjects of the course correspond in all essentials with the English curriculum Second and third years are spent entirely at the university in the study of anatomy, physiology, bacteriology and biochemistry Clinical training begins in the fourth year, with the appropriate resident periods for casualty dressers and midwifery students Association with the university is maintained, during these years, by the central teaching of pathology, public health, surgical anatomy, materia medica and kindred subjects Examinations being under the control of the university in each city, only one qualification—M B, B S—can be obtained, it is also the only degree which can be registered, which makes for simplicity and uniformity The close association of university and hospital has been encouraged, and in all four universities at least one hospital is to be found in the university grounds or just beside them Hospitals are chosen by students largely on a sectarian basis, and as there is no overcrowding of the courses there are no disappointments Association with the university is close throughout training, and hospital loyalties are thus subject to the more unifying influence of loyalty to a university

Final examinations correspond to the university examinations here The three final subjects, medicine, surgery, and obstetrics and gynæcology, must be passed in one sitting, however, a "sitting" includes a supplementary examination, which can be taken in one subject provided the candidate has been successful in the other two The varied clinical material available gives scope for sound practical training, which is continued in the hospital appointments Each hospital takes on

The intensive clinical teaching was found to be very uccessful and the general tendency was to increase is side of a student's medical training and to attach less nd less importance to the systematic lectures which gured so prominently in the education of our predecessors A certain amount of purely theoretical instruction was given either by professors or by "auxiliary professors," as they were called, but a student received he greater part of his teaching at the bedside Having ompleted their medical course many would continue working in one of the hospital departments (usually hose in which they had spent most time as residents) until hey obtained hospital appointments, or started in general practice This led in the larger hospitals to the organisation of a regular postgraduate medical course lasting for two years Students were thus able at little expense to continue their study of general medicine or take up a special subject in which they were interested At the end of this postgraduate course students were well qualified to take up a regular appointment in a hospital, and such appointments were given in preference to students who had taken the course

The general tendency of medical training in my country was thus to concentrate on a practical clinical education as soon as a sufficient groundwork of knowledge had been acquired by theoretical instruction There was also repeated selection of the best students throughout the whole course First students were picked out to be junior residents, two years later another selection was made for the senior residentships, and again at the end of the course the best students were chosen for postgraduate work The pick of these again were selected to fill hospital posts, in which they could continue to work at the subject of their choice This system of repeated selection was in process of organisation, and in my opinion promised to lead to good results, it kept graduates in close touch with an individual teacher and led to the growth of regular schools of medical thought, between which there sprang up a healthy rivalry which served as a stimulus and raised the standard of medical efficiency all round The principle of selection went still farther Grants were available from both public and private sources, which enabled postgraduates to study abroad for one or two years Many beneficiaries went to Austria, Germany, France and Italy while a few went to the United States of America I do not know of any coming to Great Britain and believe this to be due to a lack of contact between the medical professions of the two countries To our doctors it appeared that the golden age of British medicine was represented by Lister, Lane, Moynihan Starling Robert Jones and others of their day, and that it was over, while few British medical men of today have knowledge of the important work done by Ramon y Cajal Turro, Pi i Sunyer, Corachan, Cardenal, Del Rio Hortega Puig Sureda, and others I sincerely hope that this unfortunate lack of contact will come to an end after the war for the mutual benefit of the younger members of the medical profession in both countries

CZECHOSLOVAKIA

There is a medical faculty in each of the four Czecho- vakian universities—the two famous ones, Czech and erman at Prague, and in the Czech university at Brno d the Slovakian at Bratislava At the founding of the echoslovakian Republic no substantial change was ade in medical education, the regulations laid down by e Austrian government remaining in force Under ese regulations students passing the final examination the *gymnasium or realgymnasium*—which correspond the English grammar school—were at liberty to enter y of the university faculties The universities were der government control but had some degree of tonomy, their staffs were employed and paid by the ate Students' fees for medical studies were very low, mounting to about £5 a year apart from their examination fees which were about £7 in all Those who lacked fficient means—and most of them did—were exempted om paying any fees at all

The medical course was divided into preclinical and linical periods each lasting five terms, there were two rms yearly, and about ten weeks vacation Preclinical students attended lectures and practical classes n biology, physics, chemistry, anatomy histology and physiology Lectures were given by the director of the institute and by assistant professors holding special qualifications in their own subjects The director gave a systematic course of lectures—at which attendance was compulsory—covering the whole syllabus, 1–1½ hours daily being devoted to each subject The course in each subject lasted 2–4 terms, depending on its importance and complexity Lectures given by the other professors were designed to interest students in special problems and attendance was optional Altogether about 5 hours daily was spent at lectures No steps were taken to enforce attendance and students were "signed up" at the end of the course almost automatically nevertheless attendances were fairly regular There were about 350–500 premedical students at Prague so that there was little personal contact between them and their teachers An examination in biology and physics was taken at the end of the first year, and in the remaining preclinical subjects at the end of the second year These examinations were purely oral, the instructor giving the main course of lectures being the examiner The examinations were held in public and the fellow students of the candidate were admitted, a representative of the government who had the virtual right to interfere was also present and the dean of the faculty usually attended A student who failed could repeat the examination in 2–6 months' time but if he failed three times he was only allowed to continue the study of medicine by special permission of the government

During the clinical period of training lectures predominated The central hospital was at the disposal of the university, each clinical department having its own director and staff and its own lecture theatre Lectures were given daily by the director of the department as a systematic course covering his subject with demonstrations of appropriate cases, students would often be asked to take part in these demonstrations Lectures on medicine and surgery extended over 4 terms, those on other subjects over 2–3 terms Optional lectures were given on methods of examination and on clinical pathology Students lived in hospital for a week during their obstetric course There was no compulsory clerking or dressing in the wards, but students had an opportunity to act as clerks at the medical clinics, they were generally not admitted to surgical clinics A short course in vaccination was compulsory The final examination was in two parts, each comprising six subjects. part I in general and experimental pathology, pharmacology, medicine neurology and psychiatry, and children's diseases, part II in hygiene and bacteriology, forensic medicine ophthalmology, dermatology, gynæcology and obstetrics and surgery Most students attended special classes to prepare them for the examinations, these were conducted by the assistants with the consent of the directors of the various departments, and since they were really private classes a fee of 1–2 guineas was charged The clinical parts of the final examination included examination and discussion of a case, and a viva voce examination The successful candidate received the degree of doctor of medicine but since the government recognised the lack of practical experience in the course a year's work at hospital was compulsory before the newly qualified man could practise

RUSSIA

A correspondent writes I worked in Russia in 1934 but life changes rather quickly in the U S S R While I was there the medical curriculum was in a state of flux Just before a totally new curriculum—in which examinations and lectures found a very small place—had failed to work Its basic idea was that a small group of students working together throughout the whole of the medical course were taught together as a unit They even used to pass their examinations as a unit Theoretical lectures dropped out and their place was taken by discussion and practical work This was a natural outcome of the thesis that students must not be divorced from their future jobs thus engineering students worked part time in factories and were in fact often enrolled from factory workers Night courses were common But this so called group system proved less easy of application to the medical course and was finally abandoned although I believe it may still return in some modified form Whether its abandonment was mainly and if need be to the public-health department asking themselves "What has this illness done to this man for whom I am responsible ?"

MEDICAL EDUCATION ON THE CONTINENT

THE CURRICULUM IN FRANCE

To register as a medical student in France, it is necessary to produce a baccalauréat diploma, a birth certificate and a certificate of recent vaccination There is no alternative to the baccalaureat which consists of two parts The first part may not be taken before the age of sixteen and a year must elapse before the second examination The first examination consists of ordinary school subjects the second of higher mathematics and science, psychology and philosophy After passing this the student has the choice of some twenty universities in which to take his premedical course or "P C N" (physics, chemistry and natural science) This course is identical with that taken by science students and lasts one year

The medical course takes a further six years after the P C N Most medical students elect to go to Paris for their training, with the result that, before the war the average number of students in each year at the University of Paris was over a thousand—as there is only one school of medicine in the university, the classes are very large In the first year of medicine the student attends hospital practice (ward work and lectures) each morning from 9 to 12 A six months' course in surgery is followed by a six months' course in medicine In the afternoons practical classes in anatomy and histology are held from 1 to 4 P M in the medical school, while lectures in these subjects are given each evening from 5 to 7 P M In the second year he continues his hospital practice in the mornings, but his afternoon classes and evening lectures are in physiology and parasitology In the third year he attends a children's hospital for six months and then does a further six months of medicine or surgery Afternoon classes and lectures in pathology, operative surgery and obstetrics are held at the same times In the fourth year he takes gynæcology and obstetrics for six months and neurology for the rest of the year Each student is required to manage 25 accouchements, all of which are carried out in hospital Afternoon classes and lectures are in bacteriology, pharmacology and materia medica He attends the morgue for post-mortems Fifth-year hospital practice consists of diseases of the skin, ophthalmology and psychiatry The classes and lectures are in hygiene, medical jurisprudence and therapeutics The sixth year is devoted entirely to clinical medicine, surgery and midwifery with lectures in these subjects at the medical school

At the end of each year written oral and practical examinations are held, both at hospital and at the medical school, in the subjects of the year's curriculum The student must obtain pass marks in these examinations before proceeding to the next year's course They correspond to the examinations of the English curriculum To pass in clinical medicine surgery and midwifery at the end of the sixth year does not confer the right to practise A thesis must be presented to the university council before the medical diploma is granted This diploma of Docteur en Medecine is issued by the state and not by the university Under certain conditions foreign students are permitted to take the full medical course without first passing the baccalaureat At the completion of the course the student receives a university diploma which does not however, carry with it the right of registration or practice

Specialisation —Diplomas are granted in special subjects such as hygiene, ophthalmology and radiology but there are no "higher examinations" in France Their place is taken, in Paris, by a series of competitive examinations called "Concours des Hôpitaux" At any time after the end of the second year of medicine the student is entitled to sit the examination of "Externat" The subjects are anatomy, medicine and surgery and the examination is held once a year There are some 300 posts to be filled every year and they roughly correspond to the junior resident and outpatient posts in a London hospital The number of candidates is about 1500 The appointment is for six years and replaces the hospital training of the ordinary student

At any time after the end of two years as an "externe the student may sit the "Internat" examination This is a more difficult examination in the same subjects and is also held once a year There are 80 posts corresponding to the resident posts in a London hospital, to be filled every year from about 400 candidates The period of "internat" appointment is limited to four years An interne intending to specialise may after obtaining his degree, apply for the position of "chef de clinique" (corresponding to registrar) which is decided by competitive examination When a vacancy occurs on the staff of a hospital the appointment is again decided by *competitive examination from among graduates* who have held the post of chef de clinique University professors are selected from "agreges"—that is, those who have passed the competitive examination known as "Agrégation" The number of agreges for each chair is limited to five or six

SPAIN

Dr Josef Trueta writes Until the last few years Spain had two distinct state organisations both in the political and in the educational sphere—that of Catalonia and that of the rest of Spain When Catalonia regained its educational autonomy the Spanish educational system was well developed, and the medical organisation of Catalonia was based on the best elements in the Spanish system Further improvements were in progress when the autonomous University of Barcelona was suppressed I shall confine myself to a brief account of the medical training in Catalonia as it was when I took part in it, since this comprised the best features of the Spanish system After six years of general education culminating in an examination comparable to the English school certificate, a student who wished to take up medicine devoted a year to the study of chemistry, physics botany, zoology and mineralogy After passing an examination in these subjects he was allowed to enter the medical school, where he spent six years before qualifying The first two years were devoted to the basic subjects of medicine—anatomy, physiology, biochemistry and histology—the third year to general pathology and therapeutics and the final three years to clinical medicine At the end of the six years course the student's name was inscribed in the medical register and he was allowed to practise as a licentiate in medicine and surgery He could also submit a medical thesis to a qualified board of examiners, which would be carefully scrutinised and if approved, would secure him a doctor's degree

Such were the general lines of a medical student's educational career While receiving his scientific training he would also be studying medicine from the practical and clinical point of view In the first two years he divided his time between attendance at lectures and practical work in the anatomy department and laboratories At the end of this period a selection of the students was made, and the best (often a quarter of the total) were taken into the hospital as "junior residents," where for the next two years, in addition to continuing their normal studies they helped the "senior residents" and doctors in dealing with patients and learned the elements of clinical work—how to give injections, take temperatures, write up charts and apply bandage After two years as juniors the best students became "senior residents" helping in the treatment of patient, writing clinical histories, examining patients with the junior medical officers, making plasters, learning the technique of anæsthesia and later giving anæsthetics under the supervision of a doctor After six months in one particular branch of work a senior resident could transfer to another but he could also continue in the same branch if he wished Those students who had not been selected as residents also assisted in the various hospital departments, as compared with the residents they received a more theoretical and a less practical education Students were instructed by the professors who held chairs at the hospitals The large size of the teaching hospitals in Barcelona greatly facilitated teaching, the General Hospital of Catalonia had nine professors of various clinical subjects and students could complete the whole of the second part of their medical course in this one hospital This was important in a large city where much time might have been wasted in travelling from one teaching centre to another lso attend courses in dermatology, eye conditions, venereal diseases, pharmacology and hygiene. At the nd of three years they take a written examination and n oral in which they are questioned on their findings n examining a patient. Part III of the course takes another year during which students are instructed in gynæcology, obstetrics, psychiatry, ear, nose and throat conditions, children's diseases and forensic medicine. During their obstetric training students live in hospital in small groups and attend the maternity cases admitted. The final examinations are held at the end of the year and the newly qualified doctor receives the "Licentia practicandi." Most of them choose to work for some years as assistants to general practitioners before going into practice themselves and some have an opportunity to continue their education with a view to specialising.

POLAND

A member of the Polish School of Medicine, Edinburgh, writes: Before the war five universities with full medical faculties were functioning in Poland. Warsaw was the largest, serving the central and eastern part of the country; Krakow served the south-west, Lwow the south, Poznan the west, and Wilno the north. The universities provided complete medical training, theoretical, practical and clinical.

The medical course lasted sixteen terms of ten weeks each. There were many applicants, but since only about 200 could be admitted yearly to each university (owing to limitations of clinical material and laboratory accommodation) candidates had to sit a preliminary examination. This consisted of written papers in biology and general subjects.

At the university the work started at 8 A.M. and lasted till 6 P.M. or later, with two hours interval for lunch between 1 and 3 P.M. In the first year the chief subjects were anatomy, histology and embryology, chemistry and physics; in the second year anatomy, histology and embryology, physiology, biochemistry, and biology. In the mornings students attended lectures, and in the afternoons (3 to 6 P.M.) did practical work. In the third year they took an introductory course to clinical medicine, to familiarise them with methods of examination, and courses in bacteriology, pathology, pharmacology and morbid anatomy. Serious clinical teaching began in the fourth year, the last seven terms being almost entirely devoted to it except for courses in morbid anatomy, forensic medicine and hygiene. During their fourth and fifth years students passed their afternoons in the wards (about four hours weekly in major and two hours weekly in minor clinics) examining cases. They also had patients allotted to them, and took the case-history; their notes were corrected and criticised by the assistant medical officers. They were on duty for several days and nights in the year, living in the clinic to gain midwifery experience. They worked in the wards under the supervision of senior and junior assistants, who helped them in examination of the patients and taught them simple laboratory tests, such as the examination of urine and stools, blood-counts, analysis of gastric juice, and of pathological fluids. They also had the opportunity to give injections, dress wounds, and help in minor operations. The lectures, generally accompanied by demonstration of cases, were given by professors or docents (associated professors). Purely theoretical lectures during the clinical years were few. The last term was spent in the outpatient department.

In the last few years before the war a new scheme of clinical teaching was under consideration, Warsaw University being the first to introduce and test it. The main plan was to provide students in the final two years with as much clinical practice as possible; from 8 A.M. till 11 A.M. was therefore reserved for hospital work (15 hours a week). Students were divided into groups, each group spending two weeks three times a year in the medical or surgical wards. Thus every student had twelve weeks experience in those wards during the fourth and fifth years, the rest of his time (eighteen weeks) being divided among minor clinics. In the wards he was attached to the senior assistant and took part in the routine work; only two or three students would be under the care of an assistant at a time. From 11 A.M. till 1 P.M. and from 3 P.M. to 6 P.M., or even later, students attended clinical lectures.

Students had to sit one or two class examinations every year. At the end of the first year they had to pass the first professional examinations, in chemistry and physics, before they were admitted to the second year. At the end of the second year they had to pass in anatomy, histology and embryology, physiology, biochemistry, and biology. They were allowed, if they wished, to sit the professional examination in bacteriology, pharmacology and pathology at any time after the end of the third year. After the sixteenth term the examination subjects were divided into five groups:—

1. Bacteriology, pharmacology, and pathology for those who had not already passed them;
2. Morbid anatomy and pathology;
3. Medicine, skin and venereal diseases, neurology and psychiatry, and children's diseases;
4. Surgery, gynæcology and midwifery, eye diseases, laryngology, and one of the following—stomatology, roentgenology, or orthopædics;
5. Forensic medicine and hygiene.

Each subject could be taken only twice. If he failed in the first or second professional examination the student had to repeat the whole year. If he failed twice in the finals he could only sit a third time by permission of the Ministry of National Education; if he failed again his career as a medical student ended. When qualified he had to work for a year in a hospital recognised by the State as a teaching hospital for newly qualified doctors, before being allowed to practise. The period had to be spent in various wards, the aim being to produce a general practitioner. After this experience he could go into practice or specialise at some hospital or clinic chosen by himself.

The university unions were partly social but had two other aims: to publish lecture notes and medical books, and to offer financial aid to poorer members. Medical students formed circles which had their own hostels and unions, built and maintained from their own funds, with the help of the medical profession and the State. They also organised students' sports.

Life throbbed vigorously in the medical faculties, and every year saw an advance. After the war of 1914–18 we started to build up most of our universities from scratch. We advanced quickly, organising laboratories and clinics, reinforcing and educating our teaching staffs, and carrying out research on a large scale and publishing the results in Poland and abroad. The ardour of the workers, who though often earning only just enough to live on were spending almost their whole time in the laboratories and clinics, produced a magnificent result. The number of publications, their themes, their scope of interest, and the repercussions which they caused in our own country and abroad, are the proofs that we marched with other civilised nations. The war in a few weeks' time entirely destroyed all this, for which we had struggled. But the war has not killed our own medical studies. Our Polish school has taken firm root in Edinburgh, and is to have access to the new Paderewski Hospital for Polish civilians which is shortly to be opened there. Polish medical thought will revive and develop as soon as liberty once again lights the sky above our beloved and now martyred country.

GERMANY THEN AND NOW

The medieval tradition of the wandering scholars has always lingered in the universities of Germany. Before the days of Nazi rule a medical student would often begin his premedical studies at a small university such as Heidelberg, Jena or Wurzburg, leaving at the end of a year to go to Kiel, perhaps, for six months, thence back to Heidelberg for a year, and then to one of the larger universities—Munich or Breslau—for clinical experience. Migration of students from one university to another was facilitated by a standard curriculum throughout Germany, and by the fact that there was only one qualifying examination—that conducted by the State. Just after the last war the course took five years, but the student did not receive his degree until he had completed a year's internship after passing his final examination. Later the course was lengthened to five and a half years, the additional year of internship bringing it up to six and a half. The subjects studied are the same as those in English schools: biology, physics and chemistry for a due to the lack of teachers, equipment, or sufficient premedical education of the students is difficult to say The scheme was dropped, however, as was a scheme of very early specialisation in the student's course At that time a more typical European five-year course was instituted, but was intended to be only transitory until something really good and adaptable to Russian conditions could be devised I had to show all my " duly performed " certificates from my university to Kaminsky, then medical chief of the R S F S R He felt certain that he could substantially improve on our curriculum , whether he did I don't know—I rather think he might have done The students were all keen, in a way that was different from ours They were workers on a salary, a system which makes it easier to combine them as a part of a university or hospital The ratio of women students at that time had grown to at least 80% , but later, with the increase of wages of doctors, and the completion of industrial plans the profession again became more attractive to men

Much emphasis was laid on postgraduate work I worked in a clinic of which the objects were threefold treatment, research and postgraduate teaching Doctors there had an opportunity to specialise and to prepare for teaching positions in the provinces All doctors were on salary and there was hardly any distinction between doctors permanently employed at the clinic, those staying for fairly long periods and those there only for a short time The working day at that time was from 9 to 1 or 2 , afternoon and night duty was divided between the doctors—there were no residents All permanent staff or those engaged for a long time were expected to join in research and spend the rest of the time reading Enthusiasm for the work was extremely high, and the money motive seemed to be non-existent Languages and journalistic ability were at a premium at that time, and as many of the doctors knew foreign languages they could have doubled or trebled their salaries by doing translations I could not find one who was willing to give up his time to this type of remunerative work

The clinic was for gastro-intestinal cases It was situated in the largest Moscow hospital and disposed of 200 beds It had its own X-ray department, physiotherapy department, research laboratories and theatre for animal experiment There was one doctor to every 5–10 beds A professor or his assistant gave lectures every day, alternating clinical with outpatient lectures Foreign books and papers quoted were mainly German or American—rarely English , but this may have been because there was little to quote from on this subject

Nursing facilities at the clinic were extremely poor and drugs were difficult to procure For pure research work and specialisation it was unbelievably good for all-round postgraduate work insufficient This, however, did not come within its scope though it would have been extremely valuable to some of the men if it had offered a comprehensive postgraduate course

ITALY

About five years ago medical studies in Italy were sweepingly reformed The aims were to raise the standard of newly qualified men and to reduce the numbers entering the profession An attempt was also made to bring students into contact with patients from their earliest years of training Medical training lasts six years and students are required to take 26 examinations arranged in 3 groups The course is divided into three periods of two years each, and a group of examinations is taken at the end of each period All examinations are oral and practical without written papers, a system which has the drawback that it may be difficult for an examiner to discover what a shy candidate really knows Admission to the second and third parts of the course is refused unless the student has passed all the preceding examinations This makes it possible to eliminate candidates who are not up to the required standard The student is admitted to the wards during his third and fourth years of training and begins the study of general medicine and surgery During these years he is given no responsible tasks in the hospital, but the honorary physicians and the medical officers in charge of the wards give him all possible help in his first contact with patients and hospital routine

On admission to the third part of the course, during his fifth and sixth years of training, the student receives systematic instruction in medicine, surgery, midwifery and gynæcology, and the specialties He spends at least a month in the wards of each special department and a minimum of 60 days each on the study of general medicine, surgery and midwifery He begins to take responsibility for patients, under the supervision of the ward medical officer On passing his final examinations and gaining his degree the student must submit an original paper to a committee composed of twelve members of the university , three members of the committee who are acquainted with the content of the paper discuss it The choice of subject is left to the student, who works on it during his training The papers seldom achieve publication, but on the whole they contain useful material and give the student a chance to test his capacity as a research worker and to become familiar with laboratory technique His medical degree does not entitle him to practise immediately He must study medicine, surgery and midwifery for another six months before he is admitted to the State examination, which requires a high standard of knowledge and entails three oral and practical examinations covering the whole field of medicine When he has passed this, he is registered as a general practitioner

The student is somewhat hard-pressed with work throughout his course, but the hospitals cooperate closely with the universities and lecture hours are so arranged that they do not conflict with work in the wards The new system has the advantage of bringing students into daily contact with patients over a period of nearly five years

NORWAY

The medical profession in Norway is overcrowded, entrants far exceeding the demand At the University of Oslo, the only university in the country, students choose medicine as a profession more commonly than any other The curriculum was laid down at a time when the numbers of entrants were proportionate to the needs of the country, and it can therefore only be adapted to meet the present situation with difficulty Thus the original length of training was 7 years, but in the last decade overcrowding has become so serious that the student cannot reckon on completing his course in less than 9 years he has to wait his turn Places in the university and teaching hospitals are limited and only about a hundred students can be admitted yearly

Students begin work on biology before leaving school Medical training is divided into three parts Part I begins with a year's study of organic and inorganic chemistry and physics, terminating in an examination Students then proceed to biology and embryology, anatomy and physiology, biochemistry and histology During this period they dissect the body, work at practical physiology and attend lectures from the professors They also meet in discussion groups (colloquia) from which they learn a good deal So far membership of these groups has been voluntary but they are likely to be adopted as part of the training course in future, groups of five being formed under the leadership of a teacher , membership will then become compulsory The standard of the examination at the end of part I is high and 40–45% fail The hospitals in Oslo have room for only 50 students each semester, or half-yearly term Those who are happy enough to get through part I are now ready to begin part II, which is clinical Training is carried on in the hospital wards and by lecture courses Unfortunately students may have to wait 2–3 years between part I and part II, until there are places available in hospital Some fill in the interval by doing practical work in small hospitals in the neighbourhood of their own homes, but not all are fortunate enough to get the chance This interruption of training is often a serious drawback

Part II takes about three years, most of the time being spent in the wards The students are divided into small groups working under the supervision of a professor and his assistants They gain much the same experience as students in England, examining patients, writing up case histories, attending lectures, and working in the laboratories at pathology and bacteriology They are questioned about their cases by the professor before the rest of the class, just as students here are " ragged " They f the times—the perfect setting in fact for a golfing oliday as we used to know it

Many of our patients are not particularly ill but that act does not make them any easier to nurse Some are ery willing to be spoiled and some being human willing nough to grumble It is notorious that officers are far nore difficult to care for than other ranks (not of course ll officers for many of them are eminently reasonable) Ve often wonder how far the hordes of County visitors vho haunt our corridors contribute to the contentment of the hospital We have repeatedly had occasion to uspect that their intromissions were not an unmixed blessing They are willing enough to take an occasional officer patient home to lunch, and doubtless to do him very well bringing to his menu on that occasion grouse and a variety of other things not always obtainable by ordinary mortals It is an easy step from that to commiseration with the hard lot that deprives the poor boys of their sherry and their caviare and an easy step to infer that there must be something wrong with the standards of a hospital that is content with simpler fare When with their units, officers participate in such mess arrangements as they collectively wish to adopt and it is often open to them to supplement their diet from sources not normally available either to the man in the street or to civilian hospitals It is not surprising that they notice the transition that hospitalisation is apt to involve But it is difficult to believe that reasonably adequate plain fare for two weeks or even three, undermines their physique to any appreciable extent or does them any real moral or physical harm Many people doing quite a lot of active work would think they were being very well fed on a regime that brought to them (to take a typical day) at 6 30 A M. a cup of tea ; at 8 30 A M breakfast porridge grilled tomatoes on toast rolls at 11 A M Bovril cocoa or milk , at 1 P M lunch curried mutton, potatoes baked rice peaches and custard biscuits and cheese at 4 P M tea white and brown bread scones butter jam , at 6 45 P M dinner potato soup roasted chicken bread sauce green peas and potatoes steamed pudding and custard, coffee , and at 9 P M Ovaltine, cocoa or milk That does not sound unbearable in the summer of 1941 It is, indeed a question how far it is desirable that the same base hospital should cater for both officers and men except under conditions of real emergency There might well prove to be advantages in segregating officer patients in a hospital of their own under conditions and discipline compatible with their status and enabling them to make such communal arrangements as they please to eke out official rations, in the knowledge that they would then be able to supplement their diet to their hearts' content That might conceivably breed real contentment

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These moral jerks at 7 55 A M still follow the old accustomed lines girding the national spirit for war hardening the erector spinæ of resolve the pectorals of perseverance, and quite right too Perhaps it would never do to be experimental like this —

" I want to talk to you this morning about those much maligned but valuable biological virtues called Jealousy and Envy, which I need hardly remind you are closely related to the perfectly respectable Zeal and Insight t is true that throughout the ages they have been held up to scorn and ridicule but that is because the position of all preachers and other leaders is directly threatened y them You will notice they very rarely attack the ibling their favourite Ambition Yet these are aluable qualities , they tend to haul any man who seeks o get above his fellows back to the common mean hey make him watch his step lest he get too far ahead hey are Nature's thermostat the dictator's bane Hitler, by killing off the people who might be actuated y these useful qualities—a most unnatural crime— as placed Germany in a precarious biological condition, mass of people obedient to the unsafeguarded will or him of one unbalanced man "

I don't think I ever guessed at the mechanism until I aw it in operation in larval form Before the war I went for a number of years to a large mixed boys' camp nd every year the same thing happened The camp tarted off harmoniously, if shyly , under adult direction apparently leaders who are grossly dissimilar in age from he led don't evoke jealously (Pitt and Petain) Then about the third day the camp chief gave his celebrated little talk on ' leadership holding up for the boys' emulation a projection figure of a fearless hard-working, self-sacrificing loyal yet withal modest youth Thereafter the camp got much more interesting for it became not so much a competition in these qualities as a competition in the display of them a very different matter The display of modesty for instance needed great subtlety or possibly a friend who'd act as publicity agent It was from observation at this most amusing camp that I found out several things about envy and jealousy in relation to leadership which are doubly true of adults for these virtues don't really come to their prime till the fourth and fifth decades the leadership age Envy and jealousy are much stronger in the friends and associates of a leader than in strangers to him if one could measure these things up I expect they would be found to increase with the cube of the friendship When they are very strong as among a group of intimates, the leader must be one of them who is well below mediocrity, or he may even have to be chosen from outside the group The mechanism is abolished when self-preservation is in question—envy and jealousy vanish on the threat of real danger Leaders then have the loyalty even of their friends (Chamberlain September 1938 Churchill 1940–?)

ASSOCIATION OF CLINICAL PATHOLOGISTS

ABOUT 60 members and guests attended a meeting on July 19 of the association in the pathological department and St Catherine's College Cambridge

Dr J F GASKELL described 7 cases of fatal acute pancreatitis in Cambridge between 1932 and 1934 The patients were in vigorous health but died within a few hours in several cases shortly after a full meal At necropsy done usually within 24 hours acute hæmorrhagic and even necrotic pancreatitis apparently of antemortem origin was found No association between the cases could be traced and no significant microbes were found A footballer died on the field the suggestion being that the head of the pancreas had been squeezed against the spine by another player s knees

Dr G A HARRISON and Mr L E R PICKEN Ph D , described and demonstrated the preparation of blood-serum for transfusion (*Lancet* 1941 1, 536) Ordinary dry blood bottles were used and about 47% yield of serum was obtained The resultant serum remained clear at room temperature Among 102 transfusions pyrexia with rigor occurred once and without rigor four times—that is, reactions occurred in about 5% On the assumption that the body contains 10 pints of blood and that a hæmorrhage of 6 pints is the largest compatible with survival the maximum amount of serum that could be required even in the worst cases would be 3 pints—i e , half the volume of blood lost (*Ibid* p 685) In most transfusions one bottle of serum had been given Defibrinated blood was also prepared 30 c cm of glass beads shaken in the blood gave good defibrination (*Ibid* p 405) If the blood were not used the serum could be recovered later

Dr A M BARRETT pointed out the importance of details of technique in deciding titre in the Paul-Bunnell test for glandular fever Horse red cells give a somewhat higher titre than sheep cells Of 100 normal human sera none agglutinated sheep cells at 1 80 4 gave titre of 1/80 or slightly higher with horse cells Of 27 cases of glandular fever 17 gave a titre of 1/640 or slightly less with sheep cells 10 had a higher titre With horse cells 11 gave 1/640 or less and 16 showed a higher titre The slight titre in normal sera can be abolished by absorption with Forssman antigen (guineapig kidney) whereas ox cells will absorb the true glandular-fever hæmagglutinin

Dr S C DYKE showed curves of blood-counts during trichiniasis (*Lancet*, July 19 1941 p 69) The rise in the total white cells may not start for about a week , it reaches in the average case about 18 000 at three weeks and drops to 9000 at seven weeks with a temporary secondary rise to 19 000 at about ten weeks This curve runs parallel to the eosinophil curve since it is the eosinophil increase that mainly causes the leucocytosis During the early reduction or absence of eosinophil cells eosinophil granules may be found in the poly-year anatomy, physiology and biochemistry for eighteen months , and then clinical work The early part of the clinical years, however was spent largely in the lecture-rooms The student attended lectures and demonstrations throughout the day in all the subjects of his syllabus and did not "take a case" in the manner of the English ward clerk until he had reached his second or third year of clinical work The effect of this was to give him an exceedingly sound background of theoretical knowledge, which served him well later in life , but it was heavy going His final years were spent in getting practical experience not in one but in several hospitals The final examination was very long, often occupying two months or more, and divided according to subjects into more than twelve sections surgery, medicine, obstetrics, gynæcology, hygiene, pharmacology, surgical anatomy, pathology, ear, nose and throat diseases, ophthalmology, psychiatry, pædiatrics and forensic medicine Hygiene covered a wide variety of subjects, including social and prophylactic medicine, public health, insurance medicine and bacteriology The hygiene course occupied four hours weekly for a year and was followed by a practical course in public health in which house construction sanitation and water-testing were studied and visits were paid to sewage farms, sanitary institutes, water works and public-health departments Thus the student received a much more thorough grounding in the social aspects of medicine than his English contemporary He was also taught pharmacology much more thoroughly lectures on toxicology and the action, chemistry and biological effect of drugs being given throughout the period of clinical teaching , prescribing was taught separately in a short course

Just before the Nazi regime began, the medical curriculum was under discussion and experimental changes were being made in it These reforms placed more emphasis on the practical side of training and less on detailed scientific instruction The balancing of the various specialties roused as much controversy there as here every exponent believed his subject to deserve a prominent place in the final examination With the coming of the Nazis and the preparations for war these academic dissensions were cut short , the government insisted that subjects useful to the military organisation should be given precedence Doctors were to be trained for the army and the air force , and Hitler's hobby, "race biology," ousted a growing interest in prophylactic medicine The emphasis thus swung towards the practical side lectures were replaced by practical classes and students were brought early into contact with patients This was in accordance with the Nazi principle of discouraging too much spontaneous thought and they carried it through with their usual fervour Curiously enough it had the effect of bringing the German curriculum—which had previously been overweighted by science and theory—more into line with the British and French type of education Every medical student was obliged to act as a nurse in hospital for some months before beginning his clinical work—a piece of practical experience which he probably found invaluable

The self-inflicted loss of many Jewish doctors left the state poorly supplied, and it might be supposed that official encouragement would be given to young people to take up medicine No such encouragement seems to have been given, however, but the shortage has been partly met by a law made in February, 1939, legalising quacks and nature healers , indeed, chairs of nature-healing—as well as of race biology—have been established in the universities One keen supporter of this movement, permanent patient of a well-known nature healer of Munich, was that uninvited tourist Hess The Nazis have made another effort to overcome the shortage, and one which inspires even less confidence, by shortening the period of medical training by something like two years We shall have an opportunity to study the result when the war is over

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MESSRS BRITISH DRUG HOUSES have issued a useful booklet which includes, besides a price list of the B D H standard stains and other materials for microscopical work, detailed accounts of methods of staining, fixing and mounting It also introduces a new histological agent, "Mollifex," for softening tissues embedded in paraffin wax

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In England Now

A Running Commentary by Peripatetic Correspondents

I CEASED to be a consulting physician in London, at any rate for the time being in July 1940, and three months later I re-started in the depths of the country where as it happened I knew nobody I called on the doctors who remain and was told that no fortune awaits me , this is probably true, but country work has provided some compensation Here the greater part of my work is done at the patient's home • I hire and a native drives me but even so and with a good map the absence of signposts reduces near-certainty to hopeful probability My wife is able to share the drives, which was seldom convenient at home Care is as necessary as in London on account of the narrow lanes and wandering cattle Pheasants I know, but I wish I knew the names of all the birds I see I have not yet met fox or hare On May 6 at 2 A M during an appalling blitz on the near-by town a nightingale demonstrated its complete indifference I take my London bag but here also the only essential requisites are the ophthalmoscope, litmus, finger-stalls and needles Cisternal puncture, comparatively modern, performed in a farmhouse many hundred years old, intrigued both me and my partner, and afterwards we watched salmon leaping, an experience I had gained previously from photographs alone Old clothes go on for ever and they do not weary if the cut is right The informality of cricket shirts has virtue and for twelve months I have worn neither hat nor cap London conventions have come to seem largely meaningless and when patients come to me they use an expression which I never heard during the 23 years in Harley Street since I was demobilised—"How beautifully you are situated" Other old things besides clothes are proving of unexpected value A large hydrocele turned up to be tapped a few weeks ago, and I was able to lend the doctor from my bag the nest of trocars and cannulas which I had not taken out of my dresser's case since I qualified in 1907 Another day a local doctor after driving me back from a consultation asked me if I would give him a hand with an autopsy at the local mortuary A man had died suddenly at the tea-table The coronary arteries came under suspicion but the equipment did not include a probe It was my probe, also not seen for many years, which demonstrated the arterial obstruction

In 1929 I contributed to my hospital journal a list of "signposts" for the guidance of students, remembering to add that signposts are sometimes misleading "Whatever your medical hobby, be always a general practitioner" was one I have always tried to be this and I held all save one of the house and special-department appointments at my hospital, besides doing jobs at various special hospitals later I have never appreciated the habit of mind which permits a gynæcologist to crow because correctly or not he diagnoses tabes dorsalis, or an orthopædic surgeon to admit, with some pride, that auricular fibrillation is entirely outside his professional vision These chaps ought to put in half their annual holiday doing country practice

* * *

The difficulty of securing an adequate and varied diet in war time troubles everyone It must be particularly irksome for the small householder, who has to try to make the most of limited coupon resources, but even hospitals are not without their woes It is true that in the main food authorities are sympathetic to their special needs and willing enough to allow a certain measure of advance purchase against subsequent account, but there is an overriding moral obligation to adhere to rationing standards as they affect the population as a whole, subject, of course, to the special medical requirements of any particular case The trouble is that no reasonable interpretation of this latitude will stretch sufficiently far to permit the supply of unlimited quantities of meat, bacon, eggs and other rationed foodstuffs , nor is it necessary that it should An inheritance can sometimes carry with it troublesome implications and to be housed in a building that once enjoyed some reputation as a resort of epicures may convey to the world at large, and to potential customers, the suggestion that the place is still a sort of country club, with cuisine as of yore, and with a horizon untouched by rationing or any other ill the times—the perfect setting, in fact for a golfing liday as we used to know it

Many of our patients are not particularly ill but that t does not make them any easier to nurse Some are ry willing to be spoiled, and some being human, willing ough to grumble It is notorious that officers are far ore difficult to care for than other ranks (not of course l officers, for many of them are eminently reasonable) e often wonder how far the hordes of County visitors ho haunt our corridors contribute to the contentment the hospital We have repeatedly had occasion to spect that their intromissions were not an unmixed essing They are willing enough to take an occasional ficer patient home to lunch, and doubtless to do him ery well bringing to his menu on that occasion grouse nd a variety of other things not always obtainable by dinary mortals It is an easy step from that to commiseration with the hard lot that deprives the poor boys their sherry and their caviare, and an easy step to infer hat there must be something wrong with the standards a hospital that is content with simpler fare When ith their units, officers participate in such mess arrangements as they collectively wish to adopt and it is often pen to them to supplement their diet from sources not ormally available either to the man in the street or to ivilian hospitals It is not surprising that they notice he transition that hospitalisation is apt to involve But it is difficult to believe that reasonably adequate plain fare for two weeks, or even three undermines their physique to any appreciable extent, or does them any eal moral or physical harm Many people doing quite lot of active work would think they were being very well ed on a regime that brought to them (to take a typical lay) at 6 30 A M a cup of tea , at 8 30 A M breakfast porridge grilled tomatoes on toast, rolls , at 11 A M Bovril, cocoa or milk , at 1 P M lunch curried mutton, potatoes, baked rice peaches and custard, biscuits and cheese at 4 P M tea, white and brown bread scones butter, jam , at 6 45 P M dinner potato soup, roasted chicken, bread sauce, green peas and potatoes, steamed pudding and custard, coffee , and at 9 P M Ovaltine, cocoa or milk That does not sound unbearable in the summer of 1941 It is, indeed, a question how far it is desirable that the same base hospital should cater for both officers and men except under conditions of real emergency There might well prove to be advantages n segregating officer patients in a hospital of their own under conditions and discipline compatible with their status and enabling them to make such communal arrangements as they please to eke out official rations, n the knowledge that they would then be able to supplement their diet to their hearts' content That might conceivably breed real contentment

* * *

These moral jerks at 7 55 A M still follow the old accustomed lines, girding the national spirit for war, hardening the erector spinæ of resolve, the pectorals of perseverance, and quite right too Perhaps it would never do to be experimental like this —

“ I want to talk to you this morning about those much maligned but valuable biological virtues called Jealousy and Envy, which I need hardly remind you are closely related to the perfectly respectable Zeal and Insight It is true that throughout the ages they have been held up to scorn and ridicule, but that is because the position of all preachers and other leaders is directly threatened by them You will notice they very rarely attack the ibling their favourite, Ambition Yet these are valuable qualities , they tend to haul any man who seeks to get above his fellows back to the common mean , they make him watch his step lest he get too far ahead , they are Nature's thermostat, the dictator's bane Hitler, by killing off the people who might be actuated by these useful qualities—a most unnatural crime—has placed Germany in a precarious biological condition, mass of people obedient to the unsafeguarded will or whim of one unbalanced man ”

I don't think I ever guessed at the mechanism until I aw it in operation in larval form Before the war I went for a number of years to a large mixed boys' camp nd every year the same thing happened The camp tarted off harmoniously, if shyly, under adult direction Apparently leaders who are grossly dissimilar in age from he led don't evoke jealously (Pitt and Pétain) Then about the third day the camp chief gave his celebrated little talk on “ leadership,” holding up for the boys' emulation a projection figure of a fearless hard-working, self-sacrificing, loyal, yet withal modest youth Thereafter the camp got much more interesting for it became not so much a competition in these qualities as a competition in the display of them, a very different matter The display of modesty, for instance needed great subtlety, or possibly a friend who'd act as publicity agent It was from observation at this most amusing camp that I found out several things about envy and jealousy in relation to leadership, which are doubly true of adults, for these virtues don't really come to their prime till the fourth and fifth decades the leadership age Envy and jealousy are much stronger in the friends and associates of a leader than in strangers to him , if one could measure these things up I expect they would be found to increase with the cube of the friendship When they are very strong, as among a group of intimates, the leader must be one of them who is well below mediocrity, or he may even have to be chosen from outside the group The mechanism is abolished when self-preservation is in question—envy and jealousy vanish on the threat of real danger Leaders then have the loyalty even of their friends (Chamberlain September, 1938 , Churchill, 1940–?)

ASSOCIATION OF CLINICAL PATHOLOGISTS

About 60 members and guests attended a meeting on July 19 of the association in the pathological department and St Catherine's College, Cambridge

Dr J F Gaskell described 7 cases of fatal acute pancreatitis in Cambridge between 1932 and 1934 The patients were in vigorous health but died within a few hours, in several cases shortly after a full meal At necropsy, done usually within 24 hours acute hæmorrhagic and even necrotic pancreatitis, apparently of antemortem origin, was found No association between the cases could be traced and no significant microbes were found A footballer died on the field the suggestion being that the head of the pancreas had been squeezed against the spine by another player's knees

Dr G A Harrison and Mr L E R Picken Ph D , described and demonstrated the preparation of blood-serum for transfusion (*Lancet*, 1941, 1, 536) Ordinary dry blood bottles were used and about 47% yield of serum was obtained The resultant serum remained clear at room temperature Among 102 transfusions, pyrexia with rigor occurred once and without rigor four times—that is, reactions occurred in about 5% On the assumption that the body contains 10 pints of blood and that a hæmorrhage of 6 pints is the largest compatible with survival, the maximum amount of serum that could be required even in the worst cases would be 3 pints—i e , half the volume of blood lost (*Ibid* p 685) In most transfusions one bottle of serum had been given Defibrinated blood was also prepared 30 c cm of glass beads shaken in the blood gave good defibrination (*Ibid*, p 405) If the blood were not used the serum could be recovered later

Dr A M Barrett pointed out the importance of details of technique in deciding titre in the Paul-Bunnell test for glandular fever Horse red cells give a somewhat higher titre than sheep cells Of 100 normal human sera none agglutinated sheep cells at 1/80, 4 gave titre of 1/80 or slightly higher with horse cells Of 27 cases of glandular fever 17 gave a titre of 1/640 or slightly less with sheep cells, 10 had a higher titre With horse cells 11 gave 1/640 or less and 16 showed a higher titre The slight titre in normal sera can be abolished by absorption with Forssman antigen (guineapig kidney) whereas ox cells will absorb the true glandular-fever hæmagglutinin

Dr S C Dyke showed curves of blood-counts during trichiniasis (*Lancet*, July 19, 1941 p 69) The rise in the total white cells may not start for about a week , it reaches in the average case about 18,000 at three weeks and drops to 9000 at seven weeks, with a temporary secondary rise to 19 000 at about ten weeks This curve runs parallel to the eosinophil curve since it is the eosinophil increase that mainly causes the leucocytosis During the early reduction or absence of eosinophil cells, eosinophil granules may be found in the poly-year anatomy, physiology and biochemistry for eighteen months , and then clinical work The early part of the clinical years, however, was spent largely in the lecture-rooms The student attended lectures and demonstrations throughout the day in all the subjects of his syllabus and did not "take a case" in the manner of the English ward clerk until he had reached his second or third year of clinical work The effect of this was to give him an exceedingly sound background of theoretical knowledge, which served him well later in life , but it was heavy going His final years were spent in getting practical experience not in one but in several hospitals The final examination was very long, often occupying two months or more, and divided according to subjects into more than twelve sections surgery, medicine, obstetrics, gynæcology, hygiene, pharmacology, surgical anatomy, pathology, ear, nose and throat diseases, ophthalmology, psychiatry, pædiatrics and forensic medicine Hygiene covered a wide variety of subjects, including social and prophylactic medicine, public health, insurance medicine and bacteriology The hygiene course occupied four hours weekly for a year and was followed by a practical course in public health in which house construction sanitation and water-testing were studied and visits were paid to sewage farms, sanitary institutes, water works and public-health departments Thus the student received a much more thorough grounding in the social aspects of medicine than his English contemporary He was also taught pharmacology much more thoroughly, lectures on toxicology and the action, chemistry and biological effect of drugs being given throughout the period of clinical teaching , prescribing was taught separately in a short course

Just before the Nazi regime began, the medical curriculum was under discussion and experimental changes were being made in it These reforms placed more emphasis on the practical side of training and less on detailed scientific instruction The balancing of the various specialties roused as much controversy there as here every exponent believed his subject to deserve a prominent place in the final examination With the coming of the Nazis and the preparations for war these academic dissensions were cut short , the government insisted that subjects useful to the military organisation should be given precedence Doctors were to be trained for the army and the air force , and Hitler's hobby, "race biology," ousted a growing interest in prophylactic medicine The emphasis thus swung towards the practical side lectures were replaced by practical classes and students were brought early into contact with patients This was in accordance with the Nazi principle of discouraging too much spontaneous thought and they carried it through with their usual fervour Curiously enough it had the effect of bringing the German curriculum—which had previously been overweighted by science and theory—more into line with the British and French type of education Every medical student was obliged to act as a nurse in hospital for some months before beginning his clinical work—a piece of practical experience which he probably found invaluable

The self-inflicted loss of many Jewish doctors left the state poorly supplied, and it might be supposed that official encouragement would be given to young people to take up medicine No such encouragement seems to have been given however, but the shortage has been partly met by a law made in February, 1939, legalising quacks and nature healers , indeed, chairs of nature-healing—as well as of race biology—have been established in the universities One keen supporter of this movement, permanent patient of a well-known nature healer of Munich, was that uninvited tourist Hess The Nazis have made another effort to overcome the shortage, and one which inspires even less confidence by shortening the period of medical training by something like two years We shall have an opportunity to study the result when the war is over

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Messrs BRITISH DRUG HOUSES have issued a useful booklet which includes, besides a price list of the B D H standard stains and other materials for microscopical work, detailed accounts of methods of staining, fixing and mounting It also introduces a new histological agent, "Mollifex" for softening tissues embedded in paraffin wax

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ORIGINAL ARTICLES

THE SOLDIER'S DEFENCE AND THE PUBLIC'S ATTITUDE*

W. CLIFFORD M. SCOTT, M.D. Toronto
PHYSICIAN TO THE LONDON CLINIC OF PSYCHO-ANALYSIS;
PSYCHIATRIC SPECIALIST, E.M.S.

THE soldier's commonest single defence against more serious psychiatric illness is a complaint that he is afraid of some aspect of the situation which war has brought about. Common variations of this complaint are that he is afraid of becoming ill or that he is already ill. The public accepts physical illness, injury and abnormal fear as understandable war casualties. Fear of a situation which is frequently described as horrible or intolerable is now an acceptable type of war casualty. This is due to a change in the public's attitude during the past generation.

Before the last war the valorous soldier was considered to be fearless. To fear that the enemy was too dangerous to attack was cowardice and to show it might turn his superior officers into assailants more dangerous than the enemy. Some soldiers were shot. Owing perhaps to the size of the conscript armies of the last war the problem of fear was forced on the military physician. Gradually the belief that war stimulated instincts—among them a self-preservative instinct—became common. It was accepted that thwarting this instinct led invariably to a fear reaction, even though in some people this reaction might be slight. The problem of treatment became a problem of keeping this fear reaction within such normal bounds that there was no interference with social duty. The stimulus to the self-preservative instinct was considered to be the likelihood of death. This widely accepted psychopathology was discussed both inside and outside the medical profession and was found among those who gave evidence before the War Office committee of inquiry into shell shock, which reported in 1922.

Since the last war two lines of research have produced a wide gulf separating the attitude of the general public and the general medical world from that of many psychiatrists. This gulf is as wide in many ways as that present during the early years of the last war when shell-shock was still only a neurological problem and cowardice only a crime. The first type of research consisted of behaviouristic studies of infants in an attempt to identify the nature and development of early fear reactions, and the second of psycho-analytic studies into the relation of the symptoms of fear to previous emotional states. Observation of infant development, both by those neurologically and those psychologically oriented, has not provided evidence that there is a primary pattern of fear reaction in infancy. No single fear reaction can be identified in infancy which contains within it all or most of the signs and symptoms of fear reactions in later life. Studies of the startle reaction have led to the conclusion that there may be a short reflex phase followed by a variety of secondary reactions. The early aspects of what may later become fainting reactions and stupor reactions have been found to be quite complex from the time they can be identified. Perhaps the safest conclusion to be drawn from the behaviouristic studies is that evidence of primary satisfaction and primary rage are the only easily identified primary reactions. Fear and sorrow reactions appear even at their onset to be more complicated and derivative than was previously held.

Psycho-analytic studies have developed rapidly, especially since the publication by Freud in 1926 of his book "Inhibition, Symptom and Anxiety." Work in this country, especially with children and the mild psychotic reactions in adults, has clarified some of the problems involved. Freud related the symptoms of fear to symptoms of other types and to previous traumata. By trauma he meant a situation producing pain or frustration of instinctual need. He showed that the theoretical basis of anxiety neurosis as formulated by him in 1895 was largely superseded. His newer conception was that fear was a signal—which sometimes could be considered abnormal and sometimes normal—meaning that something had to be done or worse would ensue. The content of the signal (the symptoms of the fear) was a partial memory of a state which had been present during a previous trauma. This formulation led to an increase in our knowledge of the way the ego developed under the influence of fear, and to a more detailed understanding of types of neurotic and psychotic fear. But the older conception, that repression of instinctive activity leads to transformation of the repressed instinctual energy into something appearing in consciousness as fear, is still too commonly used in treatment. The widespread neglect of the work done in the past fifteen years must be in itself an attempt to deny the complexity of what goes on unconsciously. In looking back it is difficult to understand why signal fear was so long unformulated. Such expressions as "I was afraid I'd laugh," "I was afraid I'd cry," "I was afraid I'd lose my temper," "I was afraid he'd know I was afraid," "I was afraid I'd frighten him" show that few doubt that one can be frightened consciously of one's own impulses. These situations are expressed even more openly in such phrases as "I wanted to laugh but I was afraid to," "I wanted to cry but I was afraid to." That one could be frightened of one's unconscious impulses remained for long undiscovered; the more unconscious the content of the fear the more likely are we to use the word anxiety instead of fear in describing it. Perhaps there are many psychopathological truths hidden behind current idioms which are as yet neither utilised nor consciously understood.

THREE EXAMPLES OF FEAR

If common sayings mentioning fear express an unconscious instead of a conscious content they disclose widely different psychopathological problems. When a patient says he is afraid he may be unconsciously on the verge of becoming excited in a way which got him into trouble on some previous occasion, and his symptoms of fear may be a partial although unrecognised memory of this experience.

CASE 1.—A territorial soldier aged 26, who had served satisfactorily for 15 months in an anti-aircraft battery since the outbreak of war, became afraid that he would show fear by trembling. He knew that his officer was thinking of recommending him for a commission. He went sick. During treatment it became apparent that he was frightened of becoming overwhelmed by outbursts of enthusiastic kindly thoughts about the enemy. In the past he had often influenced people who had tended to frustrate him by becoming ingratiating, and by exploiting a well developed capacity for being enthusiastically pleasant. Tremor was the "fear signal." It was a partial memory of trembling with happy excitement. He had good reason to believe that the wish to ingratiate the enemy would lead to difficulties similar to, or greater than, those he had experienced in the past when his enthusiasm had not proved as acceptable as he had hoped.

A patient may be frightened of unconscious wishes to grieve.

CASE 2.—A soldier of the last war, now aged 45, who fought successfully through a recent campaign except for 4 hours' unconsciousness after a bomb-burst nearby. Some time after returning to this country he became generally frightened, especially concerning his sight, which he said was failing. During treatment he discovered a wish to cry about a situation which was developing at home. His wife had begun to work and he thought she was neglecting their children. Before treatment he had only felt annoyed at his wife's behaviour. His fear and difficulty with vision had begun when he had, for the first time, nearly cried while writing to his wife. His sorrow was connected not only with his neglected children but also with memories of being neglected in childhood and with feelings that he had been neglected in his unit.

A patient may be frightened of his unconscious rage.

CASE 3.—A man of 23 who had stammered at times throughout his life was annoyed when not called up into the corps for which he considered himself most suited. He became ill at

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* Read at a meeting of the medical section of the British Psychological Society at Nottingham on April 19.

TREATMENT OF BURNS IN SWITZERLAND

TANNING methods in the treatment of burns receive enthusiastic support from Major Henschen of the University Clinic at Basle (*Helv med Acta*, April, 1941, p 77) It may well be that the tragic after results of this treatment in the deeper degrees of burning have not come to his notice but it comes as rather a shock to find that it is precisely in those degrees of burn in which the use of tannic acid is in this country regarded with so much misgiving that he most strongly advises it Henschen follows Dupuytren's historic classification of burns into six degrees For the first two—erythema and blistering—he considers tanning methods pointless Even in third-degree burns he would restrict its use to cases in which, over a large burnt area, there are only apparent a few scattered islands of epithelium In the fourth degree, however, he believes he has the main indication for tanning Here all the epithelium is destroyed, and British plastic surgeons might be expected to shudder at the very mention of the formation of a tannic scar on the deep tissues In two other directions Henschen is in more direct agreement with us He advocates the prophylactic use of sulphonamide drugs in the prevention of septicæmia in burns, and he believes in early skin-grafting to prevent contracture of scars and consequent crippling and deformity He suggests the local treatment of burns by the application of 5–15 g of sulphonamide powder, mixed with some form of anæsthetic powder to lessen the pain it might produce, but does not mention any personal experience of the effects The clean granulating wound he skin-grafts, believing that the graft has a direct stimulating effect on the deep healing of the wound He evidently prefers the Thiersch graft where the area to be covered is not too extensive, because, as he puts it, the thinner the graft the greater its vitality For larger wounds he uses a thicker graft, which is intermediate between the thin Thiersch and the deeper Wolfe graft He stretches the graft out on a towel rung out in saline solution and converts it into a type of "sieve" graft with multiple incisions In this way he allows discharge from the granulating area to escape through the graft and finds that the graft itself can more easily be stretched to the size and shape of the area to be covered

Births, Marriages and Deaths

BIRTHS

BARWELL—On Aug 16 at Woking the wife of Surgeon Lieutenant T E Barwell R N V R—a daughter

BEDFORD—On Aug 21 at Aldershot, the wife of Lieut Colonel Evan Bedford R A M C—a son

BELL—On Aug 22 at North Shields to Dr Jean Margery Bell (née Cass) wife of the Rev R G Bell—a son

CAMPBELL—On Aug 20 at Tettenhall the wife of Dr A H Campbell of West Town Somerset—a son

DODS—On Aug 18 at Amersham Bucks the wife of Captain A S Dods, R A M C—a son

IRVINE—On Aug 22 at Henley on Thames the wife of Major K Neville Irvine, R A M C—a son

KENDALL—On Aug 16, at Aberdeen the wife of Surgeon Commander A Wallis Kendall R N V R—a son

LENDON—On Aug 10 at Poona India, the wife of Major N Courtney Lendon R A M C—a son

PROPERT—On Aug 21 at Colchester the wife of Dr Sydney Propert—a son

ST JOHN BROOKS—On Aug 22 at Murree India the wife of Captain W H St John Brooks I M S—a daughter

MARRIAGES

DENTON—SANDER LUER—On Aug 15 in London Paul H Denton M D flying officer, R A F V R to Edith Sander Luer

WALKER—JACK—On Aug 23, in London, Alan John Walker, M B to Lorna Garven Jack

DEATHS

GORTON—On Aug 17 Leslie Donovan Gorton M R C S formerly of Handsworth Birmingham aged 43

LEIGHTON—On Aug 23, at Eltham Patrick Alex Leighton, M D Edin aged 68

MAGILL—On Aug 19 at Lamberhurst Archibald Magill L M S S A, late medical superintendent of the County Hospital Chatham aged 51

MAUGHAN—On Aug 22 at Bournemouth James Maughan, M D Brux M B Lond, of Albany Street, London aged 82

The Index and title-page to THE LANCET, Vol I, 1941 which was completed with the issue of June 28, will be ready next week A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager 7 Adam Street Adelphi W C 2 Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now

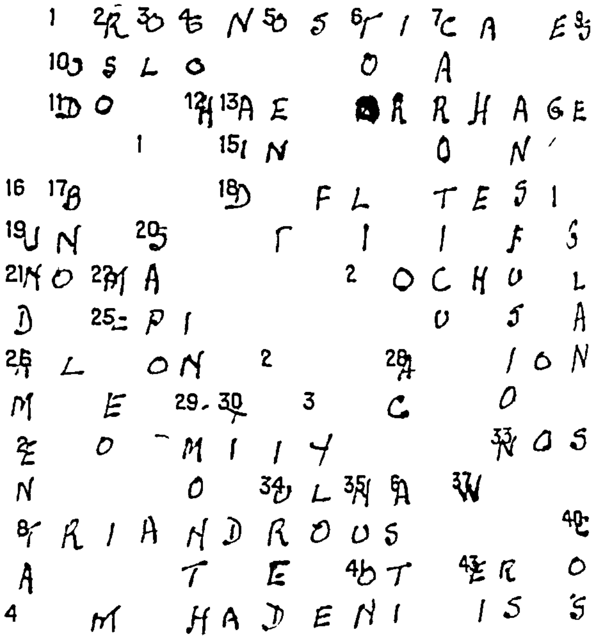
Appointments

BAK, DORA M D Vienna part time pathologist at the Elizab Garrett Anderson Hospital, London

BULLOCK, R N M B Birm examining factory surgeon for Tipt Staffs

ESSERY, E G, M R C S temp asst M O at St Audry s Hospita Melton, nr Woodbridge

LANCET CROSSWORD



ACROSS

1 Looks ahead (14)
10 Where the breakfasts come from (4)
11 and 15 Bump off in short (Two words 2 2)
12 Excuse for 8 down (11)
14 See 37
15 See 11
16 Matter out of place (2)
18 What an enema does for the distended colon (Two words, 8 2)
19 and 11 To make 11 null and void (4)
21 Ulysses to Polyphemus (5)
24 The opposite of no gentle man ? (Two words, 2 5)
25 On for a start (3)
26 The Lord Mayor s best show (5)
28 Useful water bag (6)
29 The worst is the last (4)
32 It s largely shocking (8)
33 Our backward boy (3)
34 Bone from the moon (4)
37 and 14 Positively must be treated (2)
38 Most wives think one ample but these prefer an eternal triangle (10)
41 Head the creature with an H, you're getting warmer (5)
44 Yes, I d plant him (13)

DOWN

1 Senna in the raw (3)
2 The resident surgical officer looks small (3)
3 '—ric makes me sick (?)
4 Porker goes into reverse (3)
5 Important accessory to a beer bottle (6)
6 Underhand behaviour of a catheter ? (Three word 3 2)
7 The body at the partin of the ways (9)
8 What's a pint betwee friends ? (11)
9 Essential for all who wan to keep cool (Two word 5 6)
13 You may as well have it first as last (3)
17 Failure of an aperient (5
20 Soft hard or green (4)
22 Goes with the wind (9)
23 Full term fœtus (Two words, 4 5)
27 Achieved ripeness (7)
28 Anæsthetic mixture for an aircraftman ? (2)
30 Just a team (2)
31 Tacked on to the hyoid makes the jaw drop (4)
35 Inverted substantive (4)
36 The spumous kind (4)
39 The coveted fellowship (3)
40 Probably Hippocrates ra them in his garden at hom (3)
42 Victim of a principle (?)
43 Reverse of an explanati (2)

NUFFIELD PROVINCIAL HOSPITALS —Lord Balfour of Burleigh, Lord Wigram, Mr Tom Williams, M P, Sir Bernar Docker, and Mr D Lindsay Keir, Vice Chancellor of Queen University, Belfast, have been appointed to the trust to fill th vacancies caused by the resignation of Mr Thomas Johnsto Mr E G Rowlinson, and Sir Herbert Smith

AGRICULTURAL RESEARCH COUNCIL —Major James Keit Prof F T Brooks, F R S, Prof David Keilin, F R S, Pro J A Scott Watson, and Prof C R Harington, F R S, hav been appointed members of the council

ORIGINAL ARTICLES

THE SOLDIER'S DEFENCE AND THE PUBLIC'S ATTITUDE *

W CLIFFORD M. SCOTT, M D Toronto
PHYSICIAN TO THE LONDON CLINIC OF PSYCHO ANALYSIS;
PSYCHIATRIC SPECIALIST, E.M.S

THE soldier's commonest single defence against more serious psychiatric illness is a complaint that he is afraid of some aspect of the situation which war has brought about Common variations of this complaint are that he is afraid of becoming ill or that he is already ill. The public accepts physical illness, injury and abnormal fear as understandable war casualties Fear of a situation which is frequently described as horrible or intolerable is now an acceptable type of war casualty. This is due to a change in the public's attitude during the past generation.

Before the last war the valorous soldier was considered to be fearless To fear that the enemy was too dangerous to attack was cowardice and to show it might turn his superior officers into assailants more dangerous than the enemy Some soldiers were shot Owing perhaps to the size of the conscript armies of the last war the problem of fear was forced on the military physician. Gradually the belief that war stimulated instincts—among them a self-preservative instinct—became common. It was accepted that thwarting this instinct led invariably to a fear reaction, even though in some people this reaction might be slight The problem of treatment became a problem of keeping this fear reaction within such normal bounds that there was no interference with social duty. The stimulus to the self-preservative instinct was considered to be the likelihood of death This widely accepted psychopathology was discussed both inside and outside the medical profession and was found among those who gave evidence before the War Office committee of inquiry into shell shock, which reported in 1922

Since the last war two lines of research have produced a wide gulf separating the attitude of the general public and the general medical world from that of many psychiatrists This gulf is as wide in many ways as that present during the early years of the last war when shell-shock was still only a neurological problem and cowardice only a crime. The first type of research consisted of behaviouristic studies of infants in an attempt to identify the nature and development of early fear reactions and the second of psycho-analytic studies into the relation of the symptoms of fear to previous emotional states Observation of infant development, both by those neurologically and those psychologically oriented has not provided evidence that there is a primary pattern of fear reaction in infancy. No single fear reaction can be identified in infancy which contains within it all or most of the signs and symptoms of fear reactions in later life Studies of the startle reaction have led to the conclusion that there may be a short reflex phase followed by a variety of secondary reactions The early aspects of what may later become fainting reactions and stupor reactions have been found to be quite complex from the time they can be identified Perhaps the safest conclusion to be drawn from the behaviouristic studies is that evidence of primary satisfaction and primary rage are the only easily identified primary reactions Fear and sorrow reactions appear even at their onset to be more complicated and derivative than was previously held

Psycho-analytic studies have developed rapidly especially since the publication by Freud in 1926 of his book "Inhibition Symptom and Anxiety" Work in this country, especially with children and the mild psychotic reactions in adults has clarified some of the problems involved Freud related the symptoms of fear to symptoms of other types and to previous traumata By trauma he meant a situation producing pain or frustration of instinctual need He showed that the theoretical basis of anxiety neurosis as formulated by him in 1895 was largely superseded His newer conception was that fear was a signal—which sometimes could be considered abnormal and sometimes normal—meaning that something had to be done or worse would ensue. The content of the signal (the symptoms of the fear) was a partial memory of a state which had been present during a previous trauma This formulation led to an increase in our knowledge of the way the ego developed under the influence of fear, and to a more detailed understanding of types of neurotic and psychotic fear. But the older conception that repression of instinctive activity leads to transformation of the repressed instinctual energy into something appearing in consciousness as fear, is still too commonly used in treatment The widespread neglect of the work done in the past fifteen years must be, in itself, an attempt to deny the complexity of what goes on unconsciously In looking back it is difficult to understand why signal fear was so long unformulated Such expressions as "I was afraid I'd laugh," "I was afraid I'd cry," "I was afraid I'd lose my temper." "I was afraid he'd know I was afraid" "I was afraid I'd frighten him" show that few doubt that one can be frightened consciously of one's own impulses These situations are expressed even more openly in such phrases as "I wanted to laugh but I was afraid to" "I wanted to cry but I was afraid to" That one could be frightened of one's unconscious impulses remained for long undiscovered; the more unconscious the content of the fear the more likely are we to use the word anxiety instead of fear in describing it Perhaps there are many psychopathological truths hidden behind current idioms which are as yet neither utilised nor consciously understood

THREE EXAMPLES OF FEAR

If common sayings mentioning fear express an unconscious instead of a conscious content they disclose widely different psychopathological problems. When a patient says he is afraid he may be unconsciously on the verge of becoming excited in a way which got him into trouble on some previous occasion and his symptoms of fear may be a partial although unrecognised memory of this experience

CASE 1—A territorial soldier aged 26, who had served satisfactorily for 15 months in an anti-aircraft battery since the outbreak of war, became afraid that he would show fear by trembling He knew that his officer was thinking of recommending him for a commission. He went sick. During treatment it became apparent that he was frightened of becoming overwhelmed by outbursts of enthusiastic kindly thoughts about the enemy In the past he had often influenced people who had tended to frustrate him by becoming ingratiating, and by exploiting a well-developed capacity for being enthusiastically pleasant. Tremor was the fear signal" It was a partial memory of trembling with happy excitement He had good reason to believe that the wish to ingratiate the enemy would lead to difficulties similar to, or greater than, those he had experienced in the past when his enthusiasm had not proved as acceptable as he had hoped.

A patient may be frightened of unconscious wishes to grieve.

CASE 2—A soldier of the last war, now aged 45, who fought successfully through a recent campaign except for 4 hours' unconsciousness after a bomb-burst nearby. Some time after returning to this country he became generally frightened, especially concerning his sight, which he said was failing During treatment he discovered a wish to cry about a situation which was developing at home His wife had begun to work and he thought she was neglecting their children. Before treatment he had only felt annoyed at his wife's behaviour His fear and difficulty with vision had begun when he had for the first time, nearly cried while writing to his wife His sorrow was connected not only with his neglected children but also with memories of being neglected in childhood and with feelings that he had been neglected in his unit

A patient may be frightened of his unconscious rage.

CASE 3—A man of 23 who had stammered at times throughout his life was annoyed when not called up into the corps for which he considered himself most suited. He became ill at

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* Read at a meeting of the medical section of the British Psychological Society at Nottingham on April 19

TREATMENT OF BURNS IN SWITZERLAND

TANNING methods in the treatment of burns receive enthusiastic support from Major Henschen of the University Clinic at Basle (*Helv med Acta*, April, 1941 p 77) It may well be that the tragic after results of this treatment in the deeper degrees of burning have not come to his notice but it comes as rather a shock to find that it is precisely in those degrees of burn in which the use of tannic acid is in this country regarded with so much misgiving that he most strongly advises it Henschen follows Dupuytren's historic classification of burns into six degrees For the first two—erythema and blistering—he considers tanning methods pointless Even in third-degree burns he would restrict its use to cases in which over a large burnt area there are only apparent a few scattered islands of epithelium In the fourth degree however, he believes he has the main indication for tanning Here all the epithelium is destroyed, and British plastic surgeons might be expected to shudder at the very mention of the formation of a tannic scar on the deep tissues In two other directions Henschen is in more direct agreement with us He advocates the prophylactic use of sulphonamide drugs in the prevention of septicæmia in burns, and he believes in early skin-grafting to prevent contracture of scars and consequent crippling and deformity He suggests the local treatment of burns by the application of 5–15 g of sulphonamide powder, mixed with some form of anæsthetic powder to lessen the pain it might produce but does not mention any personal experience of the effects The clean granulating wound he skin-grafts, believing that the graft has a direct stimulating effect on the deep healing of the wound He evidently prefers the Thiersch graft where the area to be covered is not too extensive, because, as he puts it, the thinner the graft the greater its vitality For larger wounds he uses a thicker graft, which is intermediate between the thin Thiersch and the deeper Wolfe graft He stretches the graft out on a towel wrung out in saline solution and converts it into a type of "sieve" graft with multiple incisions In this way he allows discharge from the granulating area to escape through the graft and finds that the graft itself can more easily be stretched to the size and shape of the area to be covered

Births, Marriages and Deaths

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BELL.—On Aug 22 at North Shields to Dr Jean Margery Bell (nee Cass), wife of the Rev R G Bell—a son

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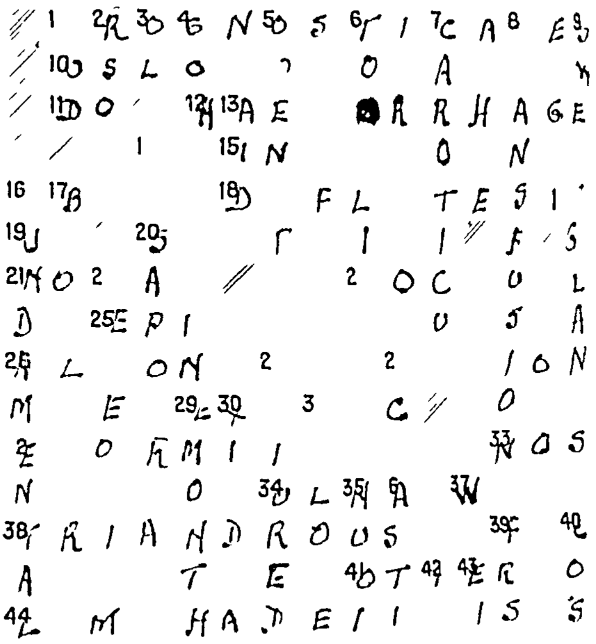
LANCET CROSSWORD



Across

1 Looks ahead (14)
10 Where the breakfasts come from (4)
11 and 15 Bump off in short (Two words, 2 2)
12 Excuse for 8 down (11)
14 See 37
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41 Head the creature with an H, you're getting warmer (5)
44 Yes, I'd plant him (13)

Down

1 Senna in the raw (3)
2 The resident surgical officer looks small (3)
3 '—ric makes me sick' (9)
4 Porker goes into reverse (3)
5 Important accessory to a beer bottle (6)
6 Underhand behaviour of a catheter? (Three words 3 2)
7 The body at the parting of the ways (9)
8 What's a plant between friends? (11)
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23 Full term foetus (Two words, 4 5)
27 Achieved ripeness (7)
28 Anæsthetic mixture for an aircraftman? (2)
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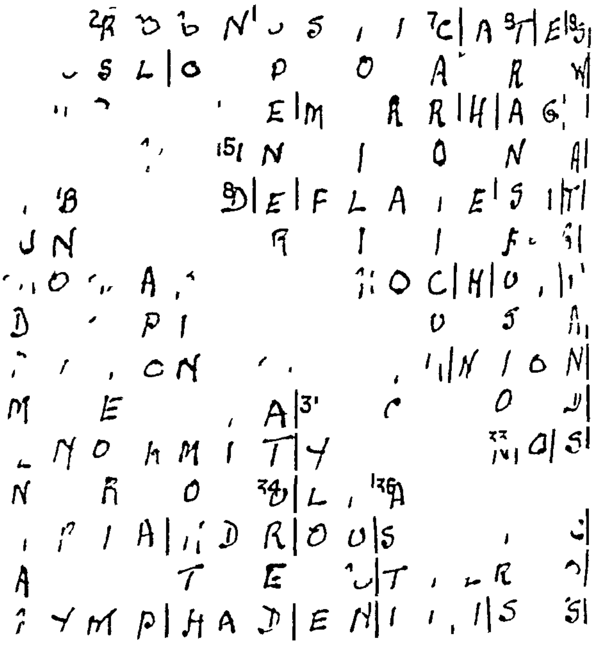

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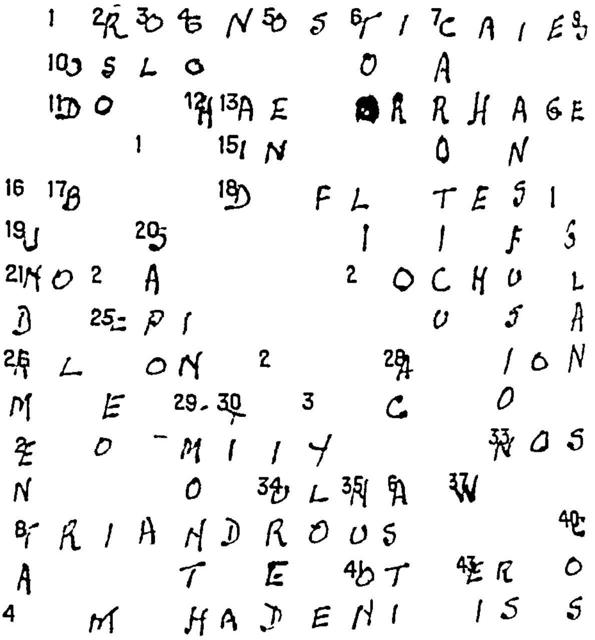

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5 Important accessory to a beer bottle (6)
6 Underhand behaviour of a catheter? (Three word 3 2)
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9 Essential for all who want to keep cool (Two wor 5 6)
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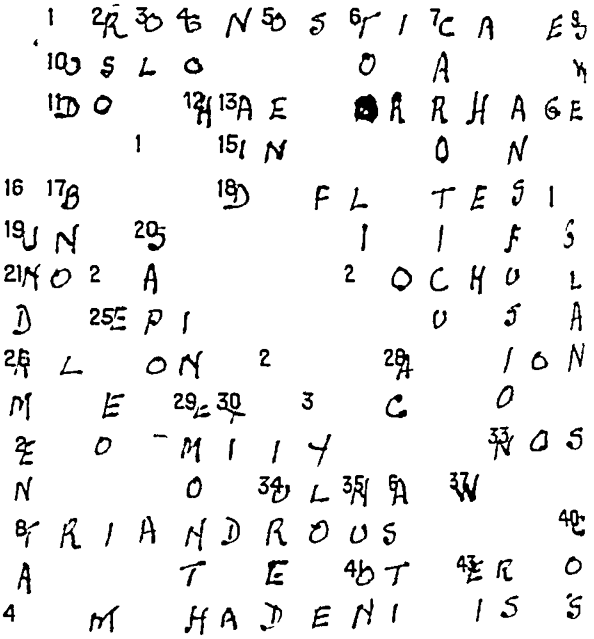

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Before the last war the valorous soldier was considered to be fearless. To fear that the enemy was too dangerous to attack was cowardice and to show it might turn his superior officers into assailants more dangerous than the enemy. Some soldiers were shot. Owing perhaps to the size of the conscript armies of the last war the problem of fear was forced on the military physician. Gradually the belief that war stimulated instincts—among them a self-preservative instinct—became common. It was accepted that thwarting this instinct led invariably to a fear reaction even though in some people this reaction might be slight. The problem of treatment became a problem of keeping this fear reaction within such normal bounds that there was no interference with social duty. The stimulus to the self-preservative instinct was considered to be the likelihood of death. This widely accepted psychopathology was discussed both inside and outside the medical profession and was found among those who gave evidence before the War Office committee of inquiry into shell shock, which reported in 1922.

Since the last war two lines of research have produced a wide gulf separating the attitude of the general public and the general medical world from that of many psychiatrists. This gulf is as wide in many ways as that present during the early years of the last war when shell-shock was still only a neurological problem and cowardice only a crime. The first type of research consisted of behaviouristic studies of infants in an attempt to identify the nature and development of early fear reactions, and the second of psycho-analytic studies into the relation of the symptoms of fear to previous emotional states. Observation of infant development, both by those neurologically and those psychologically oriented, has not provided evidence that there is a primary pattern of fear reaction in infancy. No single fear reaction can be identified in infancy which contains within it all or most of the signs and symptoms of fear reactions in later life. Studies of the startle reaction have led to the conclusion that there may be a short reflex phase followed by a variety of secondary reactions. The early aspects of what may later become fainting reactions and stupor reactions have been found to be quite complex from the time they can be identified. Perhaps the safest conclusion to be drawn from the behaviouristic studies is that evidence of primary satisfaction and primary rage are the only easily identified primary reactions. Fear and sorrow reactions appear even at their onset to be more complicated and derivative than was previously held.

Psycho-analytic studies have developed rapidly, especially since the publication by Freud in 1926 of his book "Inhibition, Symptom and Anxiety." Work in this country, especially with children and the mild psychotic reactions in adults has clarified some of the problems involved. Freud related the symptoms of fear to symptoms of other types and to previous traumata. By trauma he meant a situation producing pain or frustration of instinctual need. He showed that the theoretical basis of anxiety neurosis as formulated by him in 1895 was largely superseded. His newer conception was that fear was a signal—which sometimes could be considered abnormal and sometimes normal—meaning that something had to be done or worse would ensue. The content of the signal (the symptoms of the fear) was a partial memory of a state which had been present during a previous trauma. This formulation led to an increase in our knowledge of the way the ego developed under the influence of fear, and to a more detailed understanding of types of neurotic and psychotic fear. But the older conception, that repression of instinctive activity leads to transformation of the repressed instinctual energy into something appearing in consciousness as fear, is still too commonly used in treatment. The widespread neglect of the work done in the past fifteen years must be, in itself, an attempt to deny the complexity of what goes on unconsciously. In looking back it is difficult to understand why signal fear was so long unformulated. Such expressions as "I was afraid I'd laugh," "I was afraid I'd cry," "I was afraid I'd lose my temper" "I was afraid he'd know I was afraid," "I was afraid I'd frighten him" show that few doubt that one can be frightened *consciously of one's own impulses*. These situations are expressed even more openly in such phrases as "I wanted to laugh but I was afraid to" "I wanted to cry but I was afraid to." That one could be frightened of one's unconscious impulses remained for long undiscovered; the more unconscious the content of the fear the more likely are we to use the word anxiety instead of fear in describing it. Perhaps there are many psychopathological truths hidden behind current idioms which are as yet neither utilised nor consciously understood.

THREE EXAMPLES OF FEAR

If common sayings mentioning fear express an unconscious instead of a conscious content they disclose widely different psychopathological problems. When a patient says he is afraid, he may be unconsciously on the verge of becoming excited in a way which got him into trouble on some previous occasion and his symptoms of fear may be a partial although unrecognised memory of this experience.

CASE 1.—A territorial soldier aged 26, who had served satisfactorily for 15 months in an anti-aircraft battery since the outbreak of war, became afraid that he would show fear by trembling. He knew that his officer was thinking of recommending him for a commission. He went sick. During treatment it became apparent that he was frightened of becoming overwhelmed by outbursts of enthusiastic kindly thoughts about the enemy. In the past he had often influenced people who had tended to frustrate him by becoming ingratiating, and by exploiting a well-developed capacity for being enthusiastically pleasant. Tremor was the 'fear signal." It was a partial memory of trembling with happy excitement. He had good reason to believe that the wish to ingratiate the enemy would lead to difficulties similar to, or greater than, those he had experienced in the past when his enthusiasm had not proved as acceptable as he had hoped.

A patient may be frightened of unconscious wishes to grieve.

CASE 2.—A soldier of the last war, now aged 45, who fought successfully through a recent campaign except for 4 hours' unconsciousness after a bomb-burst nearby. Some time after returning to this country he became generally frightened, especially concerning his sight, which he said was failing. During treatment he discovered a wish to cry about a situation which was developing at home. His wife had begun to work and he thought she was neglecting their children. Before treatment he had only felt annoyed at his wife's behaviour. His fear and difficulty with vision had begun when he had for the first time, nearly cried while writing to his wife. His sorrow was connected not only with his neglected children but also with memories of being neglected in childhood and with feelings that he had been neglected in his unit.

A patient may be frightened of his unconscious rage.

CASE 3.—A man of 23 who had stammered at times throughout his life was annoyed when not called up into the corps for which he considered himself most suited. He became ill at

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* Read at a meeting of the medical section of the British Psychological Society at Nottingham on April 19.

TREATMENT OF BURNS IN SWITZERLAND

TANNING methods in the treatment of burns receive enthusiastic support from Major Henschen of the University Clinic at Basle (*Helv med Acta*, April, 1941 p 77) It may well be that the tragic after results of this treatment in the deeper degrees of burning have not come to his notice but it comes as rather a shock to find that it is precisely in those degrees of burn in which the use of tannic acid is in this country regarded with so much misgiving that he most strongly advises it Henschen follows Dupuytren's historic classification of burns into six degrees For the first two—erythema and blistering—he considers tanning methods pointless Even in third-degree burns he would restrict its use to cases in which, over a large burnt area, there are only apparent a few scattered islands of epithelium In the fourth degree, however, he believes he has the main indication for tanning Here all the epithelium is destroyed, and British plastic surgeons might be expected to shudder at the very mention of the formation of a tannic scar on the deep tissues In two other directions Henschen is in more direct agreement with us He advocates the prophylactic use of sulphonamide drugs in the prevention of septicæmia in burns, and he believes in early skin-grafting to prevent contracture of scars and consequent crippling and deformity He suggests the local treatment of burns by the application of 5–15 g of sulphonamide powder, mixed with some form of anæsthetic powder to lessen the pain it might produce, but does not mention any personal experience of the effects The clean granulating wound he skin-grafts, believing that the graft has a direct stimulating effect on the deep healing of the wound He evidently prefers the Thiersch graft where the area to be covered is not too extensive, because, as he puts it, the thinner the graft the greater its vitality For larger wounds he uses a thicker graft, which is intermediate between the thin Thiersch and the deeper Wolfe graft He stretches the graft out on a towel rung out in saline solution and converts it into a type of " sieve " graft with multiple incisions In this way he allows discharge from the granulating area to escape through the graft and finds that the graft itself can more easily be stretched to the size and shape of the area to be covered

Births, Marriages and Deaths

BIRTHS

BARWELL—On Aug 16 at Woking the wife of Surgeon Lieutenant T E Barwell R N V R —a daughter

BEDFORD—On Aug 21 at Aldershot the wife of Lieut Colonel Evan Bedford R A M C —a son

BELL—On Aug 22 at North Shields to Dr Jean Margery Bell (née Cass) wife of the Rev R G Bell—a son

CAMPBELL—On Aug 20 at Tettenhall the wife of Dr A H Campbell of West Town Somerset—a son

DODS—On Aug 18 at Amersham, Bucks, the wife of Captain A S Dods, R A M C —a son

IRVINE—On Aug 22 at Henley on Thames, the wife of Major K Neville Irvine R A M C —a son

KENDALL—On Aug 16 at Aberdeen the wife of Surgeon Commander A Wallis Kendall, R N V R —a son

LENDON—On Aug 10 at Poona India, the wife of Major N Courtney Lendon R A M C —a son

PROPERT—On Aug 21 at Colchester, the wife of Dr Sydney Propert—a son

ST JOHN BROOKS—On Aug 22, at Murree India, the wife of Captain W H St John Brooks I M S —a daughter

MARRIAGES

DENTON—SANDER LUER—On Aug 15, in London Paul H Denton, M D flying officer R A F V R , to Edith Sander Luer

WALKER—JACK—On Aug 23, in London, Alan John Walker, M B , to Lorna Garven Jack

DEATHS

GORTON—On Aug 17 Leslie Donovan Gorton M R C S , formerly of Handsworth Birmingham aged 43

LEIGHTON—On Aug 23, at Eltham, Patrick Alex Leighton, M D Edin aged 68

MAGILL—On Aug 19, at Lamberhurst, Archibald Magill L M S S A , late medical superintendent of the County Hospital Chatham aged 51

MAUGHAN—On Aug 22 at Bournemouth, James Maughan, M D Brux M B Lond of Albany Street London aged 82

The Index and title-page to THE LANCET, Vol I, 1941 which was completed with the issue of June 28, will be ready next week A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager 7, Adam Street Adelphi W C 2 Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now

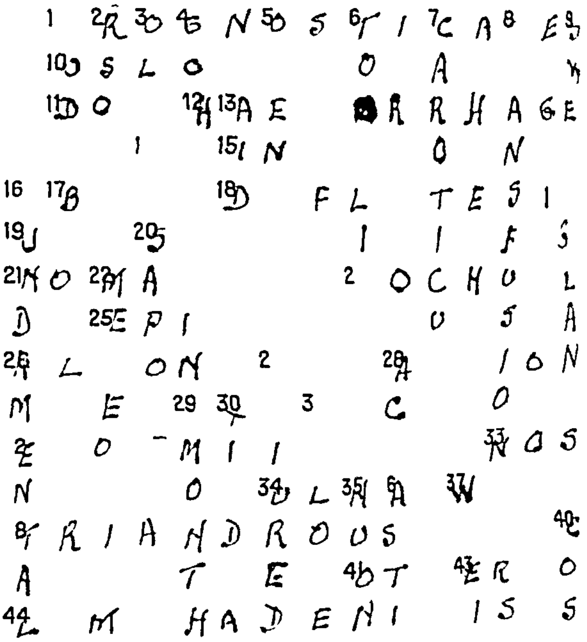
Appointments

BAK, DORA M D Vienna part time pathologist at the Elizabeth Garrett Anderson Hospital, London

BULLOCK R N, M B Birm examining factory surgeon for Tip Staffs

ESSERY E G, M R C S temp asst M O at St Audry s Hospital Melton, nr Woodbridge

LANCET CROSSWORD



ACROSS

1 Looks ahead (14)

10 Where the breakfasts come from (4)

11 and 15 Bump off in short (Two words, 2 2)

12 Excuse for 8 down (11)

14 See 37

15 See 11

16 Matter out of place (2)

18 What an enema does for the distended colon (Two words, 8 2)

19 and 11 To make 11 null and void (4)

21 Ulysses to Polyphemus (5)

24 The opposite of no gentle man ? (Two words, 2, 5)

25 On for a start (3)

26 The Lord Mayor s best show (5)

28 Useful water bag (6)

29 The worst is the last (4)

32 It s largely shocking (8)

33 Our backward boy (3)

34 Bone from the moon (4)

37 and 14 Positively must be treated (2)

38 Most wives think one ample but these prefer an eternal triangle (10)

41 Head the creature with an H , you re getting warmer (5)

44 Yes, I'd plant him (13)

DOWN

1 Senna in the raw (3)

2 The resident surgical officer looks small (3)

3 "—ric makes me sick" (9)

4 Porker goes into reverse (3)

5 Important accessory to a beer bottle (6)

6 Underhand behaviour of a catheter ? (Three word 3 2)

7 The body at the partin of the ways (9)

8 What's a pint betwee friends ? (11)

9 Essential for all who want to keep cool (Two word 5 6)

13 You may as well have it first as last (3)

17 Failure of an aperient (5)

20 Soft, hard or green (4)

22 Goes with the wind (9)

23 Full term fœtus (Two words, 4, 5)

27 Achieved ripeness (7)

28 Anæsthetic mixture for an aircraftman ? (2)

30 Just a team (2)

31 Tacked on to the hyoid makes the jaw drop (4)

35 Inverted substantive (4)

36 The spumous kind (4)

39 The coveted fellowship (3)

40 Probably Hippocrates ru them in his garden at hom (3)

42 Victim of a principle (?)

43 Reverse of an explanati (2)

NUFFIELD PROVINCIAL HOSPITALS —Lord Balfour of Burleigh, Lord Wigram, Mr Tom Williams, M P , Sir Bernard Docker, and Mr D Lindsay Keir, Vice Chancellor of Queen's University, Belfast, have been appointed to the trust to fill the vacancies caused by the resignation of Mr Thomas Johnston, Mr E G Rowlinson, and Sir Herbert Smith

AGRICULTURAL RESEARCH COUNCIL —Major James Keith, Prof F T Brooks, F R S Prof David Keilin, F R S , Prof J A Scott Watson, and Prof C R Harington, F R S , have been appointed members of the council

ORIGINAL ARTICLES

THE SOLDIER'S DEFENCE AND THE PUBLIC'S ATTITUDE*

W CLIFFORD M SCOTT, M D Toronto
PHYSICIAN TO THE LONDON CLINIC OF PSYCHO ANALYSIS,
PSYCHIATRIC SPECIALIST, E.M.S

THE soldier's commonest single defence against more serious psychiatric illness is a complaint that he is afraid of some aspect of the situation which war has brought about Common variations of this complaint are that he is afraid of becoming ill or that he is already ill The public accepts physical illness, injury and abnormal fear as understandable war casualties Fear of a situation which is frequently described as horrible or intolerable is now an acceptable type of war casualty. This is due to a change in the public's attitude during the past generation

Before the last war the valorous soldier was considered to be fearless To fear that the enemy was too dangerous to attack was cowardice and to show it might turn his superior officers into assailants more dangerous than the enemy Some soldiers were shot Owing perhaps to the size of the conscript armies of the last war the problem of fear was forced on the military physician Gradually the belief that war stimulated instincts—among them a self-preservative instinct—became common It was accepted that thwarting this instinct led invariably to a fear reaction, even though in some people this reaction might be slight The problem of treatment became a problem of keeping this fear reaction within such normal bounds that there was no interference with social duty The stimulus to the self-preservative instinct was considered to be the likelihood of death This widely accepted psychopathology was discussed both inside and outside the medical profession and was found among those who gave evidence before the War Office committee of inquiry into shell shock, which reported in 1922

Since the last war two lines of research have produced a wide gulf separating the attitude of the general public and the general medical world from that of many psychiatrists This gulf is as wide in many ways as that present during the early years of the last war when shell-shock was still only a neurological problem and cowardice only a crime The first type of research consisted of behaviouristic studies of infants in an attempt to identify the nature and development of early fear reactions, and the second of psycho-analytic studies into the relation of the symptoms of fear to previous emotional states Observation of infant development, both by those neurologically and those psychologically oriented, has not provided evidence that there is a primary pattern of fear reaction in infancy No single fear reaction can be identified in infancy which contains within it all or most of the signs and symptoms of fear reactions in later life Studies of the startle reaction have led to the conclusion that there may be a short reflex phase followed by a variety of secondary reactions The early aspects of what may later become fainting reactions and stupor reactions have been found to be quite complex from the time they can be identified Perhaps the safest conclusion to be drawn from the behaviouristic studies is that evidence of primary satisfaction and primary rage are the only easily identified primary reactions Fear and sorrow reactions appear even at their onset to be more complicated and derivative than was previously held

Psycho-analytic studies have developed rapidly, especially since the publication by Freud in 1926 of his book "Inhibition, Symptom and Anxiety" Work in this country, especially with children and the mild psychotic reactions in adults, has clarified some of the problems involved Freud related the symptoms of fear to symptoms of other types and to previous traumata By trauma he meant a situation producing pain or frustration of instinctual need He showed that the theoretical basis of anxiety neurosis as formulated by him in 1895 was largely superseded. His newer conception was that fear was a signal—which sometimes could be considered abnormal and sometimes normal—meaning that something had to be done or worse would ensue The content of the signal (the symptoms of the fear) was a partial memory of a state which had been present during a previous trauma This formulation led to an increase in our knowledge of the way the ego developed under the influence of fear, and to a more detailed understanding of types of neurotic and psychotic fear But the older conception, that repression of instinctive activity leads to transformation of the repressed instinctual energy into something appearing in consciousness as fear, is still too commonly used in treatment The widespread neglect of the work done in the past fifteen years must be, in itself, an attempt to deny the complexity of what goes on unconsciously In looking back it is difficult to understand why signal fear was so long unformulated Such expressions as "I was afraid I'd laugh," "I was afraid I'd cry," "I was afraid I'd lose my temper," "I was afraid he'd know I was afraid," "I was afraid I'd frighten him" show that few doubt that one can be frightened consciously of one's own impulses These situations are expressed even more openly in such phrases as "I wanted to laugh but I was afraid to," "I wanted to cry but I was afraid to" That one could be frightened of one's unconscious impulses remained for long undiscovered; the more unconscious the content of the fear the more likely are we to use the word anxiety instead of fear in describing it Perhaps there are many psychopathological truths hidden behind current idioms which are as yet neither utilised nor consciously understood

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CASE 1 —A territorial soldier aged 26, who had served satisfactorily for 15 months in an anti aircraft battery since the outbreak of war, became afraid that he would show fear by trembling He knew that his officer was thinking of recommending him for a commission. He went sick. During treatment it became apparent that he was frightened of becoming overwhelmed by outbursts of enthusiastic kindly thoughts about the enemy In the past he had often influenced people who had tended to frustrate him by becoming ingratiating, and by exploiting a well-developed capacity for being enthusiastically pleasant Tremor was the "fear signal" It was a partial memory of trembling with happy excitement He had good reason to believe that the wish to ingratiate the enemy would lead to difficulties similar to, or greater than, those he had experienced in the past when his enthusiasm had not proved as acceptable as he had hoped.

A patient may be frightened of unconscious wishes to grieve

CASE 2 —A soldier of the last war, now aged 45, who fought successfully through a recent campaign except for 4 hours' unconsciousness after a bomb-burst nearby Some time after returning to this country he became generally frightened, especially concerning his sight, which he said was failing During treatment he discovered a wish to cry about a situation which was developing at home His wife had begun to work and he thought she was neglecting their children Before treatment he had only felt annoyed at his wife's behaviour His fear and difficulty with vision had begun when he had, for the first time, nearly cried while writing to his wife His sorrow was connected not only with his neglected children but also with memories of being neglected in childhood and with feelings that he had been neglected in his unit

A patient may be frightened of his unconscious rage

CASE 3 —A man of 23 who had stammered at times throughout his life was annoyed when not called up into the corps for which he considered himself most suited He became ill at ease, easily frightened and stammered more. Under treatment he said he would soon be fit. He said he had conquered his trouble before and would again. Change was slow until after an air raid, during which he became very angry at the Germans. He had difficulty in talking of the content of his anger. He said he was frightened of his thoughts. He looked happy and excited and wanted to go back to duty. During a few days' treatment he became calmer and the content changed. At first he wanted all Germans killed, later he wanted them all castrated, still later he wanted birth control measures enforced throughout Germany, finally he discussed prolonged re education of the enemy after victory. There was a close connexion between the degree of his fear and the primitive nature of his rage: the more primitive his rage the greater was his fear.

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* Read at a meeting of the medical section of the British Psychological Society at Nottingham on April 19

Such instances could be multiplied but those quoted show similarities between the symptoms of conscious fear and the partial, and at first unrecognised, memory of an emotion which caused trouble when expressed at an earlier age. A similar emotion is being evoked again by some aspect of the patient's general situation in war at the moment he becomes frightened. Quite possibly many of the same mechanisms are at work in patients who do not become abnormally frightened until they are tested in the greater test of face to face mortal combat.

THE CHANGING VIEW OF FEAR

The gradual change in the public's attitude to fear during the last war no doubt made it possible to do as much as was done for those showing abnormal fear at that time. The change in attitude came about mostly through education in the Services and among civilians, most likely through reading and conversation. Now that it is easier to ascertain the amount and nature of unconscious fear, sorrow, love or hate related to complaints of physical illness or fear, many of those suffering from mild degrees of fear might be helped simply by a more widespread public acceptance of the psychopathological facts I have mentioned. The milder forms of fear, expressed in social conversation or to the family physician, might be lessened by general education. The more severe forms of fear which bring patients to hospital might be more easily treated if there was another advance in public understanding as great as that which occurred during the last war.

If the unconscious emotions which, when strong, may be signalled consciously by fear were more frequently mentioned at the cinema, by the press and wireless, in churches, and in such public pageantry as persists, mourning might be completed rather than postponed, tolerance of grief might be increased, and hate and love might become less frightening. The pleasures of hating might be more easily accepted without the accompanying fear that all enjoyment would be disturbed by having been once connected with hating. The fear that once having hated a person you can find nothing left in him to love might be partly overcome. An impulse towards appeasement may well be tolerated and postponed rather than denied. It is denial of such impulses, rather than their conscious toleration, which is dangerous, for the repressed impulse may return with full force and jeopardise a man's life and his country's safety. To wish to appease an enemy during war is a different thing from being prepared to meet him on friendly terms later for the purpose of convincing him that a good relationship with him is possible. The idea of tolerating and postponing kindly wishes till after the destructive wishes of the enemy have been overcome might thus become general and acceptable. With the development of a cultural attitude along these lines it would become easier to reassure patients and to make them understand that problems similar to theirs were widespread throughout the community. The patients themselves would be helped by the knowledge that they were tackling in private problems which their rulers were tackling in public. The courage to "take it"—to put up with the burden of being sinned against—could well be expanded to include the courage to "bear up"—to put up with desire to grieve for one's friend or foe, with desire to love one's assailant and with desire to fight him with primitive rage—and at the same time to take a share in the duties of a community at war.

RENAL COMPLICATIONS OF SULPHAPYRIDINE THERAPY

SYDNEY M. LAIRD,
M.D., B.SC. GLASG., F.R.F.P.S., D.P.H.
MAJOR, R.A.M.C.

THE toxic manifestations arising during sulphonamide therapy are in general common to all members of the group, but certain of these drugs may give rise to signs of intolerance or toxicity which are peculiar to themselves—for example, the sulphanilyl-sulphanilamide series, of which Uleron is representative, may produce peripheral neuritis. In the past two years hæmaturia has been reported as developing during or after the use of sulphapyridine, and more recently the closely allied sulphathiazole series of drugs have been similarly incriminated.[35 18] Earlier reports[26 19 14 5] suggested that the hæmaturia produced by sulphapyridine was mechanical rather than toxic in origin and did not constitute a serious complication, but when Southworth and Cooke[43] reported that it was in some cases associated with abdominal pain and nitrogen retention, and when Tsao and others[47] reported a fatal case of anuria, the potential seriousness of the hæmaturia was more fully appreciated.

CASE-REPORTS

Since the introduction of intensive dosage, the complication had been more common, and I am here reporting five cases arising in soldiers under treatment for gonorrhœa between December, 1940, and March, 1941.

CASE 1.—A healthy soldier, aged 22, was admitted to hospital on Dec. 16, 1940, suffering from acute gonococcal urethritis. No history of scarlet fever or nephritis. He had received no treatment for his urethritis, which had developed on Dec. 5. Sulphapyridine, 1 g. four hourly, was begun immediately, the daily fluid intake being about 2000 c.cm. In the early hours of the morning of Dec. 18, after a total of 12 g. sulphapyridine, he developed severe pain in the lumbar region accompanied by pain on micturition. Pyrexia (99° F.), headache and retching without vomiting were also present. Gross hæmaturia was noted and the right kidney was found to be palpable and tender. Urinary findings were sp. gr. 1014, acid, thick cloud of albumin, deposit showed very numerous red cells and many fine needle shaped crystals of acetyl sulphapyridine. The bowels were regular, the tongue being only slightly furred. Sulphapyridine was immediately stopped and fluids by mouth pressed. A kaolin poultice was applied over the lumbar region and morphia and atropine were required to keep the patient comfortable. The pain was less severe next day and had abated completely by Dec. 20. On this date the urine was normal on macroscopic examination and on the 21st only a few red cells were seen microscopically. The patient made a rapid recovery and was discharged from hospital on the 23rd with a normal urine and without clinical evidence of urethritis. Thereafter he was seen as an outpatient, and, on his last visit on March 5, 1941, the urine was normal and direct radiography of the renal tract revealed no abnormality.

CASE 2.—A healthy soldier, aged 24, was admitted to hospital on Jan. 8, 1941, suffering from acute gonococcal urethritis. No history of scarlet fever or nephritis. He had received no treatment for the urethritis. Sulphapyridine, 1 g. four hourly, was begun immediately, the daily fluid intake being about 2000 c.cm. Shortly before midnight on Jan. 9, after a total of 9 g. sulphapyridine, he developed pain in the abdomen which was worse on the right side and on occasion passed down into the right groin and testicle. He complained of nausea during that day, and next day of headache, vertigo and vomiting. The bowels were open daily. On the morning of the 10th gross hæmaturia was noted and the right kidney was palpable and tender. At this stage a total of 12 g. of sulphapyridine had been administered and the drug was now stopped. Fluids were given by mouth at the rate of one pint an hour and an enema was given. No sedatives were required as the pain was not very severe. The abdominal pain had abated by the 12th, on which day a mild sulphapyridine rash of the morbilliform type appeared. The urine had returned to normal by the 13th. The patient was discharged from hospital on the 18th with no clinical evidence of urethritis and free from symptoms.

Urinary findings—Jan 10 abundant red blood corpuscles and a moderately large number of crystals of acetyl sulphapyridine Jan 11 moderate number of red blood corpuscles, no crystals seen Jan 13 sp gr 1005, reaction neutral, no albumin, normal on microscopic examination

CASE 3—A previously healthy soldier, aged 26, was admitted to hospital on Jan 20, 1941, suffering from acute gonococcal urethritis No history of scarlet fever or nephritis He had received no treatment for the urethritis Sulphapyridine, 1 g four-hourly, was begun immediately, the daily fluid intake being about 2000 c cm At 6 A.M on Jan 22, after 11 g of sulphapyridine had been administered, bilateral pain of renal distribution was experienced, and half an hour later hæmaturia was noticed for the first time The bowels were open regularly Sulphapyridine was stopped after a total of 12 g had been administered On the 23rd the pain had become more severe and tenderness over both kidneys were noted. Fluids were pressed, morphia and atropine were given and measurement of the urinary output was begun At 9 30 A.M on the 24th pain and tenderness were less but were still present, vomiting was persistent and pyrexia (99° F) was noted The little urine passed during the previous night contained less blood than on former occasions At 7 P M anuria had been present for just over 12 hours, vomiting continued and there was evidence of dehydration and nitrogen retention (blood-urea at 2 P M 61 mg per 100 c cm) The bladder was empty and pain and tenderness were more definite over the right kidney A direct radiogram of the renal tract revealed no abnormality Cystoscopy performed under local anæsthesia at 9 15 P M showed no urine in bladder, bladder mucosa injected and covered with shreds of mucus, right ureteric orifice injected, left œdematous with raised edges The right ureter was catheterised and, while this was being done a small blood clot was dislodged from the ureteric orifice Thereafter the catheter passed easily to the renal pelvis Sterile saline, 3 c cm, was injected and immediately a thick, brown sludge began to flow from the catheter this substance did not clot The catheter was left in situ and just over 10 oz was drained off while 2½ pints of saline glucose drip was given intravenously A rigor developed during the administration of the third pint The patient remarked that his pain abated suddenly and this coincided with the establishment of drainage through the ureteric catheter After operation the patient was free from discomfort and maintained a satisfactory fluid intake and urinary output The temperature returned to normal on Jan 28, and on the 30th the blood-urea was 36 mg per 100 c cm The urine improved steadily and had returned to normal by Feb 1 On the 3rd contrast radiography of the renal tract revealed normal function and appearance and the patient was discharged on the 6th, free from all symptoms

Urinary findings—Jan 23 very abundant red blood corpuscles, no crystals seen Jan 24 (9 30 A M) sp gr 1012, acid, albumin — — —, red blood corpuscles + — —, no crystals seen. Jan 24 (catheter specimen from right ureter) strongly acid, deposit showed much blood and a large proportion of very small clots, fair number of ureteric epithelial cells, few fragments of pelvic epithelium and one or two blood casts, no unusual crystals seen Jan 27 sp gr 1014, acid, albumin +, red blood corpuscles — + Jan. 28 sp gr 1011, acid, albumin —, moderate number of red blood corpuscles, no casts Jan. 29 sp gr. 1012, acid, albumin —, red blood corpuscles — +, no casts Jan. 30 sp gr 1009, slightly acid, trace of albumin, moderate number of red blood corpuscles and pus cells Feb 1 sp gr 1007, neutral, no albumin, very few red blood corpuscles and pus cells

Urine output—Jan. 24 12 30 A.M, 45 c cm, 6 20 A M, 60 c cm, (8 P M cystoscopy) 8 30 P M. to midnight, over 300 c cm, Jan 25 2310 c cm Jan. 26 2820 c cm.

CASE 4—A previously healthy soldier, aged 30, undergoing treatment for gonococcal urethritis He was originally admitted to hospital on Feb 11 and received 6 g of sulphapyridine daily for four days The urethral condition subsequently recurred and he was readmitted for further treatment The first course of sulphapyridine caused headache, vertigo, nausea and vomiting, but there was no evidence of renal irritation A second course was begun on Feb 25 and this again resulted in headache, vertigo, nausea and vomiting The vomiting led to the fluid intake becoming lower than was desired and when pain developed in the left hypochondrium on the 28th the drug was stopped after a total of 18 g sulphapyridine had been administered Naked eye examination of the urine revealed no obvious abnormality until March 2, when it looked smoky, sp gr 1018, acid, albumin — —, red blood corpuscles — — — —, no acetyl sulphapyridine crystals seen Fluids were pressed as much as possible by mouth, and by March 4 the pain had abated and the urine was microscopically normal apart from an occasional red blood corpuscle A third course of chemotherapy was begun on March 8, because the urethral condition was still unsatisfactory Pyrexia, nausea vomiting, pain in the right lumbar region and hæmaturia reappeared on the 10th after 11 g of sulphapyridine had been administered Stopping the drug and pressing fluids by mouth led to the rapid abatement of these symptoms

Urinary findings—March 10 cloudy but no macroscopic blood, pH 7 6, red blood corpuscles — — large number of acetyl sulphapyridine crystals March 11 sp gr 1008 neutral trace of albumin, occasional red blood corpuscles, no crystals seen March 12 normal

CASE 5—A previously healthy soldier, aged 31 admitted to hospital on March 4, 1941, suffering from acute urethritis He was given 6 g sulphapyridine daily and a fluid intake of 7 pints a day was advised On the 6th after 12 g of sulphapyridine, he developed gross macroscopic hæmaturia and pain in the region of the right kidney Direct radiography of the renal tract revealed no abnormality The drug was stopped at once and a pint of water was given by mouth every hour The patient admitted that he had not previously carried out his instructions with regard to fluid intake A rapid diuresis was effected and a dramatic abatement of the renal irritation resulted

Urinary findings—March 3 10 A.M sp gr 1020 pH 6 4 red blood corpuscles and acetyl-sulphapyridine crystals — — + — — — At 1 P M sp gr 1005, pH 6 8, red blood corpuscles and crystals — — — At 2 P M sp gr 1001, pH 7 0, no red blood corpuscles or crystals seen

It will be noted that the daily fluid intake in all these cases of hæmaturia was below 3000 c cm The importance of the fluid intake in relation to renal irritation is well illustrated by the table which presents the relevant data in a series of adult male patients who have been treated solely under my care for urethritis

RELATION OF HÆMATURIA TO FLUID INTAKE

Cases	Sulphapyridine daily (g)	Fluid intake (c cm daily)	Cases of hæmaturia
162	3 g	Over 3000	0
323	4 g	Over 3000	0
104	4 g	2000	1
140	6 g	2000	4
65	6 g	Over 3000	0

CLINICAL PICTURE

The clinical picture produced by these renal complications may take one of three forms In the first hæmaturia is only detected microscopically and pain is sometimes present in the second the hæmaturia is gross, usually accompanied by pain but clears up rapidly on withdrawing the drug and giving ample fluids, and, in the third, despite such remedial measures, there is impairment of renal function which may lead to nitrogen retention anuria and death These forms may appear as separate entities but they may, in fact, only constitute progressive stages of the same process

Examples of the mildest form will be detected only by frequent microscopic examination of the urine, and hence reports of its occurrence depend partly on the thoroughness of investigation. McCann[30] reported that routine microscopical examination revealed red cells in the urine of 29 out of 65 male patients receiving sulphapyridine for gonorrhœa · Nissen and Roesgaard[33] found microscopic hæmaturia in 10 out of 41 cases of pneumonia treated with sulphapyridine Hegglin[21] reported severe hæmaturia in 1% of cases but stated that minor degrees were more common, Flippin[13] found microscopic hæmaturia in 5% and gross hæmaturia in 1% of patients receiving sulphapyridine Long and others[25] reports that 8% of 297 cases treated with sulphapyridine developed hæmaturia The pain is usually ill-defined and may especially in pneumonia be mistaken for a manifestation of the disease under treatment If the drug is withdrawn and ample fluids given before the condition has progressed to the second stage red cells disappear from the urine within a few days, though they will probably reappear if further sulphapyridine is given

In the absence of frequent routine microscopic examinations of the urine renal complications will only be detected when they have progressed to the second stage The onset of this degree of hæmaturia is often associated with severe pain, usually confined to the lumbar region but sometimes indistinguishable from the typical distribution of renal and ureteric colic At first the pain may be confined to one flank, but soon may become bilateral, and it is commonly associated with malaise vomiting and pyrexia Tenderness may be elicited over the kidney and bladder and, more rarely, over the line of the ureter The reported cases show that, in adults, the second stage is reached 48–96 hours after the commencement of chemotherapy, when between 12 and 24 g of sulphapyridine has been taken, and that patients developing this complication are receiving at least 5 g a day In adolescents and infants when dosage has been unusually heavy, symptoms have arisen in less than 48 hours[5, 42] Prompt recognition of this stage and immediate treatment will often lead to a dramatic abatement of macroscopic hæmaturia This is well illustrated by case 5, where the urine became free from blood on naked-eye examination three hours after remedial measures were begun Sulphapyridine should be stopped, the urinary output measured, and fluids given at the rate of a pint an hour When there is severe vomiting, saline and 5% glucose should be given rapidly by the continuous intravenous drip method Failure to produce diuresis within twelve hours indicates that the condition has progressed to the third stage

The third stage is characterised by a diminished output of grossly blood-stained urine and may progress to complete anuria Coincident with this there is increasing nitrogen retention which, if unrelieved, may lead to death Œdema and hypertension seem to be rare but have been described in one case by Kilgour[24]

ÆTIOLOGY

When sulphapyridine is absorbed into the blood, part of it is acetylated, and hence the kidney is called on to excrete acetyl-sulphapyridine in addition to unconjugated or free sulphapyridine There is considerable variation between individual patients in the proportion undergoing acetylation and the acetyl-sulphapyridine is much less soluble than the unconjugated form, particularly in an acid medium As the glomerular filtrate passes through the tubular system of the kidneys, the urine becomes increasingly acid and undergoes considerable concentration This process, in association with intensive dosage of sulphapyridine, an unusually high degree of acetylation, a low fluid intake or an abnormal fluid loss, will favour the precipitation of crystals of acetyl-sulphapyridine These crystals are sharp and may form a nidus for the formation of small calculi which produce mechanical irritation of the renal pelvis and ureter Such trauma causes hæmaturia, œdema, and possibly reflex spasm, which, by producing ureteric obstruction, lead to hydronephrosis, anuria and nitrogen retention

The production of crystals depends on several factors intensity of dosage , rate of absorption and excretion , the proportions of free and conjugated sulphapyridine in the blood and urine , the amount of fluid intake and loss , and the concentration of the urine * While most of these factors are extrinsic and amenable to control by the physician, others are intrinsic and depend on the personal idiosyncrasy of the patient

TREATMENT AND PROPHYLAXIS

The principle underlying the treatment of any degree of hæmaturia due to sulphapyridine is the rapid elimination of the drug from the body To effect this, administration of the drug should be stopped forthwith and measurement of the urinary output instituted Where the output is subnormal, blood-urea estimations should be carried out Fluid intake must be forced up to a high level, using the intravenous route if vomiting is present or the patient is unconscious or uncooperative from any other cause A solution of 5% dextrose in saline, or 4 28% sodium sulphate with 10% glucose in normal saline, is commonly used for intravenous medication, and the total of fluids administered in 24 hours should be at least 3000 c cm Morphia and atropine may be required to relieve pain, and other general measures of benefit include rest in bed, the application of a kaolin poultice to the lumbar region, and the evacuation of the lower bowel by enemata These measures are indicated in the first and second stages of the complication, although in exceptional cases, where withdrawal of the drug may endanger the patient's life, continuation of chemotherapy may be justified If so the urinary output and blood-urea must be carefully observed so that the onset of stage three is recognised immediately

When the fluid intake is satisfactory, increasing oliguria means that the complication has advanced to the third stage The patient may still respond to the regime outlined for stages 1 and 2, but the development of anuria is the signal for active surgical intervention in order to relieve the mechanical obstruction of the urinary tract and repeated lavage of the ureter and renal pelvis with saline or distilled water is the treatment of choice The lavage fluid should be at body temperature as this facilitates solution of the crystals This procedure, suggested by Tsao and others,[47] apparently proved a life-saving measure in my case 3 The operation can be performed under local anæsthesia and without detriment to the patient, who would otherwise be regarded as a poor operative risk It is preferable to decapsulation of the kidneys, pyelotomy and retrograde catheterisation, although this operation may prove successful in cases where direct ureteric catheterisation is prevented by technical difficulties[41] Operation should be carried out within twelve hours of the onset of anuria to avoid damage to the kidneys from pressure indeed, Smith and others[41] advise that the forcing of fluids should not be continued once renal function is obviously impaired, in view of the hydronephrosis which has been found in such cases both at open operation and autopsy With the re-establishment of urinary secretion, however, an adequate fluid intake should once again be maintained The ureteric catheter or catheters should be allowed to remain in situ after the patient has returned to the ward and until the output of urine has reached a satisfactory level

Cystoscopy may reveal that urinary secretion has ceased from both ureters and it is then necessary to decide whether unilateral or bilateral catheterisation is required Evidence on this point is scanty Carroll, Shea and Pike,[9] Sadusk, Waters and Wilson,[40] and Plummer and McLellan[36] catheterised both ureters in their cases but in case 3 only the right ureter was catheterised, and although no serious obstruction was met as soon as drainage from the right renal pelvis was established, pain was relieved and secretion from the left ureter took place This observation suggests that the ureteric obstruction may partly depend on reflex spasm of the ureteric wall Thus while bilateral catheterisation is advocated as a routine in these cases if technical difficulties arise, it may be borne in mind that catheterisation of one ureter has been successful in re-establishing secretion of urine from both kidneys

The prevention of significant hæmaturia during sulphapyridine therapy depends essentially on maintaining a fluid intake of at least 3000 c cm and a urinary output of 1500 c cm in 24 hours This is of especial importance when the dosage exceeds 5 g a day, a threshold above which this complication is most often encountered The concurrent administration of alkalis with sulphapyridine has been advocated by Marshall,[33] Backhouse[5] and THE LANCET (1939, 2, 893), but it has since been demonstrated that acetyl-sulphapyridine may crystallise out in alkaline urine[46, 47, 8, 40, 41] Haviland and Britton[20] have shown that the solubility of acetyl-sulphapyridine in urine remains essentially the same for a range of pH 3 3 to 7 4 and that the solubility at pH 7 9 is not therapeutically significant When intensive dosage is employed, it is advisable that the urine should be examined microscopically each day so that signs of renal irritation will be detected in the first stage, in which treatment is invariably successful Similar examination is called for in any patient who complains

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Secondly, the lateral mobility of the objective permits a much more detailed examination of the mucosa to be made by approaching or withdrawing from any particular area at will The mucosal surface is always in focus and the degree of magnification of any part can be controlled by adjusting its distance from the objective Thus, a near view of the pylorus can now be obtained More proximally, the objective can stand back from the posterior wall to provide a more comprehensive view of it than can be obtained by the close approximation at which the passively flexible instrument naturally lies The latter limitation of the Wolf-Schindler instrument was well recognised and the inflatable retracting balloon was designed to overcome this by pushing away the mucosa from too close contact with the objective Although the method was effective, the balloon was in practice easily damaged and its external rubber capillary tube caused some discomfort to the patient It has now been found superfluous, since retroflexion of the distal end of the new instrument produces the same effect with greater range of movement

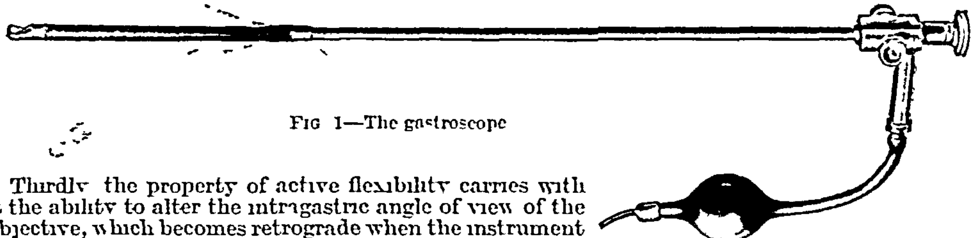

FIG 1—The gastroscope

Thirdly the property of active flexibility carries with it the ability to alter the intragastric angle of view of the objective, which becomes retrograde when the instrument is curled forwards and prograde when it is bent backwards (fig 3a and b) The intragastric field is therefore no longer limited by "blind" areas—for example, the roof of the pyloric antrum in the J-shaped stomach is now visible by the combined effect of approximation of the objective and retrograde deviation of the angle of view brought about by flexing the instrument Gastro-enterostomy stomata can be more fully examined and lesions such as the lesser-curve ulcer in fig 3a can be viewed from more than one aspect

Fourthly, active control of movement has permitted the flexible part to be shortened and the upper rigid part to be lengthened as compared with the Schindler instrument The resulting reduction in the number of short-focus collecting lenses in the flexible part of the optical system has resulted in a considerable increase in the light-transmitting power and hence in a greatly enhanced brilliance of the endoscopic picture Endoscopic photography with the flexible gastroscope has therefore become practicable, and with the help of Mr H T Foot I have already been able to photograph an ulcer on the lesser curve

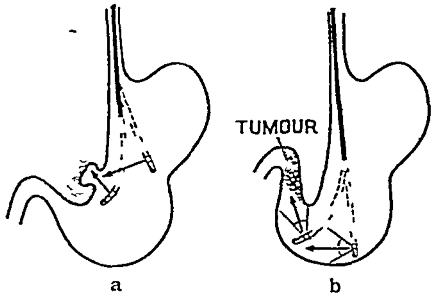

FIG 3—(a) A lesion can be viewed from two angles by using the flexion and retroflexion of the gastroscope (b) Flexion of the gastroscope brings the roof of the pyloric antrum in the J shaped stomach into view

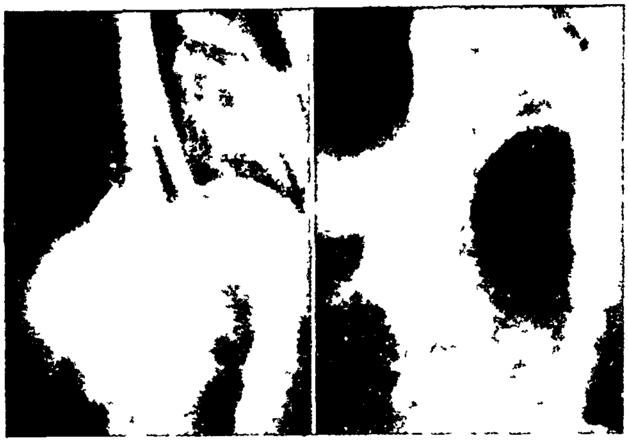

FIG 2—Gastroscope in two positions during examination of patient

The new instrument is 30 in long over all, and has an inch longer internal reach than the Schindler gastroscope, a property which I would have found useful in previous examinations of tall patients with gastroptosis

The flexible part consists of two concentric metal tubes constructed of left and right hand spirals respectively and the movement is controlled by means of two longitudinal wires between them at the back and front of the instrument A push and pull action of the wires controlled by a differential rack and pinion mechanism near the eye piece imparts the required degree of curvature to the flexible part but when the controlling wheel is free the instrument lies flaccid The lamp is incorporated in the rounded tip of the instrument and the whole is streamlined for smooth movement down the œsophagus The electrical and pneumatic connexions are combined at the upper end of the instrument so that only one attachment needs to be made to the instrument after it has been introduced into the stomach

I have been using this intrument exclusively for six months and have been gratified by the increased scope and ease in the examination of some hundred cases The simplification of technique in dispensing with gastric lavage and by using anæsthetising Desicaine lozenges for the throat, together with the use of the new instrument and the operating table attachment for the comfort and safety of the patient, combine to make gastroscopy an examination which can easily be performed on outpatients

SUMMARY

An improved gastroscope is described which by reason of active control of flexibility possesses the following advantages over existing passively flexible instruments .

(*a*) Greater safety of instrumentation
(*b*) Less likelihood of failure of instrumentation
(*c*) Abolition of "blind areas" in the stomach
(*d*) Ability to move the objective about inside the stomach so as to inspect any particular area closely at will and to do so from more than one angle
(*e*) Greatly increased illumination with less distortion of the image

I wish to thank Mr R Schranz, whose technical ingenuity contributed much to the production of the instrument, which is now being made by the Genito Urinary Manufacturing Co

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A CHAIR OF CHILD SURGERY —Dr William E Ladd, clinical professor of surgery at Harvard and chief of surgical services at Boston Children's Hospital, has been appointed the first occupant of the chair of child surgery which will bear his name and which has been endowed by his friends This is the first Harvard professorship to be devoted to this subject

All the strains of hæmolytic streptococcus isolated from skin lesions and throats were examined for serological type (Griffith) The table shows the distribution of strains from the impetiginous lesions contrasted with the distribution of a series of throat strains from cases of scarlet fever occurring about the same period (July–September 1940) The strains recovered from the throats of 5 patients with impetigo were in each case serologically identical with the corresponding skin-strain, with one exception they were scantily present in the throat, and it is impossible to say whether or not the streptococci in the throat came before or after the skin-infection In no case was there an antecedent history of sore throat

DISTRIBUTION IN SEROLOGICAL TYPES OF STREPTOCOCCI ISOLATED FROM CASES OF IMPETIGO AND SCARLET FEVER

Type	1	2	3	4	8	11	12	14	25	30	Total
Impetigo	1	1	0	0	6	1	2	0	1	3	15
Scarlet fever	21	9	14	11	9	7	5	2	1	2	81

It will be seen from the table that there were 7 different serological types of streptococcus, all Lancefield A, isolated from the skin lesions of 15 patients, and that, omitting types 1–4 a somewhat similar distribution of serological types was found in impetigo and in scarlet fever during the same season The rarity of types 1–4, the common scarlatinal strains, in the impetiginous lesions in this series may be associated with the fact that the patients were all adults, de Waal (1941) has noted that types 1–4 streptococci are common in erysipelas in patients under 21 years, whereas the higher types occur more often in older patients

EPIDEMIOLOGICAL DATA

There is too little exact knowledge about the epidemiology of impetigo contagiosa and its relationship to other streptococcal infections In Denmark, an epidemic curve with its peak in late autumn has been described (Madsen 1937) In this country Newman (1935), from the examination of cases in a district of Southampton over a period of 2½ years, found a minimal incidence in summer followed by a rapid rise in early autumn from the 35th week to a peak in the 44th week; a slight drop in December was followed by another rise to maximum incidence in January Actually his graph of the seasonal incidence of impetigo bears a remarkable resemblance to the incidence-curve of scarlet fever (see *Lancet*, May 17, 1941, p 641), but ante-dating the latter by 3–4 weeks The age-incidence of impetigo in a series of 5124 school-children was also found to be similar to that of scarlet fever, 73 5% of the cases being in the 5–9 age-group (Ann Rep C M O, Board of Education, 1928, p 127) The severity of the clinical infection has, according to Newman, decreased greatly in the past 70 years Nephritis has been noted as a complication of impetigo These findings lend support to the views expressed by Dr C J Thomas (personal communication) that among London school-children impetigo and scarlet fever were sometimes closely associated, that children who had impetigo usually escaped scarlet fever, and that impetigo seemed to have the same relationship to scarlet fever as vaccinia has to smallpox

Two other points of epidemiological interest may be mentioned Impetigo is often regarded as a disease of dirty children This contention is denied by medical officers replying to a questionnaire from the C M O, Board of Education (1928) It probably owed its origin to the frequency of purulent dermatitis from scratching by lice-infested and scabious children, and the inclusion of these conditions under the term impetigo must be remembered in any epidemiological study. The other point is that impetigo is not apparently a highly contagious disease Newman found that contagion was not a conspicuous feature of the disease even in families, and in the reports to the C M O, Board of Education (1928), the spread of infection was blamed chiefly on the close contact, by sleeping together, of the school-child with his infected pre-school brother or sister Thus, exclusion from school of infected children is not likely to control incidence to any extent This apparent lack of contagiousness was also noted among the patients I examined last autumn In the first batch of admissions, there were four cases due to *Streptococcus pyogenes* type 8, and I naturally expected to find some association between these cases However, the men were found to belong to different units, and in no case in the series was any history elicited of close contact with another case Most of the patients attributed the onset of infection to a razor-cut or other abrasion

The seasonal incidence, the distribution on exposed parts of the body, and the apparent prevalence among troops all suggest that excessive exposure to the sun may be a factor in the ætiology of impetigo contagiosa It is a disease which although trivial in itself causes a great deal of school-absenteeism, and in time of war, a considerable amount of invalidity among troops There seems not to be agreement about the most effective treatment, indeed, several different antiseptics may have to be used on the one patient Crystal violet paint or a sulphonamide paste gave best results in our cases, but some lesions prove very intractable, and it is wise to ring the changes if there is little response after 2–3 days' treatment Thus, there are various reasons why impetigo contagiosa deserves much more concerted attention from the clinician, the epidemiologist and the bacteriologist

I wish to thank Dr W Gunn, medical superintendent of the L C C North-Western Hospital, for access to cases under his care, and Miss M C Rouse for technical assistance with the serological typing

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A NEW GASTROSCOPE WITH CONTROLLABLE FLEXIBILITY

HERMON TAYLOR, M D, M Chir Camb, F R C S
ASSISTANT SURGEON TO THE LONDON HOSPITAL

GASTROSCOPY presents several problems which distinguish it from other endoscopic procedures The stomach must be entered through the relatively long, curved and delicate œsophagus, through which rigid instruments cannot be passed blindly without too great a risk of perforation It was for this reason that gastroscopy made so little headway until Schindler introduced the flexible instrument named after him Furthermore unlike the urinary bladder, for instance, the cavity of the stomach is not symmetrically disposed around the axis of the instrument, and the more distant recesses of the pyloric antrum, have hitherto been relatively inaccessible to close inspection, because all lateral movement of the objective inside the stomach has been impossible The further development of gastroscopy from the stage to which Schindler carried it has, therefore, demanded a solution of the problem of obtaining lateral movement of the objective within the stomach, without sacrificing the essential safety of introduction dependent on the passive flexibility of the instrument

This presented considerable technical difficulties, but experiments I have carried out during the last three years have resulted in the construction of a new instrument, the flexible part of which can be actively curled up or allowed to lie flaccid at will The instrument is illustrated in fig 1, and the radiograms in fig 2 show it in two different positions during the examination of a patient Passively flexible in all directions for introduction, it can be bent forwards and backwards in the plane of the objective up to the limits of optical flexibility This property endows the new instrument with several advantages

ADVANTAGES OF ACTIVE FLEXIBILITY

First, the new instrument enables the operator to overcome certain of the causes of failure of gastroscopy In reviewing a series of cases of gastroscopy with the Schindler instrument (*Lancet*, 1941, 1, 131) I found that the examination was partially or wholly unsuccessful in 9% of all cases The great majority of

Proteus X2 O alone indicates a diagnosis of tick-bite fever s it occurs in South Africa" (*Rep S Afr Inst med Res* 939) In India, Sarkar (1939) also records a case of a typhus-like fever with agglutination of *X2* O only, but the vector could not be determined In Hamburg, Ruge (1939) has described a case of typhus-like fever in a sailor whose serum agglutinated *X2* O alone

In our case the most probable source of infection was the ship from the Argentine which the patient was unloading, and it should be noted that Fialho (1932) has described a typhus-like fever occurring in São Paulo, South America, which has been shown to be immunologically identical with the Rocky Mountain spotted fever of North America (Parker and Davis 1933, Dyer 1933) The infection has been shown to be spread by local ticks, probably mainly by the horse-tick, *Amblyomma cajennense* (Lemos Monteiro and da Fonseca 1933) This tick is widespread where the disease is common and readily attacks both rodents and man It seems possible that infected ticks were brought on board by rats or among the hides and that they were driven from these when the hold became flooded and the rats drowned On arrival in port an infected tick may have attached itself to the patient, inoculating him with the typhus rickettsiæ In São Paulo typhus, *X19* O antigen is agglutinated typically to a high titre, there being a relatively low titre for *X2* O We therefore do not feel justified in suggesting more than a provisional diagnosis of a tick-borne typhus-like fever which may be related to São Paulo typhus or Rocky Mountain spotted fever—diseases which are in any case closely allied

Other points of interest are the agglutination of *Bact paratyphosum B* H and the positive Wassermann reaction with a negative Kahn result Wilson (1909) was the first to emphasise the frequency of positive Widal reactions in cases of typhus and this has been repeatedly confirmed since Boyd (1935), in describing 14 cases of typhus-like fever occurring in India, in which *X2* O was mainly agglutinated, noted that one or more antigens of the enteric group were commonly affected also Thus in 9 out of 14 cases there was a rise in agglutinins for *Bact paratyphosum B* H Tests for syphilis were carried out in 4 cases and in one of these a result was obtained similar to the one we report The Wassermann reaction was positive and the Kahn test negative during the fever Both were found to be negative during convalescence Finally, in our case there was a definite increase in monocytes, a feature which is said to occur in Rocky Mountain spotted fever and other rickettsial diseases (Whitby and Britton 1939)

SUMMARY

The clinical features and serological reactions of a case of typhus-like fever occurring in a dock labourer in a Scottish port are described

The case was thought to belong to the tick-borne group of typhus-like fevers because of the strong agglutinin response for *Proteus X2* O with negative reactions to *Proteus X19* O and *XK* O This type of Weil-Felix reaction, although unusual, has been recorded in cases of typhus-like fever known definitely to be tick-borne in North America and South Africa

The patient was possibly infected by one or more ticks which had travelled from South America, either among a cargo of hides or infesting one of the rats on the ship he had been unloading

We have to thank Prof D M Dunlop, Prof T J Mackie, Lieut Colonel E D W Greig and Dr Alexander Joe for their help

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ADRENALINE-ASCORBATE SUSPENSIONS IN BRONCHIAL ASTHMA

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IN the immediate treatment of acute bronchial asthma, no therapeutic agent has been found which entirely replaces the injection of adrenaline The absorption and destruction of this drug are, however, so rapid that its effects are brief and difficult to control In long attacks normal respiration can only be attained for any length of time by repeated injections, each of which may subject the patient to the unpleasant sensations associated with a sudden excess of adrenaline in the circulation and yet only relieve the attack for an hour or two at the most This may to some extent be avoided by giving dilute infusions of adrenaline in normal saline or by the continuous method advocated by Hurst (1929) Such techniques require continuous skilled attention and completely immobilise and invalidise the patient

The discovery of ephedrine has allowed a large number of asthmatics whose attacks are predominantly nocturnal to obtain enough rest at night to permit of their following a normal occupation by day But except in mild cases, or where it can be given before the attack commences, this drug often has an insufficiently powerful bronchodilator action, unless it is given in doses which produce symptoms of intoxication It has also the considerable disadvantage that the patient may develop tolerance and require increasing doses to secure relief

The chronic asthmatic, even if unaided by desensitisation methods, can often lead a normal life by the intelligent use of adrenaline and ephedrine In cases where there is permanent but not very severe pulmonary damage, and complete recovery is unlikely, this self-treatment is to be encouraged if by its means the patient can be prevented from allowing the disability to narrow the scope of his activities until he slips gradually into permanent invalidism By reducing the amount of dyspnœa, symptomatic treatment of this kind will delay the progress of emphysema and relieve the strain on the heart When ephedrine alone fails to be effective, or when periods of abstinence from it are indicated by increasing tolerance or signs of chronic intoxication, adrenaline injections become necessary When these have to be used at night sleep is interrupted not only by the injections themselves but also by the palpitations and shakiness which may follow them After several nights the patient may fail to wake up for his injection when the attack comes on and only becomes aware that he has had an attack when he finds himself too exhausted to go to work next day It is clear that any method of securing a continuous and uniform adrenaline-like action by a single injection on retiring would be of great assistance in such cases

The object of such a technique must be to form in the tissues a reservoir of the drug from which gradual absorption can take place Keeney (1938a) introduced the use of oily suspensions of adrenaline and reported favourable results (1939) Spain, Strauss and Fuchs (1939) added gelatin to solutions of adrenaline and found that less frequent injections were necesary to keep the patient free from attacks These methods, while allowing of a somewhat slower action, have in themselves certain disadvantages The object of the present work was to find a method of administering adrenaline which renders its liberation into the circulation as slow as possible and its rate of absorption as even as possible during the period of its action The preparation finally arrived at consists of a concentrated suspension of dry adrenaline base with ascorbic acid in arachis oil, anhydrous wool-fat and a small quantity of white wax

DEVELOPMENT OF THE METHOD

The simple suspensions of adrenaline in oil, as used by Keeney, Pierce and Gay (1939), Murphy and Jones (1939) and others, although marking a great advance in the symptomatic treatment of asthma and hay-fever, possess a number of disadvantages When they are given frequently over a long period, a considerable

POSSIBLE CASE OF TICK-BORNE TYPHUS

IN A SCOTTISH PORT

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It is now generally recognised that there occur in many parts of the world rickettsial diseases which resemble true exanthematic or louse-borne typhus in certain important respects These infections are generally classed together as "typhus-like" fevers and include, among others, endemic murine typhus (flea-borne), tsutsugamushi disease and rural typhus of Malaya (mite-borne), and such tick-borne fevers as Rocky Mountain spotted fever and fièvre boutonneuse of the Mediterranean area

The Weil-Felix agglutination test—in which the patient's serum is tested against the "O" antigens of three varieties of *Proteus* (*X19*, *X2* and *XK*)—is often of the greatest value in elucidating the diagnosis of cases of typhus or typhus-like fever, and the various types of reaction which may be encountered are as follows

In the classical louse borne typhus, as well as in flea borne typhus like fever, the X19 antigen is mainly concerned and is agglutinated to high titre In the mite borne typhus like fevers (e g, of Malaya) the XK antigen is usually agglutinated to high titre Finally, in the tick borne fevers the more usual finding is agglutination, usually to a low titre, with all three antigens, X19, X2, and XK, in certain cases, however, only the X2 antigen may be agglutinated

It is the object of this paper to describe a case occurring in a Scottish port which is considered, both on clinical and serological evidence, to belong to the tick-borne group of typhus-like fevers

CASE-HISTORY

A dock labourer at a Scottish port was engaged from Sept 25 to Oct 5, 1940, in unloading a cargo of hides from the Argentine The hold was water loggod and many dead rats were floating in it, there were also many living rats On Oct 17 twelve days after ceasing work on this cargo, he was suddenly taken ill, feeling very weak and losing his appetite A week later he noticed a rash on his body and limbs and became deaf There was also some dysuria in the early stages of the illness, and he had a slight epistaxis about a week after the onset

On Oct 26 he was admitted to hospital At that time his main complaint was of headache His face was slightly flushed and puffy, his complexion sallow, the sclera was somewhat yellow, and the conjunctiva injected, both pupils were much contracted and photophobia was pronounced, the tongue was extremely dry and furred The rash involved the trunk and limbs, although the palms and soles were unaffected The lesions were reddish brown, macular, and slightly papular, and were associated with petechiæ which were most numerous on the flexor aspects of the elbows A few small shotty glands could be felt in both axillæ There was evidence of bronchial catarrh and some nerve deafness There was no palpable hepatic or splenic enlargement, and the tendon-reflexes were unaffected The nerve deafness persisted and was severe The patient became drowsy four days after admission, and remained so for another three or four days The rash began to fade a week after admission and had almost disappeared at the end of a further five days, some brown staining of the skin remained For the first four days the temperature varied between 100° F and 102° F, later becoming remittent with a variation of about 2 5° F during the 24 hours, twelve days after admission it had settled to between 99° F and normal For the first week the pulse rate varied between 88 and 115 and thereafter between 75 and 90

Laboratory findings—Icteric index 20 on Oct 28, 11 on Nov 2 Urea nitrogen, 28 mg per 100 c cm of blood on Nov 2 Urine, on Oct 24, contained urobilinogen, a trace of albumin, no sugar, and no bile The centrifuged deposit showed a very few granular casts but no red or pus cells Fæces gave a negative benzidene test on Oct 28 Blood-sedimentation rate (Westergren) was 93 mm per hour on Nov 6 Blood count on Nov 4 red cells 3,950,000, some anisocytosis, Hb, 76%, colour index, 0 96, reticuloc under 1%, white cells 8400 (polymorphs 45%, lymphoc (mainly large) 33%, monocytes 19%, plasma cells 2 eosinophils 1%), no diminution in the platelet count

Animal inoculations were carried out with a view to exclu ing leptospirosis as a possible diagnosis, guineapigs were inoculated intraperitoneally with blood on Oct 28 and with urine on Oct 28 and Nov 4, but no leptospiral infection developed On Nov 6 whole blood was injected intraperitoneally into 2 male guineapigs, they showed no fever or scrotal reaction, the testes were removed and a suspension injected intraperitoneally in another pair of guineapigs, with negative results Rats from the hold of the ship were also examined because it was thought that the patient might have become infected from ticks infesting rats The brains of 6 rats were removed, a suspension was prepared, and 2 male guineapigs were injected intraperitoneally No fever or scrotal reaction, however, was noted, and the animals remained in good health

Test	Oct 28	Nov 1	Nov 4	Nov 6	Nov 17	Feb
Weil Felix—						
X2 O		1/240	1/480	1/480	1/240	1/60
X19 O		Neg	Neg	Neg	Neg	Neg
XK O		Neg	Neg	Neg	Neg	Neg
Widal—						
Bact paratyph B H			1/480		1/240	1/60
Tests for syphilis—						
W R				+++		±
Sachs Georgi				1/32		Neg
Kahn				Neg		Neg
Leptospira agglutination	Neg			Neg		

Serological tests (see table) gave the following interesting results

(*a*) A positive Weil Felix test for the *X2* O antigen only, the titre at one stage being 1/480

(*b*) Strongly positive Wassermann and Sachs Georgi tests which became almost negative in three months' time without antisyphilitic therapy and in the absence of any evidence of syphilis The Kahn test was negative on both occasions

(*c*) A positive reaction in the Widal test for *Bacterium paratyphosum B* H antigen This titre became considerably reduced in three months, and there was no evidence of paratyphoid infection The remaining antigens in the Widal test were quite unaffected (*Bact typhosum* O and H, *Bact paratyphosum A* H, *Bact paratyphosum B* O, and *Brucella abortus*)

(*d*) Agglutination tests for leptospiral infection were carried out on two occasions with negative results

DISCUSSION

On admission the case was provisionally diagnosed as leptospirosis, but negative agglutination and animal inoculation tests led to a revised diagnosis A tentative diagnosis of typhus was made on clinical grounds and this was supported by the result of the Weil-Felix test which showed agglutination with *Proteus X2* O antigen and a rise in titre when repeated three days later

Louse-borne typhus was at one time common in Great Britain but is now rare Gray, Peters, and Davies (1938) reported a case of typhus from Bristol in which the patient had handled imported bags of flour, during the fever his serum agglutinated *Proteus X19* O antigen to a high titre This was probably a case of murine typhus, since in this disease the antigen *X19* O is agglutinated to a high titre, and the infection occurs typically as a sporadic infection in men handling food-stuffs, especially grain Louse-borne infection could not, however, be excluded The case we have described gives an entirely different type of Weil-Felix reaction, and for this reason we do not believe a diagnosis of either louse-borne or flea-borne typhus can be maintained

The agglutination of the *Proteus X2* O antigen points to the disease belonging to the tick-borne group of typhus-like fevers, although it is unusual for the *X2* O antigen alone to be agglutinated However, Davis and Parker (1938) report that in certain cases of Rocky Mountain spotted fever the *X2* O antigen may be agglutinated alone This type of reaction has also been recorded in South Africa "Our experience this year has confirmed the finding that the agglutination of adrenaline is used two or three injections may be needed during the night These, with the period of nervousness and palpitation which may follow them are themselves exhausting A short course of nightly injections of adrenaline suspension often restores normal routine by allowing of an unbroken period of sleep

Chronic asthma—In asthmatics with chronic bronchitis winter exacerbations often lead to an annual period of invalidism This can be considerably shortened, and the bronchitis can be allowed to clear up unhampered by spasm by using this form of adrenaline With the patient in bed four injections of 0 3 c cm can be given during the 24 hours until the dose can be reduced

Status asthmaticus—In this condition the expiratory dyspnœa is probably due to a combination of bronchiolar spasm with obstruction from the presence of œdema and exudate in the bronchioles It is often resistent to intermittent injections of adrenaline solutions By reducing œdema by the hypertonic sucrose method of Keeney (1938b), and then keeping the patient free of further attacks by injections of adrenaline-ascorbate suspension it has been possible to relieve several severe cases of status asthmaticus These patients respond poorly to adrenaline until a fairly large quantity has been given, and large doses are therefore justifiable in the early stages of treatment My routine is to give 100 c cm of 50% sucrose intravenously, by means of a continuous delivery syringe, at once, together with 0 3 c cm of suspension If this is well tolerated, a further 0 3 c cm is given after 2 hours Thereafter 0 4–0 6 c cm of suspension is given every 6 hours until improvement in the patient's condition justifies reduction in dose or lengthening of the interval

Adrenaline-ascorbate suspensions have been found most beneficial in the types of case described, but there are clearly many other indications in conditions of allergic origin

SUMMARY

A method is described of preparing a suspension of adrenaline and ascorbic acid so that absorption of the adrenaline into the circulation is delayed and its action prolonged

This suspension has proved particularly useful in cases of chronic bronchial asthma with frequent nocturnal attacks and in status asthmaticus

I am indebted to several physicians for making clinical trials on asthmatic patients, and to Mr A Ogden, M P S, for his assistance in the task of preparing the numerous suspensions tried

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Reviews of Books

Tomography

By J B McDougall, M D Glasg, F R C P E, F R C S E, medical director of Preston Hall, Maidstone London H K Lewis and Co Pp 73 21*s*

This is the first separate volume which has appeared in this country on tomography, or as some call it planigraphy, stratigraphy or laminagraphy By means of an apparatus which allows the X-ray tube and the film carrier to be moved in opposite directions during the exposure it is possible to "focus" the rays in any selected body plane The planes above and below this are blurred and do not materially alter the detail of the selected plane Dr McDougall's atlas consists of 110 radiograms most of which indicate the value of tomography in showing up tuberculous cavities concealed by local areas of consolidation, by thickened pleura and by operative procedures on the chest wall There are a few illustrations of bronchiectasis and bronchial stenosis but none of lung abscess The use of tomography was extending rapidly before the war and great progress was being made with it in many chest diseases and especially in pulmonary suppuration It seems to be the ideal method for localising foreign bodies in the lungs and mediastinum

Starling's Principles of Human Physiology

(8th ed.) By C Lovatt Evans D Sc, F R C P, F R S London J and A. Churchill Pp 1247 32*s*

As the number of physiological textbooks increases, "Starling" becomes more indispensable, for it is different in character from any of them and from any which are likely to be produced in the future Its strength is not derived from unnoticed omissions There are still numbers of chapters on subjects like the cell, biochemical principles biophysical principles, defence of the organism against infection, and heredity, while the human importance of things like milk, everyday nutrition and pregnancy is not forgotten All this takes up space and prevents the expansion of sections on the big systems but it dovetails the book firmly into related sciences and tells the reader better by its scope than by any definition just what is physiology The special senses are over-represented by the 120 or so pages which they fill but this section by Hartridge is so complete in itself, in spite of some recent pruning, that it would be a pity to spoil it by attempting to compress it into a small space Hartridge's own theory of visual acuity is a welcome addition In another dimension the book has its roots in the beginnings of modern physiology The reader who uses the references, liberally scattered through its pages, will indeed find the most recent contributions to the subject, but he will also make the acquaintance of the old masters and thereby benefit

The most striking feature of this edition is Lovatt Evans's complete rewriting of the section on the central nervous system which, profusely illustrated, is now fully in keeping with modern ideas A great deal of work has also been devoted to the sections on reproduction endocrine organs and vitamins and changes are discernible throughout This edition is larger than and an improvement on all its predecessors The style remains direct, emphasising ever the concrete experimental result This makes it a book to be studied rather than read—a compliment to the present generation of students It will remain a never-failing source of factual information for their teachers The greatly increased number of illustrations and the replacement of old ones are further improvements

The Cambridge Evacuation Survey

Edited by Susan Isaacs with the coöperation of Sibyl Clement Brown and Robert H Thouless London Methuen and Co Pp 231 8*s* 6*d*

This is a war-time study in social welfare and education based on two selected groups of 725 out of 3000 London children evacuated to Cambridge in the first days of the war The period covered by the investigation ended in July, 1940, so that in some measure the story seems already out of date, dealing as it does with months before air-raids on any considerable scale had begun None the less it is a valuable study of the complex problem of evacuation from the various points of view of officials and other workers, parents, children foster-parents, teachers and billeting officers Credit is given for the admirable organisation of the actual trek from London, but it is suggested that some failures might have been avoided "if human nature had been taken into equal account with geography and railway time-tables" Children sent to Cambridge were fortunate in several respects not only were there exceptional facilities for their recreation but from an early date a child guidance clinic was available, and an emergency hostel was established for children needing special treatment There is an illuminating chapter entitled "What the children say" amount of oil has to be injected into the patient, and this is not very rapidly absorbed. The adrenaline is apt to be absorbed much more rapidly in the first half-hour after injection than later on, and symptoms of collapse have been recorded from absorption of almost all the adrenaline content of the injection at once (Dorwart 1940). Symptoms referable to sensitivity to the vehicle (peanut-oil) have also been recorded by Cohn (1939). Continual shaking is necessary to keep the adrenaline suspended, and owing to sedimentation uniform dosage cannot be assured. In oily suspension adrenaline base is fairly readily oxidised and loses potency slowly even when kept in a cool, dark place. Contamination of the syringe with small quantities of water, causing solution of the drug, may allow a large dose to enter the circulation at once, resulting in severe symptoms of overdose.

During the past two years a large number of personal experiments, together with clinical trials of the products which produced no harmful symptoms, have allowed a preparation to be evolved which minimises a number of these faults. The effects of the drug were assessed by the changes in blood-pressure and blood-sugar, by the subjective sensations, and, in the case of the patients, by its relief of attacks of asthma. These methods have no pretensions to accuracy but were a help in forming a general clinical impression.

The problem was approached in two ways, chemical and physical, and both contributed to the final result.

Compound of adrenaline used.—Zinc, which retards the absorption of adrenaline, could not be used, since it allows of rapid oxidation and loss of potency (Kohn and Bulger 1937). It was hoped that by associating the adrenaline base with a fairly complex acid its absorption might be retarded without this happening. Adrenaline forms salts with mineral acids and with boric acid, and these are less liable to oxidation than the base. For a number of reasons it was decided to associate the adrenaline with ascorbic acid, and it was found that actual combination took place. Ascorbic acid considerably retards the oxidation of adrenaline, both in solution and in suspension. Owing to the presence of a double bond it is a powerful reducing agent; it was, in fact, first discovered as such in the suprarenals by Szent-Gyorgyi in 1928. When present in excess it keeps the suspension sufficiently acid to discourage oxidation, which does not take place in adrenaline solutions more acid than pH 3. Ascorbic acid is, moreover, non-toxic, and favourable results have been described from its independent use in asthma (Epstein 1936, Hochwald 1936, Cintra 1939). The theoretical reasons for its use in asthma have been summarised by Hunt (1938). In view of the special usefulness of the suspensions in nocturnal asthma its effect in promoting sleep is of interest, while its favourable effects in cardiac failure (Evans 1938) are worthy of note in view of its use in cases of status asthmaticus. In practice it was found that suspensions of adrenaline base with ascorbic acid in excess deteriorated very slowly and were non-irritant to the tissues in concentrations under 15 mg. per c.cm. of the acid. The suspensions were made of a mixture of the finely divided powders, no attempt being made to isolate the ascorbate in quantity.

The base.—For self-administration, it was hoped to inject the suspension through as fine a needle as possible, so that the choice of a base was limited. Olive oil and arachis oil were both sufficiently thin, and the latter was chosen as more constant in composition. Simple suspensions sedimented rapidly, and when enough wool-fat was added to prevent this the mixture became too thick. The quantity of wool-fat necessary was greatly reduced by addition of a very small quantity of white wax. With these suspensions containing wax, absorption seemed to be much slower, as if it had some protective effect on the adrenaline. The base finally used was thin and easily sterilisable. On account of the difficulties with sterilisation, the work of Spain, Strauss and Fuchs on retarding absorption with gelatin was not repeated.

Arachis oil, though absorbed as rapidly as most vegetable oils, is not very rapidly removed from the tissues. After an injection of 2 c.cm. into the deltoid, over 1 c.cm. was aspirated a week later; this was full of polymorphonuclear cells, suggesting that it had been walled off in the tissues. For this reason it was thought advisable to make the bulk of the injections as small as possible. It was found that increasing the concentration of the suspension as far as 10 mg. adrenaline per c.cm. did not greatly accelerate absorption, and this strength finally used. The average dose therefore contains a little over 0.2 c.cm. of oil.

PREPARATION AND ADMINISTRATION

The efficiency of the suspensions depends considerably on the technique of preparation. The formula is:

Adrenaline base (in very fine powder)	0.010 g.
Ascorbic acid (in very fine powder)	0.015 g.
Cera alba	0.020 g.
Wool fat (anhydrous)	0.040 g.
Ol. arachis B.P.	1 c.cm.

The white wax and wool-fat, with a little of the arachis oil, are sterilised at 150° C. for an hour in a hot-air oven and allowed to cool, the rest of the oil being sterilised separately in a similar manner. The wool-fat must be anhydrous and the use of lanolin in one sample led to very rapid absorption and alarming symptoms of overdose. The adrenaline and ascorbic acid are ground to a fine powder in a previously sterilised mortar, under aseptic conditions, and are then triturated with some of the cooled arachis oil. The mixture of wool-fat, wax and oil is added to form an homogenous suspension. This is at once transferred to dark amber glass vaccine bottles, each of which contains 3 c.cm. of glass beads and are filled only half full to allow for shaking. They are then thoroughly agitated. The suspension is drawn, when required, through a skirted rubber cap which can be covered with a screw cap to exclude moisture. The bottles should be stored in the dark, in a refrigerator.

The injections are made with a dry 1 c.cm. record syringe. The bottle is warmed before use, but not above 50° C. If properly prepared the suspension can be injected through a 6/10 bore needle, a feature of special value when it is to be given by the patient himself. In hospital the injection is made deep into the gluteus medius, or, where there is room, into the deltoid. Patients can be taught to give their own injections into the region 2 in. below the crest of the ilium, using alternate sides and moving backwards 1½ in. with each injection. Injections must be given as deeply as possible and the skin must be rubbed afterwards to prevent leakage of oil. For filling the syringe a separate large bore (10/10) needle may be used, to prevent air bubbles from entering the suspension.

The average dose is 0.3 c.cm. (i.e., 3 mg. of adrenaline base). Its effects are comparable to those of a series of injections of 0.5 c.cm. of liq. adrenaline hydrochlor. and last for 6–8 hours. During the first 2 hours the intensity of action is sufficient to arrest an attack of asthma, and for the rest of the time it is usually sufficient to prevent one from coming on. The maximum effect occurs ¼–¾ hours after injection. During this period the patient may feel palpitations, tremor of the hands and a feeling of tension, and may look a little pale. As the suspensions were improved, these symptoms became less marked and came on at an increasing interval after injection. In many cases, especially in nocturnal asthma, it is possible to avoid these side-effects altogether.

Patients vary considerably in response to adrenaline. For this reason the initial dose should always be 0.1 c.cm., except in status asthmaticus, where adrenaline is usually tolerated well, and the first dose may be 0.5 c.cm., or rarely 0.6 c.cm. The effects of an excess of adrenaline in the circulation may be due to overdose, contamination of the suspension with water, or to injection into a vascular area. They consist of pallor, severe palpitations with precordial distress, air-hunger and faintness. The danger is not great, and the patient should be kept as still as possible. There is no practical physiological antidote.

INDICATIONS

Nocturnal asthma.—The type of case in which adrenaline-ascorbic suspensions have proved most useful is the chronic asthmatic with some emphysema, who can work by day but whose attacks are predominantly nocturnal. Many of these patients find that taking ephedrine at night is not always sufficient to prevent attacks. When a cold or some dietary indiscretion has made the attacks more severe for a few days the patient becomes too exhausted to go to work in the morning. If aqueous

THE LANCET

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AN ARMY OF CHOICE

THE well-acted despair of the traditional sergeant-major when faced with a new bunch of recruits was not a grossly exaggerated caricature of his feelings. The job of welding a collocation of men of widely dissimilar intelligence, experience and interests into a corporate team with uniform standards of skill and behaviour was never a mean one. Today, when the soldier is expected to handle valuable mechanical equipment successfully, the task is much more complicated. Mental fitness, as the U.S.A. medical induction boards are now realising, is far more difficult to assess than physical fitness. The twenty-second report of the Select Committee on National Expenditure comes to grips with the problems of allocating man-power in the Army and woman-power in the A.T.S. A report from the subcommittee on Army Services has been adopted in which the system of selection by testing for intelligence and aptitude is strongly advocated. Selection by testing is a new principle in the British Army, and could only be given its fullest value as the report points out if it had already been in use for twenty years. Difficulties and prejudices will have to be overcome, many of the tests will have to be devised from day to day, and revised equally freely. Two types of test will be needed: a simple intelligence test, to discover whether a man or woman is suitable for specialised training, and a special-aptitude test to decide what his particular job should be. Tests of the second type will have to be designed by people with wide experience of the jobs to be done, and for that purpose, as we have already noted, a special directorate has been set up in the War Office to work out the method of selection. The committee would limit such tests at present to technical bodies like the Anti-Aircraft and the Royal Armoured Corps.

The time allowed for examination by medical boards is short; the committee therefore advise that the examiners should have before them the National Health Insurance records of the men they are to examine. Recruits should then take, either at once or on an arranged day, a simple "civilian" test of mental capacity, conducted for the Services by the Ministry of Labour and National Service. Thus men would be graded mentally before being posted to a corps. Under the present system the recruit is seen by the interviewing officer, who in times of peace is able to talk with each man long enough to form some estimate of his capacities; in war, the interview is reduced by pressure of time to a few questions, and since transfer after posting is difficult a man's whole future in the Services may depend on his answers. A preliminary test at this stage would make it possible to post men to corps roughly appropriate to their capacity. What might be achieved by such a test is indicated in a table of vocational categories quoted in the report, drawn up fifteen years ago by (what is now) the Industrial Health Research Board. Later it may be possible to send all recruits on joining to a central depot where they could be more carefully graded for special work. Officers too, should be selected from those whose intelligence, as measured by tests, exceeds a certain level; the other qualities essential in an officer would be ascertained from the reports of commanding officers, as at present.

Mental ratio	Vocational category	Per cent of adults
Over 150	Highest professional and administrative work	0.1
130–150	Lower professional and technical work	3
115–130	Clerical and highly skilled work	12
100–115	Skilled work, minor commercial positions	26
85–100	Semi skilled work, poorest commercial positions	33
70–85	Unskilled labour and coarse manual work	19
50–70	Casual labour	7
Under 50	Institutional cases (imbeciles and idiots)	0.2

The committee make similar proposals in regard to the Auxiliary Territorial Service. This was set up to save man-power in the Army wherever possible, and it is now taking over, in connexion with anti-aircraft and other units, some specialised combatant duties which require a high standard of intelligence and training. The committee feel that so far the A.T.S. has been hampered by the type of work given to it, and by the failure to give its members sufficient chance to gain positions of responsibility. In the selection of personnel for such responsible posts they again advocate the use of a preliminary test of ability at an early stage. Special tests, they think, should be given to potential drivers and clerks, and to anti-aircraft and signals personnel. Recruits will probably do better in tests if they are allowed to settle down for a few days before taking them, and the committee therefore advise that the tests should be given at the reception depots, not at the recruiting offices. It has been found that candidates for selection as officers seldom appear at their best before selection boards; and to avoid the loss of potential officers from this cause it is suggested that candidates should be sent in larger numbers to the Officer Cadet Training Units, where those who are unsuitable can be gradually eliminated by fortnightly tests. Those who fail to reach the required standard should be returned to their units or—preferably—posted elsewhere.

A NEW WAY OF IDENTIFYING INFLUENZA VIRUS

WE continue to learn of strange pranks which viruses can play. Dr. G. K. HIRST[1] at the Rockefeller Foundation's Laboratories in New York has lately shown that certain fluids containing influenza virus have the property of specifically agglutinating fowl's red cells. He had been inoculating chick embryos with the virus, and, while removing allantoic fluid from infected embryos, noted that blood reaching that fluid from accidentally ruptured vessels became agglutinated. Further study showed that this did not happen in control, uninoculated, eggs but that infected allantoic fluids could be considerably diluted and still show the effect. The agglutination was rather loose and was easily broken up by shaking.

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[1] Hirst, G. K. *Science*, 1941, 94, 22.

Cerebrospinal Fever

By **DENIS BRINTON**, D M Oxfd, F R C P, physician in charge of department of nervous diseases, St Mary's Hospital, Paddington Edinburgh E and S Livingstone Pp 163 8*s* 6*d*

THIS pleasantly written little book marks a distinct departure from the accounts of cerebrospinal fever in textbooks, even in those issued as late as 1940 Here the old wood has been ruthlessly cut out, and the reader is presented with the facts elicited by modern clinical research A correlation of symptoms with morbid anatomical changes in line with these researches has been attempted, and the new chemotherapy is explained in full Since this has transformed the evolution of the disease, dreary descriptions of obsolete types and obsolete treatment have dropped out The author follows closely the work and technique of Banks, his own experience is based on the epidemic of 1940 in the R A F and does not include the disease in infants and children There are few typographical errors, but on p 105 in a reference to the Vacoliter drip method of giving glucose saline it is stated that it is usually necessary to expose a vein this must be a slip for "unnecessary"

British Encyclopædia of Medical Practice

Surveys and Abstracts, *Cumulative Supplement* Edited by SIR HUMPHRY ROLLESTON London Butterworth and Co Pp 596 and 282 27*s* 6*d* together

THE Cumulative Supplement and the Surveys and Abstracts are arranged in two books The first new work done since the publication of the last supplement is summarised and arranged under the same headings, with cross-references to the original volumes The second book contains critical surveys of recent work, a special section on drugs, and abstracts of medical literature of the last year by British and foreign authors The books are admirably constructed and well illustrated, but the text is sometimes confused by the large number of references to other volumes in the series Inevitably, the critical surveys deal with the effect of war on medicine, but the general practitioner, for whom the books are presumably intended, still spends most of his time treating such conditions as measles and bronchopneumonia The sections on digestive diseases in soldiers and injuries to the ear in war-time, for example, might have been shorter The abstracts, however, are instructive, brief and well written The alphabetical arrangement of the supplement is perhaps not ideal, the busy man could probably find the facts he needs more readily if they were arranged under systems and regions as in the standard textbook At present he is confronted with facts about menorrhagia sandwiched between meningitis and mental deficiency

Manual of Clinical Chemistry

By **MIRIAM REINER**, M Sc, assistant chemist to the Mount Sinai Hospital, New York New York Interscience Publishers, Inc Pp 296 18*s*

THIS book describes the biochemical methods for analysis of blood, urine, fæces, cerebrospinal fluid and gastric contents Several other such works are available and a new textbook on this subject may scarcely seem warranted, but this small manual certainly gives all the necessary information conveniently The book is purely technical and likely to interest chiefly technicians and practitioners who carry out their own analysis

Physical Therapy for Nurses

(2nd ed) By **RICHARD KOVACS**, M D London Henry Kimpton Pp 335 15*s*

THIS useful American manual has been revised and rearranged, and chapters on the history of physical therapy and short-wave diathermy have been added and the wealth of information compressed into this small volume will be equally valuable for medical students and nurses In some chapters too much has been attempted, so that accuracy has been sacrificed The wisdom of introducing advanced physics into a simple exposition of physical methods of treatment may be doubted and there are a few statements which are controversial—for instance the remark that ultraviolet light increases the number of red blood-cells The failure to adopt routine erythema skin-tests is to be deprecated, especially when treatment is undertaken by non-medical workers. There are many excellent diagrams and numerous illustrations of apparatus and methods of treatment, and the sections on hydrotherapy and massage are decidedly useful

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Medical Societies

BRITISH ORTHOPÆDIC ASSOCIATION

THE summer meeting of this association was held at the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, on Aug 9, under the presidency of Prof T P MCMURRAY, when the following short papers were read

Mr N W **NISBET** (Oswestry) in a twelve year period had treated by traction 26 patients with *slipped upper femoral epiphysis* There had been a long period of intermittent symptoms before medical advice was sought and radiograms in two planes always revealed displacement Traction did not change the position in cases with mild displacement, but sometimes produced considerable, although not complete, correction in those in which displacement was severe Prolonged heavy traction appeared to have an adverse effect on the hip and knee joints and in this series seemed to have some responsibility for the development of arthritis in the hip joint Mr Nisbet concluded that —

1 When displacement is slight no effort should be made to correct it, the hip should be protected and weight bearing avoided until the epiphysis had fused In this way normal function can be achieved The insertion of a Smith Petersen nail might hasten recovery, provided it did not damage the blood supply of the capital epiphysis

2 When displacement is pronounced and not of long duration sufficient correction may be achieved by cautiously applied traction to ensure a satisfactory, although not perfect, result

3 If severe displacement cannot be corrected by traction or is of long duration the best results follow a subtrochanteric osteotomy to correct deformity, and this treatment is preferable to persistent and vigorous traction

Mr N L **CAPENER** (Exeter) described a *pseudo-fracture of the tibia* A child aged seven had complained for a month or so of discomfort about the ankle Radiograms were negative Three weeks later a further radiogram showed a crack in the lower diaphysis of the tibia with subperiosteal new bone formation which suggested a "fatigue" fracture Recovery was uneventful Mr Capener also discussed *operative treatment of intra articular fracture of the upper end of the tibia* He maintained that because of the soft texture of the cancellous bone in this region bone-pegs and screws are mechanically inefficient He showed radiograms of 3 patients treated by wire applied circumferentially around the upper end of the tibia through two incisions, while longitudinal skeletal traction was applied Early active movements were initiated and the functional and anatomical results were most gratifying

Mr **RONALD FURLONG** (London) demonstrated the value of *arthography* in *congenital dislocation of the hip* He showed a series of radiograms in which a contrast medium (Per-abrodil in pure solution) had been injected within the capsule before and after reduction of the dislocation, and indicated the valuable information which could be gained about the possibilities of a successful manipulative reduction, the accuracy of reduction and the development of an adequate acetabular roof

Mr **DENYS WAINWRIGHT** (Stoke) compared 20 patients treated for *fracture of the olecranon* by excision of the detached fragment and efficient repair of the extensor apparatus with 20 treated by other methods, chiefly by suture Excision resulted in a powerful, fully mobile and stable elbow capable of withstanding the heaviest strain in a shorter time than could be achieved by other methods Mr Wainwright considered excision to be the treatment of choice in all patients approaching middle age, whatever the size of the proximal fragment provided the coronoid process and the head of the radius were intact numbered and dated to permit subsequent inspection, and for periodic tests of efficiency with a sporing organism They do not consider colour changes in test capsules placed in the drums satisfactory, and think there is no substitute for careful bacteriological tests What is wanted, they say, is not so much improved apparatus as more rigid supervision of all the steps involved in the sterilising process Let us hope that hospitals will take this report to heart, but there will still remain the large quantity of cotton-wool used in doctors' surgeries and by laymen with little if any attempt at sterilisation The risks of this can only be removed by the manufacturers.

CHRONIC GASTRITIS

That chronic gastritis exists has long been recognised, but for many reasons it has proved extremely difficult to study Its clinical manifestations of nausea, flatulence, loss of appetite and vomiting may *be indistinguishable from the reflex effect of some* distant viscus, and little confidence can be placed in a diagnosis based on clinical grounds alone Indeed, until recently an easy diagnosis of gastritis, so difficult to disprove, has provided a cloak for ignorance all too convenient and some rebellious spirits have been induced to deny the existence of the condition at all Equally difficult has been the pathological approach to its investigation Post-mortem specimens of the stomach are damaged by autodigestion soon after death, and in cases of wasting illness shortly before death also **Faber** did much to overcome this difficulty by fixing the stomach in situ by direct injection of formalin immediately after death and in this way the reality of chronic gastritis was definitely established But since people do not die from chronic gastritis alone the correlation between the gastric pathology and clinical manifestations has remained obscure Moreover, **Faber**'s investigation was necessarily confined to the still picture of the morbid anatomy and histology of the specimen

The further elucidation of gastritis and its effects has recently been achieved by the application to the stomach of endoscopic methods of examination and the various stages of the disease process in life can now be observed in detail The endoscopic picture presents the characteristic changes of inflammation found in mucosal surfaces elsewhere Thus there are œdema, exudation, vascular congestion with petechial hæmorrhages, excessive secretion of mucus, and a hyperplastic or desquamative reaction in the epithelium These changes superimposed on the variable contour and rugosity of the gastric mucosa produce a remarkable variety of appearances **Hermon Taylor**[1] urges the importance of distinguishing between the true inflammatory effects and those due to the type of mucosa in the individual stomach This aspect is worthy of note, because there seems no doubt of the correctness of **Hurst**'s views on the congenital difference in the types of mucosa possessed by different individuals, whereby under-development or over-development of the rugosity can occur Lately **Miller**[2] has noted that the rugosity of the stomach arises only in the ninth fœtal month, and he observed a hypoplastic mucosa even in one mature infant It seems probable that there is an ætiological connexion between such developmental variations in the type of gastric mucosa and the incidence of gastritis Moreover, although not in itself a complaint with very disturbing symptoms, chronic gastritis may promote the onset of very serious illness Atrophic gastritis and depression of Castle's hæmopoietic factor with pernicious anæmia and subacute combined degeneration of the cord are an illustration of distant secondary lesions Locally, **Hurst** has shown that carcinoma of the stomach arises more frequently in patients with hypoplastic gastritis than in those with normal stomachs Peptic ulceration, too, can apparently be regarded simply as an extension of the disease process of hyperplastic gastritis, by the inflammatory depression of the resistance of the gastric mucosa to the digestive activity of its own juice Erosions, subacute or chronic ulcers may therefore follow according to the chronicity of the process and the intensity of the gastric acidity

Gastritis has been subdivided for classification according to the degree and profusion in which various changes present themselves to the gastroscopist Whether this is useful may be questioned, but the superficial catarrhal form appears to be distinguishable as a separate entity This condition is easy to comprehend for it occurs in people with chronic disease of the mouth, nose or respiratory tract, such as chronic sinusitis, tonsillitis, pyorrhœa, bronchiectasis and pulmonary tuberculosis The appearances are congestion of the tops of the rugæ, sticky adherent mucus and lumps of swallowed mucopus floating about in the gastric juice, all suggestive of simple secondary infection from above Peptic ulcers may be associated, but, like the diffuse changes, respond readily to treatment of the primary disease There seems to be, however, a more insidious form of gastritis indicated only by a diffuse and uniform œdema of the gastric mucosa together with some mammillation of the surface, due to true pathological hyperplasia as distinct from congenital redundancy of the rugæ This condition appears to be distinct from the catarrhal form of gastritis and no reasonable suggestions as to its cause have yet been put forward It may be a deficiency disease or due to hormone imbalance, or possibly an effect of the vagus Whichever may be the explanation, it is invariably associated with the more chronic and intractable forms of peptic ulceration **Bower**[3] has treated a series of cases of gastritis with vitamin-B complex under gastroscopic control The cases were all atrophic gastritis and a slight improvement was noticed in 2 out of 7, it is a pity that no cases of hyperplastic gastritis were included Until the cause of this œdematous hyperplastic form has been elucidated little progress can be expected in the reduction of the incidence of peptic ulceration It has been said that the diagnosis of gastritis can only properly be made by the gastroscope, for only by this means can the congestion, hæmorrhages and œdema be observed There seems to be little ground for the claim to make the diagnosis from a study of the barium-meal film or screen At most a relief film might show excess of secretion, but none of the essential minutiæ of a diffuse inflammation Much confusion has apparently resulted from descriptions of variations in rugosity as evidence not of the congenital type of mucosa but of gastritis Certainly, gastritis

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[1] *Lancet* 1941 1 131

[2] Miller R A *Arch Dis Childh* March, 1941, p 22

[3] Bower, L L *Rev Gastroenterol* 1940, 2 313

Apparently it is the influenza virus itself which does the trick, centrifugation which can throw down the virus also deposits the agglutinating agent Moreover, treatment of infected fluids with excess of fowl cells absorbs out the greater part of the virus, which must therefore be presumed to act by virtue of adsorption on the red-cell surface

This finding is not a mere biological curiosity, for it may prove to have practical application in two directions HIRST succeeded on two occasions in recovering influenza virus from human throat washings by infecting chick embryos and proving that infection had occurred by the aid of the agglutination phenomenon If virus could be regularly recovered like this the necessity for using the ferret would be eliminated, but too much optimism would be unwise at this stage Thus BURNET[2] lately described a method for infecting chick embryos by the amniotic route with material of immediate human origin, but workers using it in this country[3] have not met with success comparable with BURNET's, and HIRST indicates that in his hands also the test has proved "rather uncertain" Far more hopeful is the finding that the agglutination phenomenon is inhibited in the presence of antiviral serum It is not yet known whether any viruses other than those of influenza can cause the phenomenon but it seems certain that the inhibition by immune serum is a specific effect Thus the immunologically distinct influenza viruses A and B, as well as that of swine influenza, can be sharply separated from one another by this simple in-vitro test, of which the results can be read in an hour or so The agglutination-inhibiting antibodies apparently parallel the virus-neutralising ones, as demonstrated by tests in mice, more closely than they do those concerned in complement fixation This is probably all to the good, for, though the matter is still in dispute, a majority of workers seem to attach more significance in influenza studies to measurement of neutralising antibodies than to the complement-fixation test, and in any case the vagaries of the latter test are responsible for more bad language than most pathological techniques If HIRST's results are confirmed—and they have been reproducible in at least two laboratories in this country—it may prove possible to diagnose influenza A or B (and perhaps C to Z if and when they are discovered) by comparing the agglutination-inhibiting titres of "acute" and convalescent serum samples, the only unusual reagents being washed fowl red cells and a supply of virus True, the diagnosis will be only available when the patient is already out of bed and will not help him much, but the new test may prove invaluable in epidemiological and other studies

MAKING COTTON-WOOL SAFE

PUERPERAL tetanus, though long recognised, is a very rare complication of childbirth The Registrar-General's figures for 1927–37 showed that one fatal case of tetanus occurred in every 700,000 deliveries, an incidence almost identical with that in the female population as a whole However, in view of PULVERTAFT's demonstration[4] that sanitary pads may be a rich source of both *Clostridium tetani* and *Cl welchii*, a committee under the chairmanship of Prof FLETCH SHAW was set up by the Royal College of Obstetrici and Gynæcologists at the request of the M O H the London County Council to consider the possibility of puerperal tetanus or *Cl welchii* infection arising from vulvar pads used in the puerperium, and to advise about ways of making non-infected pads and dressings available Their valuable report[5] is now issued In the maternity departments of a group of municipal hospitals and four voluntary ones they traced only one case of fatal tetanus in 244,562 deliveries, while data on puerperal infection with *Cl welchii* from one hospital where full bacteriological records were available showed 2 fatal and 35 non fatal infections among 704 cases of puerperal sepsis It should be pointed out, however, that *Cl welchii* may be present in the genital tract of puerperal cases without producing any clinical infection Both puerperal tetanus and gas-gangrenous infection more often follow abortion than full-time delivery, for which the greater chance of retained products to act as a suitable pabulum may be partly responsible That the risk may be specially grave in abortions therapeutically or criminally induced by the insertion of an unsterile cervical pack is exemplified by the extraordinary experience of BUSH,[6] of Texas, who in a fortnight saw 5 cases of post-abortal tetanus, all from the practice of one doctor to whom the women had gone to procure abortion All cases proved fatal despite intensive serotherapy

As regards *infection of dressings*, the committee confirmed earlier investigations that brown cotton wool, which is not submitted to any chemical treatment after it leaves the field where it is grown, is almost always heavily infected with spore-bearing anaerobes, including the tetanus and Welch bacilli White cotton-wool, which is boiled with strong alkali and then bleached with an oxidising agent, though not so heavily infected, is seldom free from anaerobes Here contamination was found to occur at the drying stage, when large volumes of hot air are blown over it Infection comes, then, from the air, the wool acting as an efficient filter Some change in the manufacturing process to avoid this gross contamination of a previously sterile substance is obviously desirable If this is impracticable the dried material should be resterilised before it is sent out Until one or other of these steps is taken the purchaser must himself see that the cotton-wool is sterilised before it is applied to an abraded surface Pyogenic cocci are easily killed, but the destruction of spore-bearing anaerobes in dressings can only be ensured by a rigid technique in the use of sterilising plant, and the committee has done well to detail the exact ritual to be observed in the use of hospital sterilisers There is an unfortunate tendency for the sterilisation of dressings to be left in the hands of a porter or nurse who does not fully appreciate the principles involved, and whose work is not supervised by one responsible person In some hospitals it seems to be no one's duty to reject a suspected batch The committee urge the need for loosely packed drums, for sterilisation at a pressure of 20 lb per sq in for 20 minutes after preliminary evacuation to a negative pressure of 15–20 in of mercury, for graphic records f the sulphonamide compounds, and it is reasonable to onclude that they were in fact due directly to the presence f phenobarbitone. At the same time it must be emembered that the patients who received treatment with the contaminated tablets of sulphathiazole were presumably seriously ill before the drug was administered, and it should not be too readily assumed that they would have survived if the treatment had been omitted. Chemical analysis showed that the composition of the more grossly contaminated tablets of Sulfathiazole-Winthrop appeared to be identical with that of Luminal-Winthrop. In other words, one of these sulphathiazole tablets was nothing more or less than an outsize tablet of phenobarbitone. Thus a patient who received 2 tablets of ‘sulphathiazole” was actually getting not less than 10 grains of phenobarbitone. The *J.A.M.A.* performs an essential public service by its warning of the potential dangers of the use of contaminated material. It points out that convincing evidence is not yet available to indicate clearly the casual relationship between the drug and the deaths that followed in time. It adds in all fairness a footnote recording that a coroner's jury of six physicians determined that the death of one patient could bear no relation to the possible ingestion of phenobarbitone. Nor have we yet heard what the drug manufacturers have to say. If we draw attention to the incident subject to all proper reservations, we shall inevitably raise at least two questions which deserve careful consideration. Is it in the interests of the community that the handling of potent drugs should be centralised? And if centralisation is desirable, is it not possible to check samples of every batch of drugs by chemical test before they are released? It is the general practice in the drug-manufacturing trade in this country to examine all the ingredients from which tablets are to be made and also to analyse samples drawn by the laboratory from all finished batches of tablets, the tablets not being packed until the laboratory has passed them both as regards identity and quantity of ingredients. It is also usual to draw occasional samples from the packed goods store, and submit these to the same tests again, and throughout manufacture and packing it is the custom to handle only one dangerous drug in one shop. Moreover it is the habit when contamination is reported for the manufacturers at once to recall all batches which may have been involved. If accidents still happen from time to time it is not for want of precautions.

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[2] Burnet, F M *Brit J exp Path* 1940, 21, 147, see *Lancet*, 1940, 2, 48

[3] Andrewes C H, Glover, R E, Hudson, N P, Lush, D and Stuart-Harris C H *Lancet* 1941 In the press

[4] Pulvertaft, R J V *Brit med J* 1937, 1, 441.

[5] *J Obstet Gynec* June, 1941, p 394

[6] Bush, W L *J Amer med Ass* July 21, 1941, p 2750

VALUE OF THE MINIATURE RADIOGRAM

Most of those competent to judge now agree that in the miniature screen photograph we have a method of examination which is sufficiently cheap and labour saving to be applied to large numbers and sufficiently accurate to provide a sieve through which little of clinical importance will escape. This view is supported by a careful comparison of the findings of miniature and full-sized radiograms made by Clark, Poulsson and Gage,[1] which confirms previous studies.[2] A group of 1011 subjects, mainly Norwegian sailors, were photographed by both methods and the films were reported on separately by two radiologists. There was a very high correlation between the findings. The pathological changes overlooked in the miniature—such as small calcified foci and pleural thickenings—were all unimportant, whereas changes of clinical significance were always detected. In all, 55 “positive” findings were recorded in the 1011 subjects, 13 (1.3%) of them being definite lesions of active tuberculosis. There has been some misconception as to the precise functions of mass radiography and fears have been expressed lest healthy people be branded tuberculous on the slender evidence of a doubtful shadow on a screen photograph the size of a postage stamp. A positive finding on a miniature radiogram means one thing and one thing only: investigate. Full clinical and radiological investigation and sputum tests are required before an opinion can be given as to whether the shadow represents a lesion of importance and if so whether the lesion is due to active or arrested tuberculosis.

CONGENITAL DISLOCATION OF THE HIP

In studying the results of orthopædic treatment so often apparent only after many years, the cases re-examined after a set period must represent as large a proportion as possible of the primary material and measurable factors must form the basis of comparison. Severin[1] has tried to satisfy these conditions in a report on the treatment of congenital dislocation of the hip at the Stockholm Orthopædic Institute. He points out that in most of the large series previously reported only a fraction of the original cases had been followed up and that subjective findings or even the answers to questionnaires were accepted as standards of cure. This accounts for the great variance in the percentage of successes. Severin set out to survey the late results in cases where a satisfactory closed reduction by Lorenz's method had been initially achieved and re-examined all but 4 of 330 patients still alive 5–27 years after their reduction. This gave a total of 454 hips which could be accurately assigned to six groups on the radiographic findings, ranging from the almost-normal hip—for some tell-tale feature betrays even the best reduction—through subluxation to complete re-dislocation. This grouping was made more precise by correlation with the CE angle of Wiberg[2] which is the angle between the perpendicular through the centre of the femoral head and the line joining the centre of the head to the outer edge of the acetabular roof. Wiberg has shown this to be an accurate index of acetabular dysplasia and displacement of the femoral head in the adult and Severin established the normal values in children in order to apply it to his younger cases. On this radiographic basis only 4% were excellent results and 7% satisfactory, 43% were subluxated and in no less than 30% the femoral head was either in an extension of the true acetabulum or completely re-dislocated. The remainder showed dysplasia not amounting to subluxation. These rather gloomy findings were offset by the functional results, 25% being perfect and another 40% good, but good function associated with a poorly developed hip as shown radiographically tends to deteriorate and such joints are prone to degenerative arthritis at an early age.

Reference to the original radiograms showed that in 30% of the unilateral cases the presumably normal hip was either dysplastic or subluxated, the condition usually improving spontaneously while under observation; in the rest of the unilateral cases the sound side exhibited an uncertain CE angle. Thus it appears that both hips are nearly always affected to some extent by the congenital tendency to dislocation. Severin's results confirm that the prognosis, hip for hip, is worse in the bilateral cases, and demonstrate that the trauma of difficult reduction reduces the percentage of successes by more than half. It is this strikingly adverse influence of reduction-trauma on the late results that has led to modifications in treatment. It may be minimised by using a modified Lorenz method with only 70° of abduction, or, as in some centres in this country, by allowing gradual traction in an abduction-frame to replace manipulative reduction. Most satisfactory of course is diagnosis in Putti's “preluxation stage” during the first year, when simple abduction will effect a cure in 90% of cases. In such early diagnosis arthrography is most can only be confidently excluded by endoscopy, a point of some importance in the investigation of the large number of cases of dyspepsia now occurring in Service personnel So far the gastroscopic side of the examination of the Service cases does not seem to have been given the attention it deserves

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[1] Clark, K. C., Poulsson, K. T. and Gage, H. C. *Brit. J. Radiol.* July 1941, p. 250.

[2] Clark, Cordiner, G. R. M. and Ellman, P. *Ibid*, February 1941, p. 54; Douglas, B. H. and Birkels, D. C. C. *Amer. Rev. Tuberc.* January 1941, p. 96.

[1] Severin, E. *Acta chir. Scand.* 1941, 84, Suppl. 63.

[2] Wiberg, G. *Ibid*, 1939, Suppl. 58.

The present treatment of gastritis is directed to the underlying cause in the superficial catarrhal type and to the complications such as ulceration in the diffuse type Direct treatment is difficult to institute in uncomplicated chronic gastritis, since the symptoms of gastritis proper are more easily borne than treatment by lavage Indirect measures taken to improve the general health, a bland diet with ample vitamins, and carminative or sedative drugs are of course useful The important thing, however, in the management of gastritis is to remember the increased tendency to serious complications and to ensure early investigation of any change in the symptoms Indeed, a case can be made out for regular radiological examination of all people known to suffer from diffuse gastritis

Annotations

SPIROCHÆTE IN STORED BLOOD

THE risk of transference of disease by blood-transfusion worries the layman much more than the physician But the risks are real if comparatively rare, and it is odd in view of present-day practice how little we have learned of the effects of refrigeration on infectious agents which may be present in donors' blood It is known that the malarial parasite may persist in the blood for many years after the patient has left a malarial district, and some authorities advise against using any person who has lived in a tropical or subtropical country as a donor But will the parasite survive in stored blood? Experience in recent years suggests that the virus of infectious jaundice may persist in serum for months, and Findlay[1] has recommended that donors, particularly of convalescent measles serum, should be kept under observation for a month after being bled to insure that they are not incubating jaundice The greatest fear, however, is of syphilis, and there are enough records to show that infection with *Treponema pallidum* may be transferred in blood-transfusion even from donors in the incubation stage of the disease It is customary at our many blood-depots, though not compulsory, to carry out serological tests for syphilis on the blood of donors, but a negative Wassermann or Kahn test, done even at the time of blood-letting, may mean no more than that resistance to syphilitic infection has not yet had time to develop Most blood for war-casualties is stored at temperatures of 3–5° C for varying periods before use and rather belated reports are now appearing on the effect of refrigeration on the spirochæte Harrison's well-known experiment of demonstrating motile spirochætes in chancre-fluid that had crossed the Atlantic four or five times showed that at ordinary atmospheric temperatures the parasite is remarkably resistant Bloch[2] has found that *Tr pallidum* derived from rabbit testicular emulsion and added to freshly drawn citrated rabbit blood did not survive longer than 3 days at a temperature of 3–5° C Even in 24 hours, the virulence of the spirochæte was apparently attenuated, there was now no motility and syphilomas did not develop in the rabbit testicle after injection of the blood spirochæte mixture until 48 days later compared with 22 days for the freshly prepared mixture Turner and Diseker,[3] using a smaller inoculum of *Tr pallidum* in human stored blood, found that spirochæte did not survive as long as 72 hours In storage in the blood-bank for a week is likely to be more reliable prophylactic against the transference of syphilis by transfusion than the performance of serological tests, though the routine use of these tests has an undoubted value in bringing to light unsuspected infections They also serve as a guide to the incidence of syphilitic disease in a community, and the figures obtained in various parts of the country might well be collected and made generally known

WHEN THE DISPENSER FAILS US

ONE of the many functions of the pharmacist is to act as a public watch-dog The final responsibility for dispensing drugs rests with him Should the doctor inadvertently prescribe a poisonous dose, the pharmacist who undertakes to make up the medicine shares the legal responsibility for any untoward consequences That the public weal has been so closely integrated with the pharmacist's self-interest is doubtless more than a happy coincidence, but it is certain that both considerations have played a part in achieving the high standard of pharmaceutical practice that now prevails in this country The present century, however, has seen the rapid growth of a new industry—that of the manufacturing pharmaceutical chemist—which has necessitated radical readjustments for the chemist behind the shop counter To an increasing extent he is becoming an intermediary between the manufacturer and packer on the one hand and the medical practitioner (or even the layman) on the other Such a development is bound, in the long run, to be inimical to the status of the pharmacist It may be argued that that is his affair, and that the doctor's primary consideration is that the drugs, accurately compounded, should always be available when required For many people, indeed, faith in the bottle is enhanced by a proprietary label, and external elegance counts for more than the pharmacist's art Admittedly modern methods of factory organisation and production tend to make for uniformity in the quality of pharmaceutical products, and so specialised is the work that opportunities for making mistakes are reduced almost to a vanishing point But it is rarely possible entirely to eliminate human intervention in manufacturing processes, and mistakes, though they are amazingly rare, are almost certain to occur from time to time When this happens the relative lethal power of the pharmacist compared with that of the manufacturing chemist is roughly represented by the homicidal prowess attributed to Saul and to David (I Samuel, xviii, 7)

On page 290 we report a case where a pharmacist, being out of stock of the sulphapyridine prescribed for a woman with pneumonia, and other shops being closed for bank holiday, dispensed sulphanilamide instead, without telling the doctor, thus robbing the patient, in the doctor's opinion, of a chance of cure A particularly unfortunate instance of a large scale calamity was briefly referred to by our American correspondent a few weeks ago[1] Since then, a comprehensive account of the affair has been given by Dr Morris Fishbein and his colleagues in the *Journal of the American Medical Association* for May 17 (p 2259) It is alleged that the Winthrop Chemical Company issued four lots of sulphathiazole tablets which contained varying amounts of phenobarbitone, and of the 56 people known to have received these tablets 9 died The toxic effects due to phenobarbitone ran true to type and included prolonged narcosis, incoordination, diplopia, emotional instability, anuria and skin eruptions One physician said that a man of 74 " went to sleep and never woke up " The ill effects recorded are quite unlike those which occasionally accompany the administration

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[1] Findlay G M *Jour R Army med Cps* 1940, 74 72
[2] Bloch, O *Bull Johns Hopk Hosp* May 1941 p 412
[3] Turner, T B and Diseker, T H *Ibid* 1941 68, 269

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[1] *Lancet*, June 14, 1941, p 766

ho work among the mentally defective The feeble nded and imbeciles of all grades are for the most part onest and conscientious beyond the ordinary When ey become delinquent it is nearly always as a result of uggestion from without

RELATIONSHIP OF EPIDEMIC AND ENDEMIC TYPHUS

ENDEMIC or murine typhus, transmitted from the rat to man by the flea *Xenopsylla cheopis*, does not as a rule occur epidemically and is a comparatively mild disease It is usually believed that exanthematic is derived from endemic typhus as the result of the rickettsias being repeatedly transmitted by the human body-louse instead of the rat flea Both strains of rickettsias produce a febrile reaction in the guineapig associated in the case of endemic strains with acute inflammation of the tunica vaginalis In man it has long been recognised that an attack of murine typhus immunises against exanthematic typhus, with the result that in North Africa various attempts have been made to use living murine typhus rickettsias for immunising the *indigenous* population against exanthematic typhus Nevertheless the exact relationship between endemic and exanthematic typhus has never been clear Fresh light has been shed on the problem by the *cross-immunisation* of guineapigs Earlier observers failed to show any great degree of protection against exanthematic typhus when killed murine typhus rickettsias were used as the immunising agents Thus Zinsser and Castaneda[1] reported that formalin-killed murine typhus rickettsias conferred a higher degree of protection against the homologous virus than against a strain of European typhus, only 30% of vaccinated animals resisted infection by the latter strain. Varela, Parada and Ramos[2] found that only 50% of similarly vaccinated animals withstood inoculation with Nicolle's Tunisian typhus virus Mooser and Sparrow[3] obtained absolutely no protection against heterologous strains The antigens used by these various workers were prepared from the peritoneal washings of benzol-treated typhus-infected rats Using a richer antigen and multiple injections Veintemillas[4] protected all his test animals against an epidemic strain of typhus isolated in Mexico It has however been *pointed out* by Castaneda and Silva[5] that in Mexico City some strains of virus appear to have properties which would place them as intermediate between the murine and the classical European strains

Within the last few years a number of methods have been introduced for producing large quantities of rickettsias *for use as antigens* Cox[6] has utilised the yolk-sac of the developing chick embryo, while Zinsser, Wei and Fitzpatrick[7] have employed a modified tissue-culture technique Durand and Giroud[8] have obtained antigens of the rickettsias of exanthematic and endemic typhus as well as of fievre boutonneuse and Rocky Mountain spotted fever from the lungs of mice inoculated intranasally with the rickettsias; a similar method has been used by Ruiz-Castaneda[9] using a Mexican orchitic strain injected intranasally into rats With this vaccine excellent protective results have been obtained against the homologous strain while observations now tend to show that protection may also be afforded against heterologous strains Thus Finlayson and Grobler[10] reported successful protection of guineapigs against infection by both endemic and epidemic rickettsias *obtained from South Africa* A single dose of 1 c cm was sufficient to protect against endemic strains but two such *doses were required* when epidemic strains were used to test immunity. Later Finlayson[11] found that *when the vaccine* was concentrated to half its original volume by precipitation with alum guineapigs were *protected against the epidemic strain* by a single 1 c cm dose Analogous results have been reported by Castaneda, guineapigs given three doses of 1 c cm of lung vaccine made from an endemic strain were immune to infection with a European epidemic strain those given two doses of 1 c cm were either completely or partially protected, while of 5 animals given one dose of 1 c cm only 2 showed partial protection The degree of immunity obviously depends on the amount of antigen injected It is extremely desirable that efforts should be made to determine the value of endemic murine rickettsias as an efficient immunising agent against exanthematic typhus in man

Human rickettsial diseases are now fortunately rare in these islands Exanthematic typhus however still occurs in Eire, while in 1938 Gray, Peters and Davies[12] recorded murine typhus from Bristol In this issue Ludlam Batchelor and Rhodes report what is apparently a case of tick-borne typhus in a Scottish port The source of infection was almost certainly ticks imported from South America Thus even in Great Britain interest in the rickettsias cannot be regarded as purely academic

EXTRA MILK FOR INVALIDS

THE Ministry of Food has now recognised the undesirability of telling the dairyman what the patient is suffering from before he releases an extra pint or two of milk for him Under an amended arrangement the practitioner need only certify that the patient for whom extra milk is medically desirable is suffering from a disease or condition specified in the First Schedule to the Sale of Milk (Restriction) Order '

Prof F R **FRASER**, who has for some time been acting in that capacity at the Ministry of Health, becomes director-general of the Emergency Medical Service on the retirement this month of Sir **JOHN HEBB** who combined the post with that of director-general of medical services at the Ministry of Pensions, where his services will remain available

A SPECIAL meeting of representatives of home divisions of the British Medical Association will be held at B M.A. House, on Thursday, Sept 11 at noon, and will continue on the following day.

THE medical as well as the pharmaceutical world will be the poorer for the rather sudden death at Bournemouth of Mr F. C **GOODALL**, for his journalism had a quality of its own. Always well-informed, often eloquent, his writing was apt to carry conviction to the most deeply opinionated. And so he may have contributed, more than we know or he would have dared to hope, to just pharmacy

THE INDEX and title-page to THE LANCET Vol I, 1941, which was completed with the issue of June 28 is now ready A copy will be sent gratis to subscribers on receipt of a post card addressed to the Manager, 7 Adam Street, Adelphi, W C.2. Subscribers who have not already indicated their desire to receive indexes regularly as published should do so now.

MEDICAL CASUALTY —In a recent casualty list W S Captain H C A. Harris, M R C.S, is posted as wounded.

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[1] Zinsser H and Castaneda M. R. *J. exp Med.* 1933 57 381

[2] Varela H Parada, M. A. and Ramos, V *Proc. Soc exp Biol N Y* 1932, 30 206

[3] Mooser H and Sparrow, H *Arch Inst. Pasteur Tunis*, 1933 21 1

[4] Veintemillas, F *J Immunol* 1939 36 339

[5] Castaneda and Silva R. *Publ. Hlth Rep., Wash. 54, 1939* 1337

[6] Cox, H R. *Ibid* 1938 53, 2241

[7] Zinsser H Wei, H and Fitzpatrick F *Proc. Soc. exp Biol, N Y* 1937 37, 604

[8] *Durand* P. and Giroud P. *Arch Inst Pasteur Tunis* 1940, 29, 234

[9] Ruiz-Castaneda M *Amer J Path.* 1939, 15 467 *Brit J exp Path* 1941, 22, 167

[10] *Finlayson M. H Grobler, J M Sth Afr. med. J.* 1940 14 129

[11] *Ibid*, p 247.

[12] *Gray J D A., Peters B A.* Davies, I G *Lancet* 1938 1, 490

useful, as it is in studying the "healthy" side in unilateral cases and the stages of reduction and healing It is a simple and safe procedure, though an anæsthetic is needed for young children, and its popularity here is growing Severin uses per-abrodil diluted with an equal quantity of saline, 3 c cm being introduced into the joint through an anterior puncture, pictures must be taken rapidly because the medium is soon absorbed The results are not always easy to interpret without experience but are often so valuable that the method deserves wider use The arthrogram demonstrates the relation of the free fibro-cartilaginous edge of the acetabular roof, the limbus, to the femoral head—the key to diagnosis of dislocation It may indicate the probable failure of closed reduction if there is a long narrow capsular isthmus and thus save valuable months

Together with the minimising of trauma, the need for maintaining function at the hip from the earliest stage is nowadays more and more realised Severin leaves the knees out of the reduction-plaster, so that rotary movements of the femoral head may influence the development of the acetabulum, and Fairbank[3] has always insisted on the importance of early walking and crawling in the plaster Bauer,[4] too, has described how, after reduction in infancy, the child can walk later on in a simple abduction-brace It is evident that satisfactory closed reduction is only part of the solution to the problem of the congenital hip, diagnosis in the pre-ambulant stage, reduction with minimal trauma, and fixation allowing maximum function are also to be aimed at It is in helping to achieve the first of this triad that the arthrogram may prove of great value

SERUM TREATMENT OF PERITONITIS

SCANDINAVIAN surgeons have lately been employing serum in the treatment of acute peritonitis, especially of peritonitis complicating appendicitis, and some of them at any rate are enthusiastic about the results Bohmansson and Norup[5] of Orebro quote Swedish figures for general septic peritonitis, which in the decade 1929–39 show a fatality of 40–50%, whereas in the two years 1939–40, when serum in massive dosage has been given, the figure has dropped to just over 6% J Fog-Møller[6] of Kolding, Denmark, compares two parallel series Serum was given in 79 cases, with a fatality of 21 5%, no serum was given in 36 cases with a fatality of 40% On the average the patients who had serum were afebrile a fortnight sooner than the others, and stayed in hospital 13 days less The serum used contained antibodies to the two main types of organism that were considered pathognomonic—the different varieties of *Bacillus coli*, and *Clostridium welchii* This is referred to as "peritonitis serum" Dosage is all-important The only good results have been obtained with massive doses aimed at producing quick results In Orebro Hospital, in a first period in which no serum was used, the fatality was 42%, with small serum dosage it was 50%, in the third period, comprising the last two years, the dose was much increased and a fall to 6 3% was obtained During these same two years, however, sulphonamide drugs were used for the first time, and there must be much doubt about the relative contributions of serum and chemotherapy to the patients' recovery Bohmansson and Norup have definite ideas about what they expect from the combination of treatments The serum counteracts the toxin of the anaerobes and of the colon bacilli, while the sulphonamide attacks the actual bacilli (*B coli* and streptococci) and inhibits their growth Fog-Møller does not seem to have used chemotherapy, and his results, though good, are not so striking The dosage advised by Bohmansson and Norup has been raised even in the course of the last two years It is now c cm intraperitoneally and 40 c cm intravenously the time of operation, with smaller doses intramusc during the next few days They operate on all cases peritonitis that they consider fit to stand laparotomy. They remove the inflammatory exudate and any infected material, but do not wash out the peritone cavity They make a rule of closing the abdom without drainage, except where there is a localised ar of infection which obviously requires a drain They operate under spinal anæsthesia, counteracting fall o blood-pressure with intravenous fluids during operation The main points of their after-treatment are intravenou fluid, warmth to the abdomen, inhalations of oxyge and small repeated doses of morphia They allow no aperients, no enemata and no rectal wash outs As early as possible—usually about the second or third day—they get the patient up and let him sit on the closet and have his first motion naturally. Whatever its prime factor, their treatment seems to have been most successful in these last two years, and it is noteworthy that the cases quoted are of true septic infection, with purulent exudate or positive bacterial findings on culture

THE DEFECTIVE LEAVES SCHOOL

THE educable mental defective is more often than not a pleasant person, and when he leaves his special school his family are usually glad to have him at home After care and supervision are needed, however, because some families do not provide the ideal environment for a simple, often highly suggestible, character, because home circumstances which are favourable when the defective leaves school may deteriorate, and because the defective may be able to earn his living, and it is as well that someone should keep an eye on him to see that he is not exploited For forty years the Birmingham special schools aftercare committee have been performing these duties Their annual report is the third of a juvenile series, given in alternate years, and deals with pupils who left the city's special schools during 1939 and 1940 and who are therefore all under the age of 19 The committee's task, never easy, has been hampered by the blackout, by raids and evacuation, by transport problems and by the difficulty of tracing families who have been bombed out Sometimes a whole family has gone to work and left the defective to the care of neighbours, and it then becomes a problem in tact to make advice and guidance acceptable to the unofficial foster parent The large numbers of patients supervised—375 boys and 2 girls—have made the task a formidable one, and it is to the credit of the committee that only 19 of the boys and 32 of the girls have been lost sight of More than half the remainder are wage earners Of the 217 boys in work some are in factories and warehouses, others in engineering works (9 of these are skilled workmen), in electroplating and jewellery workshops, or in the building trade Others are doing outdoor work, serving in shops, o earning as wood-workers and cabinet-makers Of the 132 girls in paid employment many are in factories, few are in sewing trades or doing domestic work, three are skilled hands in engineering workshops, and 25 ar in press work In many cases the wages earned are good one boy of 18 earns 62*s* a week in a brickyard and thre girls earn 40*s* a week, the lowest wages are, among th boys 12*s* 2*d* a week, earned at filing, and among th girls 12*s* earned by greasing tins in a biscuit factory Only 7 of the 634 young people have been delinquent, of them being boys Five of the boys and the one gi were charged with stealing, the other boy with hou breaking It is noteworthy that whereas the incidenc of delinquency among young persons as a whole has risen in Birmingham during 1939–40, the incidence among th special school juveniles under aftercare has not changed there were only 7 cases in the previous two year period This is in keeping with the general experience of thos

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3 Fairbank H A T *Proc Roy Soc Med* 1941, 34, 217
4 Bauer, F *Ibid* p 215
5 Bohmansson G and Norup E B *Acta chir scand* 1941 84, 427
6 *Nord Med* July 12, 1941, p 2129

nographs mostly aiming at economy in constituents hich are scarce or needed elsewhere Suitable drinking-ater may now be used instead of distilled water in eparing aquæ and infusions and surgical solution of lorinated soda and arachis instead of olive oil in rtain injections *Chloroform and alcohol now take the* ace of glycerin in elixir of cascara, glycerin of tannic id and syrup of wild cherry (which now contains accharin instead of sugar), and extra honey takes its lace in mel boracis Glycerin is omitted altogether om the compound tinctures of rhubarb and cardamoms, incture of ipecacuanha, and tannic-acid ointment

In England Now

A Running Commentary by Peripatetic Correspondents

A YEAR ago Professor Ryle wrote an article in THE LANCET called "Of Death and Dying" It was a scholarly production and might be summarised in a telegram "*Dying doesn't hurt don't be afraid death* is the end finality Ryle Reg Prof" When I read it I felt like an adolescent caught playing with children's toys, a grown boy who still believes in fairies and converses with animals, for I had always felt that the tiny speck of what we call life, emanating from that ever-changing mass of cells that is I, would go on even when those cells with one accord sought other frames or lay in dust content I never reasoned about it—it was as far beyond my control as the autonomic system—but I felt and still feel absolutely certain about it But regius professors are great men, they have in their memories a large number of the salient points of human knowledge, and that article, which was a snub to my and many other people's beliefs, made me retire to chew a reflective cud in statu humiliato I have chewed quite a bit in my spare time since then

Professor Ryle reminded me of a pike I used to know in London when I was a student, which requires some explaining You see it was my habit every day after leaving hospital to walk back to my digs in the East End I thoroughly enjoyed that, partly because there was always a feeling of release in the physical exercise, but chiefly because through one's mind ran a continuous stream of highly coloured and often very exciting pictures, which one could to a certain extent control I am sure that most young people are the same in this way, at any rate I have found throughout life that it is a great mistake to suppose one is different from anyone else except in very small ways, provided one's the same age, sex and race Well, one evening walking home I went down into a subterranean "Gentlemen Only" somewhere near King's Cross, and I noticed that high up in a big rather dirty, five-sided glass tank which intermittently filled with bubbly water was a small pike Some sporting lavatory man, I suppose, had brought it back from a day on the Lea Being a country lad I often used to make a detour on my way back and go and look at the lovely lines of that small pike It reminded me of the river at home, the greeny depths, the weedy smell, the entrancing blur of an open-eyed dive, the exciting glide of, say, a Red Palmer over a rising trout When I got up into the street again I often used to think What an unnatural environment, what can the poor beast think of it all? A few moments later I was striding up the hill towards the Angel, carrying on a conversation with a huge grim-looking pike "I'm King Luce" he says rather angrily with a swish of his tail, "the Terror of the Thames O yes! And all those poor fish who come in here, they come to worship me, of course Don't they cross their arms in front of them and bow their heads and pour out an oblation of water towards me?" "Yes, yes," I say nervously, for I'm about the size of a small roach "And what's more," King Luce continues, "God locks the *ones* that won't worship me up in those wooden boxes *and* fines them too" King Luce does an imperious swish round the pipe that runs through the middle of the tank and *comes* back to me "One fellow got shut up for an hour once," he says savagely, and does the round of *the* tank again When he was still again I ventured to ask him "Who is God?" "Who's God! What a ridiculous question Doesn't he carry a red and white chequered banner, doesn't he turn the sun off at night and on in the morning, *doesn't he* feed me, didn't he bring me here a long, long while ago when I had a terrible pain in my jaw, and make me a King Who's God indeed!" Then I'd try to explain to him our peculiar excretory system our lighting system, that lavatory men didn't really rank very high in our hierarchy but it was impossible He was *thinking in terms of dominance* over other creatures, of a peculiar bony, kicking distension of his stomach which only an alderman could appreciate, *of tactile sense along his lateral line* while I was thinking in terms of coloured pictures as seen by the limited human eye, and occasionally in heard-words, those rough signals between members of the same species There was no point of contact, and even if he had understood it would have seemed as fantastic to him as his fairly reasonable explanation which I have imagined may seem to you But suppose he was a regius professor pike what then? What would he make of all those people who line up below him especially when the pubs close? "Subjective phenomena, my dear boy" rejoins pike "entirely subjective" "But what of God with the chequered duster and his rows of boxes?" I ask "Projection figure, formed out of reflected shadows, that's all," says he "The world consists of this tank and I can see no evidence of anything outside it"

Now which of those two pike is nearer the mark? The fact is we haven't the slightest idea what life is It may be a state of matter like heat, or the result of an upset of some natural equilibrium like pâte de foie gras, or akin to the product of the symbiosis of a fungus and a mammal like the writings of D H Lawrence The vast probability is that we couldn't understand the truth and as for putting it into signals—into words—the impossibility of that seems to me one of the certainties Meanwhile my projected Heaven is the best that this male mammal has known in his present cellular state Location? English countryside, undoubtedly Mostly spring, say about May 7 But we'd better be able to switch on to other times if we want to Let's have a little bright October Righto I'll switch it on Companions? Most certainly It's that which makes a future life imperative I would rather not have lived at all than be severed for ever from some, and this seems to be the basic instinct in all creatures Whatever lies ahead of us I have a hunch it will have two paradoxical qualities because in every minor discovery I have made in my life in the natural world they have been present, it will be much simpler and at the same time much more wonderful than anything one could have imagined Like the youth of the Large Blue butterfly Childish? I wonder Is it as childish as the average human being's conception of time—as a stream as a linear thing marked out into reigns and centuries and eras, whereas it is so *obviously* an *endless circle* with repeated recombinations of life and matter? Yes I suppose we must have a hell Ten to one it's a city We'll do our slumming there We'll throw them picture books over the fence It may help them to get out, for they are self-immured "Entrapped behind a palisade of words, we shall be sorry for their littleness"

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Medicine today more than *ever, seems to be always* working under pressure This is probably more apparent in a reception area, where hospital clinics seem to grow larger and larger One *gynæcological clinic* in this hospital establishes a new record for attendance about once a month, but certain psychological factors may account for this Certainly *the presence of* large numbers of fellow-sufferers seems to have a paralysing effect on the female sense of time The harassed gynæcologist after good-humouredly listening to the first three patients making futile calculations about the date of the last period, based on such premisses as "Well, it'll be a year ago come Michaelmas," or "The day Tommy got the measles which was either *last* Saturday, or the week before" took his fate in his hands and addressed the whole of his waiting suppliants There and then, he ordered they must get out pencil and paper and work it out in terms that could be more *easily recorded* The response was immediate and tremendous, and *far from* bringing blushes to their collective cheek, the whole clinic echoed with peals of laughter The histories taken from then on were prompt and business-like *Nevertheless* I often wonder what the reactions of a patient can be who,

Special Articles

MEDICINE AND THE LAW

A Pharmacist's Error of Judgment

THE new Pharmacy and Medicines Act entrusts to the Pharmaceutical Society the enforcement of sections 8 and 9, which prohibit advertisements of remedies for certain diseases or relating to abortion, and, after the end of June, 1942, section 10 which requires the disclosure of the composition of medicines The society, of course, already possessed disciplinary powers over its members by virtue of part 1 of the Pharmacy and Poisons Act, 1933 What seems to be the first of such cases against a member was inquired into by the statutory committee at a sitting at Derby on July 30 Complaint had been made to an insurance committee by a doctor that although he prescribed M & B 693 tablets for a patient suffering from lobar pneumonia the chemist supplied sulphanilamide tablets The prescription, dispensed on April 14 (Easter Monday), was a repeat of one dated April 11 (Good Friday) which was correctly complied with Since the discovery of M & B 693, the doctor said, he had not had a failure in a case of lobar pneumonia He was puzzled therefore in this instance when the expected response did not ensue, and this caused him to examine the tablets, which he found to be wrong The chemist informed him that, as he had not got the M & B 693 tablets, he decided to give the nearest thing to them as he understood matters The doctor replied that, if he had telephoned him he could have supplied the tablets he considered essential or the patient could have obtained them from another chemist The patient had died and he considered that her failure to obtain this essential specific drug had robbed her of a nearly certain chance of cure In a subsequent letter the doctor stated that the fact of the prescription being presented when other chemists' shops in the district were closed did not excuse the changing of it, but he thought this might be regarded as a somewhat extenuating factor The pharmacist explained that he believed the shop to be the only one in the area which was open on Easter Monday morning, he therefore felt obliged to dispense the prescription Owing to difficulties of transport and closing for the holidays (the main wholesaler was closed for ten days at Easter) no M & B 693 was in stock At the time he considered he was doing his best by substituting sulphanilamide; now, however, he fully realised his error

Major L E Simpson, presenting the case for the society, pointed out that, according to the statement upon matters of professional conduct prepared by the council, an offence was committed if there was a substitution of articles or ingredients, save in cases of obvious error or emergency, and in all such cases the authority of the physician should be obtained Here the defence did not suggest that there was obvious error or that the authority of the physicain was obtained The rule further required a note to be made in the prescription book of the alteration and the other things that constituted the emergency The only emergency which he could see in this case was that the drug was not in stock The doctor said that if he had been advised that it was impossible for the chemist to supply the drug he himself could have done so Major Simpson pointed out the importance of a doctor feeling sure that, in giving a prescription, he was saying the last word and that it would not be altered without reference to himself The society did not suggest that anything was done wilfully or with a malicious purpose The pharmacist agreed that he could have communicated by telephone with the doctor There was a rota of the local chemists for dispensing urgent medicines during holidays, but it did not apply on Easter Monday morning Asked whether his training enabled him to realise that there was a considerable difference between sulphanilamide tablets and M & B 693, he replied that he had not realised its full significance until this case came up

Delivering the decision of the committee, Mr G R Hill, the chairman, said it was common sense that, when a chemist was told to make up or supply a certain drug or medicine, he should implicitly follow the doctor's direction unless he suspected that a mistake had been made or there was some emergency which prevented him from doing so If he thought the doctor had some mistake, such as prescribing an excessive dose some poison, he would be justified in self-protec in not making up the medicine without communica with the doctor, but he ought to communicate with immediately In the case of drugs like these, q apart from the printed rule of conduct, it was the d of the chemist, if he had not got the particular tablets stock and could not get them elsewhere, either to up the doctor at once and ask whether he should su tute other tablets, or, if he thought that time was v important, to substitute the nearest thing he had, bu only on condition that he informed the doctor at th earliest possible moment that he had been compelled by force of circumstances to alter the prescription Otherwise the chemist would be taking upon himself to prescribe for a patient whom he had not seen and of whose condition his only knowledge was that a doctor who had seen the patient had prescribed something different from what the chemist was proposing to make up In the present case the pharmacist clearly made a very grave mistake It might be that if he had tried to ring up other shops he would have found them all closed on the Easter Monday and he could not have got the proper tablets It might be also that if he had tried to ring up the doctor he would have found that he was out on his rounds In those circumstances, if he really thought the other tablets were substantially the same, he would have been justified in supplying them, but only on condition that he got into touch with the doctor as soon as possible "I do not myself," the Chairman proceeded, "attach very much importance to the distinction between the two tablets What I attach importance to is implicit compliance with the doctor's directions" The chemist had admitted his mistake The committee, with considerable hesitation, had decided not to direct the removal of his name from the Register, but the chemist must understand the importance of obeying the rule

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FOURTH ADDENDUM TO THE B P

A FAIRLY large addendum to the B P 1932 will come into force on Oct 1 It contains the following 26 new monographs

Benzyl benzoate, bismuth subgallate, digoxin, dilute ointment of mercury, ephedrine, exsiccated sodium sulphate, hamamelis ointment, injection of calcium gluconate, nikethamide (Coramine), procaine and adrenaline, quinine and urethane, and sodium morrhuate, light liquid paraffin, magnesium trisilicate, mandelic acid, morphine sulphate, nicotinic acid, pamaquin (Plasmoquine), phenyl mercuric nitrate, proflavine sulphate, sodium metabi sulphite, sodium morrhuate, solution of sodium hydroxide, sulphanilamide, suramin (Germanin, Bayer 205), and urethane

The inclusion of sulphanilamide marks the final absorption of chemotherapy into orthodox medicine. *Several of the monographs extend the process of estab*lishing official substitutes for drugs hitherto manufactured abroad, the proprietary names for these are shown in the above list in parentheses The new Ung hydrarg dil consists of the familiar Ung hydrarg (30% Hg) diluted with two parts of simple ointment, so that its strength will be 10% Hg, in future the dilute ointment will be dispensed when "mercurial ointment," "mercury ointment," or "blue ointment" is prescribed It will come as a surprise to some doctors to see that morphine sulphate was not in the B P before, but in fact only the tartrate and hydrochloride were included Paraff liq lev has a specific gravity at 15 5° C of 0 835–0 87, compared with the 0 88–0 895 of Paraff liq B P We are also told the "kinematic viscosity" of the light paraffin, which is to be not greater than 33 1 centistoke at 37 8° C Hitherto viscosity of liquid paraffin has been expressed in terms of rate of flow through a Redwood viscometer, and the methods now laid down for estimating and expressing viscosity are set out in an appendix Another appendix describes the methods of sterilising and dispensing solutions for parenteral injection

The addendum also contains the amendments already made official by announcements in the press in February covering the use of Indian squill and Indian valerian and there are a number of emendations to existing

Letters to the Editor

EATMENT OF SOLDIERS AT CIVILIAN V D CLINICS

ir,—Owing to the fact that it is Army policy to treat liers suffering from V D as inpatients so long as they contagious, all that civilian clinics were asked to do s to carry out *preliminary* tests of cure for gonorrhœa l *routine* continuation treatment of syphilis, definite ndards being laid down for each The advantage of s course is that it saves a considerable amount of time l transport Practically every civilian clinic accepted s proposal

Every soldier attending a civilian clinic should take h him a pro forma On this the medical officer erring the case should set out the patient's name, &c , ease, treatment or examination required (subject to y contra-indications such as signs of intolerance), ults of previous examinations with dates, summary previous treatment with dates, and other observations is should give the medical officer of the clinic all the formation necessary It is to be regretted that this o forma is not always correctly filled up, but medical en are notoriously bad at filling up forms and the large ajority of Army M O s of today are the G P s of yesterly, so that too much blame must not be cast on the my The Army M O has much to learn when he st enters the Service and one cannot be surprised if a w M O makes mistakes in the multiplicity of forms hich he has to complete

To reply to some of the points raised

1 The soldier cannot be expected to keep a V44 , he has ute as much kit as he can cope with already It must be membered that he does not live under the same conditions the civilian.

2 It is forbidden to prescribe sulphapyridine for a suspected se of gonorrhœa until microscopical examination has been rried out

3 A case which attends a civilian clinic for one or more eeks and then ceases does not necessarily, or even commonly, default " Soldiers are constantly being moved and there e many other reasons for non attendance—e g , operational responsibility rests on a civilian clinic if a man does not tend For a variety of reasons in war time it is impossible notify civilian clinics when a man is moved , this will be vious to anyone who gives the matter a second thought

If Dr White and Dr Erskine would realise that the ldier is comparable rather with the merchant seaman, ho goes from port to port, than with the comparatively atic civilian they would understand that their suggesons, though admirable in theory, are unworkable in actice

T E OSMOND,
War Office. Adviser in Venereal Disease

SIR,—Dr H H White and Dr David Erskine emphasise me of the difficulties experienced in the treatment service V D cases in civilian clinics In addition we ave suffered from overcrowding of certain sessions, with nsequent prejudice to the civilian patients, due to the ct that the civilian clinic has no power to control the mes of attendance of Service personnel The Ministry Health recently introduced in circular 2226 a scheme nsidered adequate for the diagnosis and treatment by eneral practitioners—under the general supervision f the local authority V D officer—of civilians in many reas The application of a similar scheme to the Serices, supervised by the Service V D specialists and arried out by the unit medical officers, should not be npossible, should make for continuity of treatment, nd would relieve the civilian clinics of any possible lame for unsatisfactory results as well as obviate ossible future difficulties consequent on staff problems nd the slowly increasing incidence of infections

Newcastle on Tyne A E W MCLACHLAN

ACUTE ULCERATIVE STOMATITIS

SIR,—I have read with interest the article by Colonel Valton and his associates on the treatment of three cases f acute ulcerative stomatitis by blood-transfusions, for luring the past year I have seen more than 450 cases of ulcerative gingivo-stomatitis and have treated nearly 300 The severe illness and prostration described by Walton and the presence of pneumococcus-like, rather than fuso-spirochætal, micro-organisms are perhaps the most unusual features of their cases I have examined more than 2000 direct films from ulcerative mouth lesions and have on occasions noted relatively large numbers of gram-positive diplococci which do have the morphological characteristics of pneumococci The suggestion by Dr Britton that they probably belong to the streptococcus group is interesting in view of the almost constant presence of coccal organisms in lesions of so-called Vincent's disease Indeed, the comparatively superficial nature of the ulcerations, the extremely strict anaerobic requirements of fusiform bacilli and Vincent's spirochætes and other considerations strongly indicate that invasion of the tissues by the latter association of micro-organisms is probably a secondary result of tissue injury by other means As Walton and his colleagues indicate, ulcerations of the mouth may depend on defective cell metabolism associated with deficiency of nicotinic acid (and possibly other components of the vitamin-B complex), regardless to some extent of the type of micro-organisms, or association of micro-organisms, found in the lesions when developed In about 10% of my cases typical fœtor has been absent

Mechanical trauma in the mouth, as a result of tartar, food debris in gum pockets, cervical caries and fillings, ill-fitting dental appliances, &c , should not, however, be forgotten I believe that nutritional deficiency and traumatic injury of the gums are the main ætiological factors in the disease This belief is based on the treatment of 276 cases of ulcerative gingivo-stomatitis since June, 1940—81 with nicotinic acid alone , 121 with nicotinic acid supplemented by local measures , 14 with ascorbic acid (with little or no beneficial effect) , and 60 by local treatment alone Successful treatment to some extent depends on the type of case—acute, subacute or " flaring " subacute. The last two types often respond only slowly to nicotinic acid or to local measures separately. Up to the present I have found the following method the most reliable —

(*a*) Nicotinic acid, 150 mg daily for seven days, followed by a maintenance dosage of 100 mg daily

(*b*) Chromic acid (10%) plus hydrogen peroxide applied to lesions on two consecutive days, with scaling of teeth on second day.

(*c*) Hydrogen peroxide syringing on third and fourth days

(*d*) Hydrogen peroxide mouth washes for seven days , removal of chronic traumatic foci (by tooth extraction, gingivectomy, &c) after (*b*)

By these means clinical ulceration is eliminated in approximately two days in the majority of cases, even when the ulceration is fairly widespread No relapses—so common after local treatment alone—have so far been encountered A detailed report of this work is now being prepared for publication as a sequel to my article in your columns (*Lancet*, 1940, 2, 32)

As Colonel Walton and his colleagues remark the cure of their cases by blood-transfusions may have been due to correction of a nicotinic-acid deficiency and my experiences perhaps give the suggestion some support Other components of the vitamin-B complex, and perhaps vitamin A, mentioned in connexion with the " sore mouth," cheilosis, angular stomatitis, perleche, &c of the Indian, Malayan, Egyptian and African investigators, may also be concerned

I am indebted to the Director, Army Dental Services, for permission to refer to the cases mentioned.

Dept of Biochemistry, Oxford J D KING

MODIFIED INSULIN THERAPY IN WAR NEUROSES

SIR,—The account given by Dr Sargant and Dr Craske of a " modified " insulin treatment and of their efforts to effect a reduction in the amounts of sugar and insulin used is of interest to all those practising insulin treatment It occurs to us, however, that in those patients who receive " just insufficient insulin to produce light coma, or even hypoglycæmic excitement," it would be enough to give potatoes only, without any coming up apprehensively for the first time is bustled about and has needles stuck into her with cheerful nonchalance Perhaps I am interested because my first term as a medical student was, owing to a certain rashness in disputing a right of way with a lorry when only mounted on a bicycle myself spent in studying medicine from the patient's point of view My first reaction, in a postconcussive state, was one of cheerful cooperation, when I had two teams, one attempting under local anæsthesia to set a somewhat fractured tibia and fibula, and the other to remove a well-fragmented windscreen from my scalp This attitude was, however, considerably modified when I finally came to my senses after a period of secondary shock Then I must confess the atmosphere of secrecy about the next move (particularly being forbidden breakfast without being given a reason) had an awe-inspiring, if not actually fear-generating, result A little explanation would go far to alleviate a lot of the anxiety provoked by the unknown in patients More than anything I learnt to appreciate the value of a basal anæsthetic which averted the horror of an ether induction, intravenous anæsthetics were really great fun but gas and oxygen was the only one after which I was immediately able to eat a big meal with a good appetite, so naturally it was a firm favourite I am sure that getting patients to take a cooperative interest in their treatment is well worth the extra trouble it involves and saves time in the end, but it is just these human touches that are first to be sacrificed in a rush

* * *

Three weeks ago I was called to see an A F S man who was in charge of a "knot and tie" section, he was complaining of numbness in his hands and feet and a discomfort in his lower back His knee-jerks were sluggish and his ankle-jerks were absent I asked myself Halliday's famous questions—why he took ill *how* he did, and why he took ill *when* he did I elicited this story A fortnight previously a man in his section had fallen from a rope and fractured his spine The knots in the rope were shown to be faulty and they had been tied by my patient He made a report to the chief which had been considered inadequate and he was required to attend before the committee to make his explanations in person This he did, but he had not yet been told of the committee's decision On the morning the committee met he was first aware of the numbness in his hands and feet and the discomfort in his back Here then were the answers to Halliday's questions, here plainly to be seen were the marks of his guilt Here were the hands and feet that slipped and the back that was broken as clearly imprinted as were the stigmata of the medieval saints The clinical diagnosis, however, was polyneuritis, and he died in a fortnight of respiratory failure Is there a gap here to be bridged? Do disordered psychological states prepare the neurological soil for the invasion of a virus? I offer this case to any outraged psychiatrist who requires a text for a lecture directed to Group-Captain Symonds and entitled "The psychiatric approach to neurology"

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Not least among the difficulties of a patient at hospital is the trouble of fitting the right denomination to the right person It is the misfortune of women doctors that they have to exert their authority under the title of "nurse" or perhaps if they look very dignified, "sister," while the most junior male student will get called "doctor" Most of us appreciate this as a first glimpse of a future life when we will no longer fill the rôle of the lowest form of animal life, and if taxed for a decision one can always gently sidestep On other occasions it can be embarrassing Just before the war, students from the Welsh and English universities used to help in the organisation of camps in South Wales for unemployed miners We worked hard in a domestic way and there was a wonderful sense of fellowship When, however, it was discovered that you were a medical student your status changed quite a bit, particularly if you were the senior one present, for your juniors applying their well-practised technique, put it all on to you As the nearest doctor was some miles away, one couldn't follow one's instincts and put it all on him But there was a good medicine chest and once you had some confidence you could get on all right The scurviest trick of all, however, was played in name of democracy by the simple process of it was decided that the "medical officer" should sole charge of sanitation So there was no alt than to put into unwilling practice the principle doctors should concern themselves more closely public health I may say that principle triumphed, I dug pits, emptied buckets, and disinfected seats such vigour that I was promised that when South W had a Soviet I should be appointed People's C for Chemical Closet Control

One of my colleagues gained immortality by a diagnosis An Irishman came to him complaining that he was too ill to work "The trouble is, doctor," he said in a brogue which I cannot transcribe, "that my heart's in old Ireland" "On the contrary," replied his medical adviser, "your trouble is that your bowels aren't in the Free State"

SALARIES FOR NURSES

WHEN the Minister of Health announced the new rates of pay for the Civil Nursing Reserve in April[1] he also asked hospital authorities to review the salaries they were paying their nursing staffs But he realised that a revision of nursing salaries, however desirable, would add a heavy burden to hospital finances at a difficult time, and after negotiations with the British Hospitals Association, the King Edward Hospital Fund and the Nuffield Trust he has agreed to give the hospitals provisional help until he receives the report of a national committee on nursing salaries which he is setting up The scheme will be administered by the B H A which has drawn up the following minimal annual scale of nursing salaries

	£
Probationer	
1st year	30
2nd ,,	35
3rd ,,	40
4th ,, (until state-registered)	50
4th ,, (state registered)	70
State registered staff nurse	90

Voluntary hospitals which raise their nurses' salaries from Aug 1 or which had already done so since the minister's announcement, will be eligible for a grant for each probationer and state-registered nurse they employ To qualify for the grant the salaries must be raised to at least the minimal scale and the minister will also pay a proportion of the cost to the hospital of raising the salaries up to

	£
Probationer	
1st year	40
2nd ,,	45
3rd ,,	50
State registered staff nurse	95

The average cost to the hospital of these increases will probably work out at about £10 a year for each probationer, and £22 (including superannuation) for each state-registered staff nurse The increase in the expense will of course depend on the salaries the hospital had been in the habit of paying and in order not to give unfair advantage to those which have been paying the smallest salaries the grant will be limited to half the average increase—i e £5 or £11—or half the actual total increase whichever is less Rises for the junior staff will entail rises for the senior staff as well, and the grant of £11 for the trained nurse will also hold good for those in senior positions such as sisters, assistant matrons, and matron Midwives are to be dealt with separately

The national committee on nursing which is to be set up will consist of two panels, representing employers and employees The B H A as well as the King Edward Fund and the Nuffield Trust will be represented on the employers' panel

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[1] *Lancet* 1941, 1, 495

SCHERING products have long been known in this country for quality and the new organisation advertised in the press assures continuity of supply since, as present stocks become exhausted, the preparations will be of entirely British manufacture The new research laboratories will be under the direction of Mr D H Hey, D Sc, lecturer in organic chemistry at the Imperial College of Science and Technology reach the second class from the top in school previous 'nervous breakdown," suicidal attempts, member of the family treated in mental hospital or committed suicide repeated court convictions, previous discharge from the Army, Air Force or Navy severe head injury, chronic pain or severe headaches, faints or collapses, fits or convulsions severe fears or nightmares, stammering, enuresis after 5 years recurrent diarrhœa or indigestion, dieting over a long period cramps spasms or tics, long litigation after an accident and doubt concerning conscientious objection Had such pointers suggested to the medical board that a psychiatric opinion might be helpful and had the psychiatric opinion been acted on, much time and trouble would have been saved , 75% of these men had been in the army considerably over three months and 25% considerably over one year Of 50 outpatients found to be so chronically ill that discharge was advised without treatment in hospital 49 could have been detected on intake by similar criteria

We also examined the histories of a sample (150) who were sent back to duty after treatment in hospital, and found that examination on intake would have elicited about half as many pointers to further psychiatric examination In these cases the pointers would not have indicated to psychiatrists such serious previous illness that the patients would have been rejected In other words early neurosis was less frequent, milder and of shorter duration

It may be said that medical boards have not the time to elicit indications of previous psychiatric problems according such hints as we have given Nevertheless the suggestions made for questioning entrants to the A.T C (*Brit med J* Suppl May 17, 1941, p 67) appear to us too meagre It was only suggested that a history of sleep-walking, bed-wetting fits and convulsions be asked for The following questions seem the easiest to ask and the most useful What class were you in when you left school ? What was the top class ? Were you ever knocked out by an accident or a blow ? Have you ever had a fit or a convulsion ? Have you ever fainted or collapsed ? Have you ever had bad fears ? Have you ever had bad aches or pains for a long time ? Have you ever been discharged from the Army, the Air Force or the Navy ?

J C Mackwood,
W Clifford M Scott

Sheffield

CARE FOR HOME GUARD CASUALTIES

Sir —The letters that have appeared in your columns have mainly dealt with equipment and establishment of collecting posts where Home Guard casualties can be maintained until they are moved to hospital by A R P ambulance These posts must of necessity, be at some distance from battle stations, and, as attack may come from any direction, Home Guards may be cut off from collecting posts for a considerable time They must therefore be prepared to carry out efficient, if elementary, first-aid and tend casualties for hours if need be, until men can be spared to carry them to a post To meet this contingency first-aid instruction has been given to the men, but owing to lack of material this is as much use to them as a locomotive would be for their transport were no rails provided In your leading article of Aug 16 you say "The Government provides for each post" (i e platoon of 80 or more men) "52 pad and bandage dressings, 2 small tubes of tannic-acid jelly, 2 triangular bandages and a set of splints of which the longest is 17½ in This supply is intended for the most elementary first-aid treatment " Obviously the splints would only provide the most elementary first-aid for arm fractures, but even the most complaisant leader writer should be startled by the practical uselessness of splints without means for attaching them to a limb Splints can readily be improvised whereas means of attachment are difficult to procure offhand To use strips of clothing for this purpose is a needless extravagance Triangular bandages are cheap and efficient, they can be washed after use and reissued , moreover, they exist in huge quantity in the B R C and A R P stores and dressing stations where they are virtually "frozen" Their actual point of usefulness is not central, in store but peripheral, where casualties are sustained and first-aid is required A redistribution of existing supplies is necessary, together with a scheme for replacement of used bandages, their laundering and recirculation

Morphine antitetanus serum sterile vaselined gauze and sulphanilamide dusting powder must also be available and as casualties may have to be kept for hours perhaps days, medical comforts (cafe au lait cocoa and milk sweetened condensed milk in small tins) should be provided at section and casualty collecting posts

To expect the Home Guard to provide its own casualty equipment is inappropriate, to say the least and you betray your estimate of our great nation s attitude to, and recognition of, the gratuitous services and sacrifices by the Home Guard for national preservation when you write that a medical officer "can only tap these supplies if he first collects funds, and this is a duty which may well fall to his lot" Is it meet that the M O procure a hurdy-gurdy suitably inscribed and tour his battalion area or badger already overburdened people to shoulder yet another burden and subscribe to his first-aid fund ? We have come to a sorry pass when a medical officer must turn beggarman Can the *Lancet* really endorse such a policy ? Provision for Home Guard casualties is a national duty which cannot be fobbed on to the charitable nor can it be left in its present impossible state While the Home Guard is willing to face the risks of modern war it cannot be expected to provide its own first-aid material or to squander life and limb needlessly for lack of it The problems of medical equipment and organisation in the Home Guard are specific and simple and since all necessary supplies will be of use in civilian life after the war there can be no inhibition to their provision on grounds of economy, or for that matter on any other grounds

London, W 1

W G Macdonald

Sir,—The Good Book says "without vision the people perish" Therefore, those of us who remember multiple medical muddles will take little comfort from the letter of your anonymous H G M O , who Jove-like assumes that "the C -in-C 's intention as regards the function of the Home Guard can be roughly assessed by the quantity of the equipment issued to them," the corollary being that since their medical equipment is nil his intentions are nil, and therefore their function is nil—surely a somewhat risky statement even under the guise of anonymity

Marlborough laid it down that no action and no campaign could be won without application of the three I's, industry, intelligence and imagination, and that the greatest of these was imagination Does H G M O really believe that we should only follow the instructions laid down in A C I 468 and 752 of 1941 (unless, of course they are instantly amended) ? Does he realise as a professional man the enormity of no splints longer than 17 inches, no morphia, no Dettol, no sulphanilamide, no antitetanic serum, no antiburn or gas equipment, and still think that all's well and can be left to that deus ex machina, the R A M C , "who within twenty-four hours" are to be conjured out of the sky to deal with casualties anywhere and everywhere from Dover to the Great Green Belt and upwards to John o' Groats ? Can he not visualise desperate fighting in the open against vast air- and sea-borne enemy hordes What authority has he to assume that this tactical medical problem without parallel can be mastered in a day by the R A M C , who like the Home Guard are meagrely equipped for field casualties Indeed he is one of great faith, though perhaps of little experience of such debacles as the retreats from Mons and Cambrai

I note his paternal advice to follow the instructions laid down by the War Office to train stretcher bearers In what ? Lifting stretchers ? for there is nothing else with which to wet their curiosity or grey matter Again he adjures us in the midst of battle, when cut off from the beloved A R P , to organise aid-posts but he does not tell us what magic wand to wave in order to stock such posts with the very minimum medical requirements mentioned though I see he states that we are to have a system of runners to bring first-aid equipment across field or fen, by day or night, without any knowledge of the whereabouts of the post or the enemy To my mind his attitude savours too much of gregarious and dangerous complacency

Harley Street W 1

V. B Green-Armytage

sugar, to restore the blood-sugar to normal values In this way a complete sugar economy would be effected, apart of course from the occurrence of those complications for which Sargant and Craske have been at pains to provide Almost a year ago (*Brit med J* 1940, 2, 310) we published a method of carrying out insulin treatment under war-time conditions in which potatoes were used as a substitute for sugar In this method 7 g of glucose are given intravenously to terminate the coma The patients wake up from the deepest coma within two or three minutes and are ready to drink potato soup, of which 12–18 oz is given This is followed by tea or cocoa and biscuits or bread and butter In this way no patient receives more than his sugar ration in the week We were also able to show that by administering the insulin intravenously it is possible to reduce the amount required to induce coma and incidentally to avoid the onset of such complications as delayed recovery and late shock so much feared by your contributors

JAMES S McGREGOR,
Warlingham Park R A SANDISON

CALCIUM AND PHOSPHORUS STUDIES IN NORMAL PEOPLE

SIR,—Dr Harris's letter of Aug 23 contains many wrong and inaccurate statements

Calcium content of the tissues —There is a large literature on this subject, including work by Weiske, Voit, Aron, Sebauer, Kost, Patterson, Denis, Minot, Clark, Heubner, Rona and Corley As much calcium by injection as 1 2 g per kg over short periods and 0 7 g per kg over prolonged periods have been given All are agreed that the calcium content of the tissues (e g , heart, blood-vessels, brain, muscles, abdominal organs, &c) does not rise above normal When Dr Harris raises the bogy of " calcium saturation " with its dangers, and uses such phrases as " tissues contain more calcium under a large intake," he is talking nonsense

Advantages of a high calcium intake —When Dr Harris writes " no data are available to judge which (intake) is the best," he displays ignorance Among others, work on this subject has been done by Sherman, Campbell, McLeod, Booher, Bessey, Toepfer, Gaunt, Irving and Thomson All are agreed that in contrast with a low calcium intake an optimal or high calcium intake produces more rapid growth, more efficient growth, earlier maturity, longer duration of reproductive and ordinary life, greater success in rearing young and better growth of young It should not be difficult for Dr Harris to answer his own question " Which of the two conditions is more desirable ? "

Renal excretion of calcium —On a low calcium intake the daily excretion of calcium in the urine is about 0 06 g and in the fæces about 0 2 g When the intake of calcium is high, normally only a small amount of the added calcium is excreted by the kidney The amount of increased work this gives to the kidney is insignificant , exactly how little has already been explained to Dr Harris by Dr McCance and Dr Leitch

Detection of calcium insufficiency —If large sections of our population are ingesting less calcium than is necessary for equilibrium between intake and output, then they are getting insufficient calcium That is simply a matter of logic, for the healthy body must retain some of that mineral The above has been shown by dietary surveys, among others by Orr, Corry Mann, Leighton, Clark, Davidson, McGonigle, Crawford, Broadley and Potts But Dr Harris asks for signs of calcium insufficiency Clearly osteoporosis is the terminal stage like the coma of diabetes But demineralisation of the skeleton can take place without X rays being able to detect it Thus in thyrotoxicosis, which is associated with an excessive calcium loss from the body, Golden and Abbot could only detect the decalcification in 22% of cases despite the employment of radiographic controls The conclusion is not that in 78% of thyrotoxicosis there is no demineralisation but that X rays are not sufficiently sensitive

There is a means of showing calcium insufficiency by employing calcium balances Above an intake of 1 g calcium daily, in the normal healthy subject, no more retention of calcium occurs If the body stores more calcium at intakes above 1 g than at 1 g , then there is calcium insufficiency Dr Harris himself has provided us with such a series of cases from Liverpool, thereby proving the people he considered normal were actually calcium deficient At an intake of 0 8 g calcium his subjects stored 0 269 g calcium As the intake increased to 1 791, 1 99, 2 566, and 2 712 his stored more and more calcium, until at an intake of 2 71 stored as much as 1 980 g and these figures are averages That is evidence there was calcium i present and Dr Harris thought they were normal Dr must now know how very hard it can be clinically to certain there is no calcium deficiency in the adult pop

Calcium retention in middle age —Dr Harris has " great retention of calcium is a peculiarity of middle It really does not matter whether this was stated in a in a letter In table VI of my first paper I compared calcium metabolism of old and young adults and found th similar The statement by Dr Harris is therefore wr When Dr Harris writes " Obviously in the fully cases the middle aged cannot react differently from young To demonstrate his point the subject of Robertso table should have been kept in a calcium unsaturated state he begs the question Let me put it very simply There difference in the storage of calcium in old and young adult Large retention of calcium in adults is a sign the body is calcium deficient and this obviously can occur at an There is nothing peculiar about this

Osteoporosis and vitamin D —When Dr Harris writes " very rare condition of osteoporosis is now considered to be du to vitamin D," he is again inaccurate In thyrotoxicosis and hyperparathyroidism the osteoporosis is not due to vitamin deficiency , the former is due to thyroid activity and the latte to parathyroid activity When the intake of calcium fall below equilibrium level the demineralisation of appa normal people is due simply to lack of calcium and not to vitamin-D deficiency As Sherman says, the factor of prime importance to the optimal storage of calcium in the body is the presence of a sufficiently liberal allowance of calcium (optimal) in the food Vitamin D without that optimal amount of calcium cannot do its vitamin storage work properly There is also a wide literature on this subject including work by Aub, Cameron, Fraser, Tibbits, McLean, Stettner, Hunter, Barr and Bulger

I have written at length because it is clear that Dr Harris is deceiving himself (and might deceive others) through his inadequate knowledge and grasp of the relevant literature Dr Harris's conclusions and results on calcium are at complete variance with those of 39 workers I have limited myself to quoting Their observations are all consistent with one another and are now generally accepted Their findings must be proved wrong and Dr Harris's calcium work confirmed before hi unorthodox views can be considered

London, W 1 J DOUGLAS ROBERTSON

MARTIAL MISFITS

SIR,—Writing about Service misfits (May 17, 1941, p 633) you stated that passing men who are grossly neurotic or feebleminded meant expense, delay and waste, and further that the medical boards of the Ministry of Labour have seldom called for a psychiatric opinion In a later leader (July 26, p 103) you reported that a third of the American rejections were made on psychiatric grounds and that this third represented 5% of the examinees In a certain region the medical director of the examining board had quashed the psychiatrists' opinion in two-thirds of the cases In other words the medical director sent into a unit of 5000 men 150 about whom the psychiatrists had given a poor prognosis

There are other facts related to this problem which should be mentioned Baillie reported (*Amer J Psychiat* January, 1941, p 753) that of 200 admissions to a Canadian Army neurological and psychiatric unit 144 were discharged from the army Of the 144, 47% should have been rejected at intake and 41% detected because they presented severe psychiatric problems during their preliminary training Baillie concludes that 88% of the discharges would have been rejected had adequate psychiatric examination been made at intake or shortly after We have tried to decide how our experience compares with Baillie's

Of a random sample of men (200) whose discharge was advised after treatment in a psychiatric unit, about 70%, in our opinion, would have been rejected on intake had attention been paid to indications of previous neurosis or psychosis The evidence of previous severe psychiatric problems was indicated by such pointers in the history as illiteracy, attendance at special classes, inability to

Obituary

ALFRED JOSEPH CLARK

M C, M D CAMB F R C P, F R S

THE brief biographical sketch of Prof A J Clark in ur Scottish letter of Aug 9 has been followed by personal ppreciations of a singularly convincing character Since he end of the last war Clark held in succession the chair f pharmacology at Cape Town, at University College, London, where he was for a time dean of the medical faculty, and finally at Edinburgh It was indicative of his character that his colleagues (in the words of one of them) and students always spoke of him with affection The reason was not far to seek, for he had an intense interest in his fellow creatures A staunch friend with a generous spirit his advice was sought by many with the knowledge that they would receive of their best, and he had a happy way of putting juniors at their ease by giving them the impression that what they had to say was entirely new to him At work or at play Clark was whole-hearted in action He infected with his enthusiasm his comrades in research or teaching and he could hold his own with juniors at fives or squash rackets At the outbreak of war he took charge of the A R P for the safety of students and laboratories around the Edinburgh medical quad, taking more than his share in the filling and stacking of sandbags Time will not erase the memory of the upright igure walking rapidly across the quad with hands behind is back his cheery morning greeting and the luncheon our talks at the Union where his erudition astonished ot only his colleagues in medicine but those from other aculties

Lafayette

A survey of his published work shows the thoroughness f A J Clark's early grounding in the basic sciences xperimental physiology provided his approach to harmacology but throughout his career Clark always rought to his researches a freshness of outlook that pened up new possibilities for investigations in many irections The extreme care with which he prepared imself for exploring the pharmacological aspects of a ubject is illustrated by his "Comparative Physiology f the Heart" published in 1927, which contains original bservations on the vertebrate heart, representing many ears of patient study Nor did he ever show any endency to become stabilised within the limits of some pecialty As a result of his early experience—which ight almost be taken as a pattern by any aspirant to harmacological distinction—his interests were wide and ar-reaching and in later years he did not hesitate to pply his knowledge to subjects important not only to he scientist but also to the practising doctor

His "Mode of Action of Drugs on Cells" constitutes a lea for a wider appreciation of the multitude of variables hich are always operating in experiments on living issues, and Clark rendered a signal service to pharmacological science by his critical analysis of the many "laws" nd hypotheses which had attracted attention, partly on ccount of their misleading simplicity It was a fitting ompliment to his status in the pharmacological world hat he was invited to contribute the volume on general harmacology in Heffter's "Handbuch der Experimentellen Pharmakologie" Here is proof again of his ncyclopædic knowledge of the literature and of his alent for the mathematical interpretation of biological ata although well aware of the limitations to the use of athematics in biology And finally in his "Applied Pharmacology" the author showed a real understanding f the difficulties of the student in a time when there is disastrous tendency to separate the teaching of pharmaology from that of therapeutics The book represents, n his own words, an attempt to 'bridge the gap between pharmacology and therapeutics and to demonstrate as clearly as possible the connection between the two subjects' Its success may be judged from the fact that seven editions have appeared since 1923 and the book has been translated into Chinese and Spanish But his best-seller was undoubtedly a sixpenny monograph in the "Fact" series setting out the scandalous shortcomings of the existing laws on commercial medication which is a model of lucid exposition Clark did not adopt the extreme view that all self-medication is bad, but he showed convincingly how great was the menace of an uncontrolled trade in secret remedies, and with great courage he laid bare the stranglehold which this trade exerts on the lay press His agile brain was quick to discover the ludicrous anomalies in this part of our legal system It is one of the unkind ironies of fate that he should die in the prime of life and just at the time when legislation long overdue has found its way to the statute book

HERBERT RITCHIE SPENCER

M D LOND, LL D ABERD, F R C P

IN the death of Dr Herbert Spencer at the age of 81 there passes from us the last of the great men responsible in this country for the awakening of modern midwifery and gynæcology He was named after his uncle, the Victorian philosopher, from whose influence he derived the catholic outlook combined with accuracy of detail that gave such depth to his opinion At the early age of 31 he became obstetric member of the U C H staff under Sir John Williams, with charge of an outside maternity averaging over 2000 cases yearly this gave him an immense experience in routine midwifery, and the low maternal death-rate was evidence of his skill as a master-craftsman When Williams retired Spencer as senior gynæcologist was able to develop the proper place of cæsarean section in difficult labour He was one of the first to introduce saline transfusion for grave hæmorrhage to recognise the importance of antenatal treatment, and to diagnose the correct presentation of the infant before labour Throughout his 38 years of hospital practice Spencer bore the stigma of professional aristocracy which led a colleague in his valedictory to say "So we see in Spencer an unusual personality, and when he leaves us we shall do more than miss his presence in the ward we shall look back, we who remember his work, and say We are glad to have been students in the Spencer era" And others may apply to himself the closing words of his Harveian oration " that most worthy, good and learned Dr, whose memory ought to bee had for ever in great esteem with midwives and child-bearing women"

Herbert Ritchie Spencer came of an old Warwickshire family, his father was associated with Thomas Brassey as a railroad contractor, and before entering University College, London, in 1879 he had had a strict grammar school education at Atherstone which left him with the love of the classics and the aptitude for modern languages that appears in his writings After qualifying in 1883 he held house appointments at U C H after which Gowers opened the way to an Australasian tour with the Earl of Bantry, and Wilson Fox one to Europe with the Earl of Dalhousie To Gowers he also owed the introduction to shorthand which made his case-notes so compendious and attractive with their cunning coloured drawings Pity that these are destined to remain hidden in hospital records His first published work to attract attention was a laborious study of the visceral hæmorrhages in the stillborn based on a series of 180 autopsies This enabled him to poke inimitable but devastating fun many years later at the "astonished" children born by Delmas's method of *accouchement sur rendezvous* All his later writings were of the same character for Spencer held it was better to place on record full and careful observations from which

ZINC CHLORIDE FOR FIRE FIGHTING

SIR,—I am at a loss to understand the objection taken by Messrs Parker, Moir & Co to my letter of May 24. This letter dealt solely with the dangers from a medical point of view which might arise from the use of solutions of zinc chloride, and I was careful to say that I was not in a position to express any opinion as to whether such solutions were greatly superior to water, but that unless that was so the possible dangers were such that the public should not be allowed unrestricted use of them. I would again emphasise that I have no knowledge of fire-fighting methods. Messrs Parker, Moir & Co state that Incendex (which contains zinc chloride) is over 70 times as efficient as water; therefore to use my expression such a solution is greatly superior to water and thus fulfils the conditions for use by the public.

In their letter of Aug. 30 they urge that a method must be devised to beat more efficiently the incendiary bomb and it is clear that they fully realise the nation-wide importance of this. Therefore I feel sure that they would not assert that their preparation was 70 times as efficient as water unless they were capable of satisfying the most stringent tests and had succeeded in convincing those who are responsible for our fire-fighting services. At the same time I feel it my duty to mention leaflet No. 4 published by the Fire Prevention Executive in which is quoted the following statement made by the Joint Parliamentary Secretary to the Ministry of Home Security in the House of Commons on May 21:

> "A number of proprietary chemical liquids are being sold, some at high prices, for which it is claimed that they readily extinguish incendiary bombs. Many of these have been tested by the Research and Experiments Department of the Ministry of Home Security, but in no case has any been found which can be recommended in preference to water. There is no substantial difference in their favour in the time taken to extinguish a bomb. Apart from this a far more important consideration is the necessity to be in a position to deal immediately with surrounding materials which are often set on fire by the bomb. For the dual purpose of extinguishing the bomb and the fire it causes, there is no liquid as cheap or as readily obtainable as water. Moreover, some of the liquids being sold are corrosive, some contain caustic substances dangerous to the eyes and others produce fumes and smoke which may be harmful, and in any case make fire fighting difficult. In these circumstances expenditure incurred on any such liquids would not be recognised for purposes of grant."

St Mary's Hospital, Paddington. G. ROCHE LYNCH.

"MOTHERS CAN SAVE 50,000 GALLONS OF MILK"

SIR,—Under this heading there appears in the provincial press a report of an address given as part of Sunderland's Food Week where the speaker is alleged to have said that if mothers would breast-feed their infants this large quantity of cow's milk could be saved per year in a town of Sunderland's size. It is time that such erroneous propaganda was stopped. More cannot be got out of anything than is put in. One of the important constituents of milk is calcium and this can only be derived from two sources (*a*) the mother's food and (*b*) the mother's bones. A diet low in calcium inevitably leads to a loss of lime from the maternal skeleton and teeth. To prevent this all too common a disaster, the food must be richer in calcium salts for a nursing mother than for one not suckling her infant. If her intake of cow's milk is not to be markedly increased during this critical period, some other foods rich in lime must be substituted. What are these foods? Apart from cheese, which is a milk product, we have the green vegetables, eggs and nuts. It has clearly been shown by experiments on lactating women that the bulk of green vegetables, &c., that must be fed to supply the necessary amount of calcium is so great as to produce digestive disturbances and subsequent lack of appetite for such foods. This leaves us with milk, milk products and eggs as main sources of food calcium. Dietetic experts are agreed that increased milk intake is the best means of nsuring a good milk output in the human. To this end ot [illegible]nistry of Food arranges that pregnant and lactat- sidere[illegible]ers shall have priority in the distribution of of 0 S g[illegible]. For every pint of milk produced at least a pint of milk must be given to the mother. That is, t would be no saving of cow's milk by a more comm practice of breast-feeding—if the mother's health is to be preserved.

D. BURNS.

Physiology Department, King's College,
Newcastle on-Tyne.

DRUG-FAST BACTERIA

SIR,—In your annotation of Aug. 23 you say that in the treatment of gonorrhœa with sulphanilamide a proportion of cases fail to react to the drug, and that most of these refractory cases, usually as a result of early insufficient dosage, have responded to treatment with the more active sulphapyridine. I agree that drug resistance is usually due to insufficient early dosage but there are some cases where the dosage has been adequate. Judging from one's failures alone there is very little to choose between the results obtained with sulphanilamide and sulphapyridine. Until the introduction of sulphathiazole changing from one sulphonamide to another, including sulphapyridine, had no effect on these resistant infections and the gonococcal discharge persisted. Sulphathiazole, which is even more rapid in its action than sulphapyridine, does cure some of these drug fast cases, but fever therapy is still necessary in the treatment of the failures.

Wimpole Street, W.1. A. H. HARKNESS.

A FATHER OF PUBLIC HEALTH

Johann Peter Frank, the pioneer of public health in Germany, has been strangely neglected, even in his own country; a few partial studies on single aspects have appeared from time to time, but no comprehensive treatise. One of the few German publications lately reaching England is a book by Dr. Hellmut Haubold on the life and work of Frank[1], but the reader is likely to find his expectation changing to foreboding when he sees the foreword by Gauleiter Burckel. Both expectation and foreboding are partly realised. Frank's biography occupies rather less than half the volume—hardly sufficient space in which to do justice to the subject. Several chapters in his life—notably his 10 years work in Italy, for which abundant material is available—are disposed of very summarily in order to leave space for a fuller treatment of the Viennese period. Then follow nine short chapters on various aspects of his work, with special emphasis on its philosophical aspects; it is here that National-Socialist prejudices, which obtrude occasionally throughout the book, are most in evidence. About a third of the whole is taken up with extracts from Frank's great "System einer vollstandigen medizinischen Polizey," selected almost exclusively to illustrate his views as a *Rassenpolitiker*. Frank's Medical Polity is a classical work of 18th century absolutism: the ruler of a state is regarded as standing to his subjects in the relation of a father to his children, amongst his duties being the preservation of the people's health and the promotion of a healthy race by appropriate laws. Frank's idea of the state was naturally that of the political structure he saw around him in the Empire of the period, with its conglomeration of German, Magyar, Slavonic and Baltic peoples. He lacked the concept of his contemporary Herder, of the nation as a mythical biological (racial) and political unity. According to Haubold, it is the tragedy of Germany that she had had to wait for more than a century before the complementary ideas of Herder and Frank could be united to realise the National-Socialist state of today. The book is thus not the impartial and definitive work on Frank that it might have been; nevertheless, it is the most considerable study which has yet appeared. The chapters on Frank's relations to the philosophical ideas of his time, though somewhat biased, represent an original contribution to our knowledge of this great pioneer in public health.

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[1] "Johann Peter Frank, der Gesundheits und Rassenpolitiker des 18 Jahrhunderts." Munich: J. F. Lehmanns Verlag. Pp. 346.

PADDINGTON MEDICAL SOCIETY.—A clinical meeting of this society will be held at Paddington Hospital, Harrow Road, London, W.9, on Tuesday, Sept. 9, at 2.30 P.M.

Notes, Comments and Abstracts

THE LESSON OF THE ONION

With the collapse of France last year and the difficulty of transport from the Mediterranean the possibility of import of onions ceased. Of this the British became painfully aware last autumn. Our home-grown stock was in no way equal to the demand and prices began to soar to astonishing heights so that the Ministry of Food stepped in and fixed the price. As a result onions practically disappeared from the market. Nor was this the only result. Leeks shot up to as much as a shilling a head in the open market, so keen is the public on the flavour of the onion tribe. Neither the Board of Agriculture nor the Ministry of Food—nor be it said the gardener and allotment holder—were to be caught that way again, and throughout the country could be seen fields and gardens green with the tiny spires of onion seedlings in the spring on land that had never grown onions before. Thinnings of onions were sold as spring onions and so ravenous were the public that microscopic plants sold at 1*d* each. Nor did things stop there. As the onions swelled and no longer by any stretch of imagination could be called spring onions they still found a ready sale at a price (calculated from purchases) of 5*s* 6*d* a pound. The possibility of an autumn crop of onions was being endangered by the cupidity of the grower and the extravagance of the purchaser. The Ministry of Food had to step in again and fix the price of the adolescent onion. Even this has not worked, for it appeared that 7½*d* a pound for salad onions in the hand was better than 5*d* a pound for mature onions in the autumn bush. The Ministry of Food had again to step in and distinguish a spring onion from any other. From the dietetic point of view perhaps the move to check the use of immature onions was questionable though maybe wise from the purely economic point of view. Vegetables are prized (dietetically that is) for their calcium, their iron, their vitamins A and C, and on those scores the spring onion defeats the mature bulb hands down. The respective values per 100 g. (3½ oz.) are for the spring onion 135 mg. Ca, 1.24 mg. Fe, 6000 I.U. vitamin A and 280 I.U. vitamin C, the corresponding figures for the mature onion being 31.2, 0.3, 14 and 52. It is a dietetic problem whether those immature onions should not have been canned against the winter when our sources of calcium, iron and vitamins A and C are diminished rather than allowed to mature, just as it is whether fruits should not be canned rather than jammed.

The onion illustrates the all too familiar observation: leave prices uncontrolled and they soar; control prices and commodities disappear off the market. It happened in the war of 1914–18. *Punch* in a cartoon commented on the fact, a rabbit put into the conjurer's top hat labelled "controlled price" disappeared. The phenomenon has been closely studied both during the interval of uneasy peace and now again by the I.L.O. in the earlier days of this war, and the dilemmas of governments, producers, middlemen and consumers set out for all to read. They do not make for serenity of mind. The function of the Food Controller is "so to guide the trade in the fundamental food commodities as to eliminate vicious speculation, extortion and wasteful practices and to stabilise prices in the essential staples." This has hardly been effected in the onion though whether it is a staple or not is debatable. The public say "yes" and the dietitian gives an ambiguous answer. We have been warned that the danger of piecemeal legislation is that unforeseen results happen. Control the price of X and the price of Y, its near substitute, soars. The onion was controlled and the leek became food for millionaires. "The gradual and inevitable growth of controls over the whole range of food prices due to the unforeseen effects of the control of some of them is a marked characteristic of war-time experience."[1]

How are the price controls to be made? Can they be regulated at some "fair" level (say) cost before the war plus a percentage, or on the basis of present-day costs of production? In the last war Beveridge said they proceeded by way of costings, conference and compromise, and Clynes freely rendered the same idea thus: "price fixing must rest less upon elaborate efforts at ascertaining accurate costs than upon experience and general observations." Price fixing, then, cannot be scientific or accurate and there will always be someone apart from the producer and distributor who feels himself aggrieved by a fixed price. Moreover price fixing without rationing is bound to lead to chicanery. On the other hand if price fixing and rationing are to go hand in hand and never to be separated it would entail a complication in ration books and book-keeping in the shops before which imagination quails. There is thus a dilemma before the Government: either it fails miserably to prevent profiteering or the disappearance of valuable commodities on the one hand, or it holds up the distribution of those commodities by an impossible weight of bureaucracy and book-keeping. It is a dilemma between laissez-faire economics and complete totalitarian economics.

One escape from the dilemma has the support of both economist and dietitian. Maynard Keynes[2] put forward the idea of the free guaranteed issue of an "iron ration" and a similar suggestion was adopted by Orr and Lubbock.[3] This plan appears attractive when dealing with stark necessities, but has failed to impress the bureaucratic mind. It would cut down the huge expenditure on clerical work and would leave the prices of the unnecessary food condiments to find their own economic level. That such ideas have crossed the mind of the Minister of Food has been obvious in sundry outbursts—e.g., the price control of turkeys at Christmas, 1940. The economics of the onion throw some light on the problem. Meantime we must each be content with our seasonal 2 lb.

A COMPACT TRANSFUSION OUTFIT

Drug Houses of Australia Export Ltd., of London, have now available their Soluvac Transfusion Pannier. This contains 4 litres of 5% dextrose in normal saline and a similar quantity in Ringer's solution, 2 litres of normal saline, five sets for giving these solutions complete with filters, two sets for collecting blood from donors, two sets of instruments and accessories, two sets for blood-grouping and twenty ampoules of 100 c.cm. citrate-glucose solution. The necessary parts are packed sterile for use. Solutions for replenishment of panniers are available in cartons of ten flasks.

A NEW BRANCH OF NURSING

Industry needs for the proper care of its members certain social services which may at first sight appear to overlap those already in existence. One of these is nursing. The uses of the nurse are increasingly important in factory life and are by no means confined to the care of the injured but cover a wide field which is preventive as well as curative, educational as well as administrative. A man who has been injured at work differs in no wise as regards the burden to himself and to the community from one who has been sick or injured off duty. Both are temporarily non-producers. In either case if by skilled rehabilitation speedier return to full activity can be procured or if by a system of graded work function and health can be more efficiently restored everyone stands to gain. The practitioner should be able to rely on an intelligent nurse to assist in aftercare and supervise the patient's first efforts to resume modified or full duty; the nurse must of course be well selected and properly trained, and she should have certain temperamental qualities if she is to use to the full her opportunities for the education of juveniles and adolescents in the art of living. Industrial and social legislation is putting more and more on her shoulders. Hers is a very full-time job which demands a set of mental and technical equipment the nature of which it is not easy for her to find clearly defined. Even our own profession is a little hazy about what it is reasonable and proper to expect from the nurse in any plant where as a result of Ministry of Labour initiative or employers' foresight, she has become installed. Miss West has made a valiant attempt to remedy this with her handbook.[4] She knows her job and writes well though some of the deductions could be drawn or on which working theories could be based than to write text-books of ephemeral value His Harveian oration, for instance, by its sheer weight of accumulated evidence established William Harvey as a famous obstetrician although his "medicinal observations" have been lost And the FitzPatrick lectures not only told an entertaining tale of British midwifery but redeemed it from disparaging comparison with the story of progress in other countries In the same way the material content of a Lloyd Roberts lecture and of a presidential address to the Medical Society justified his use of the word renaissance to describe the more recent changes in obstetric practice

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[1] Studies in War Economics. Control of Food Prices. Published in the *Studies and Reports* of the International Labour Office. London. 1941.

[2] How to pay for the War. London. 1940.

[3] Feeding the People in War time. London. 1940.

[4] A Handbook for Industrial Nurses. By Marion M. West, S.R.N., S.C.M. London: Edward Arnold & Co. Pp. 134. 3*s* 6*d*.

Of the personal qualities behind this achievement a colleague writes Herbert Spencer was a striking personality, robust both in body and mind He was a first-class clinician and his knowledge was founded not only on his own large experience but upon a profound acquaintance with the literature of his subject His was indeed one of the most familiar figures in the library of the Royal Society of Medicine An innate dislike for unproven novelties and a marked conservatism made him slow to accept new views or new methods until he had examined them with thoroughness or put them to a practical test It is true that he often clung to old methods when they had been abandoned by others too apt in his opinion to be led away by the glamour of the new, yet his results were so uniformly good that those who had the opportunity of watching his work knew what a master of his craft he really was As a consultant he was reliable and helpful, and although some of his patients were at first a little alarmed by his brusque manner they had implicit faith in his judgment and often came to regard him with affection As a committeeman there were times when his partiality for the rôle of the opposition made him a little trying, but his devotion to his hospital and school, his perfect good-humour and his disinterestedness led his colleagues to forgive and forget the veneer of wayward obstruction As an operator he was methodical and careful, as a teacher sound and accurate, as a clinician painstaking and skilful—a worthy successor to his master John Williams

In his spare time Spencer proved himself no mean sportsman Having carried a gun from a time when it was longer than himself he was a keen and clean shot, he was also a good fisherman and enjoyed all outdoor things, so that his companionship on a country walk was a pleasure His many honours, both abroad and at home, must be left to his memory but his unique library of ancient books on obstetrics dating back to the sixteenth century should be secured by some learned society

DAVID HUGH MANSON-BAHR

M B CAMB, M R C S, D T M & H

David Manson-Bahr, who has died suddenly in Kenya at the age of 25, was the second son of Sir Philip Manson-Bahr and grandson of Patrick Manson Educated at Rugby and Trinity College, Cambridge, he completed his medical education at the London Hospital and qualified in 1940 After serving as house-surgeon at the Northampton General Hospital he entered the Colonial Medical Service and took the diploma in tropical medicine With his heredity and upbringing it was natural that he should be attracted by the many-sided problems of medicine in the tropics and it is sad that he has been cut off at the commencement of a promising career in Kenya Of fine physique he was proficient at all games, especially as a hardworking useful rugby forward He was tried out on several occasions for Cambridge University and played regularly for his hospital and the United Hospitals side He was a prominent member of the Falconers Club, and he was seen at his best flying his falcons, or tramping the fields with his dog and gun He will be greatly missed for his cheerful and generous disposition by a wide circle of friends

JOHN JAMESON EVANS

M B EDIN, M D BIRM, F R C S

Mr Jameson Evans, who died at Aberdovey on Aug 13 in his 70th year was consulting surgeon to the Birmingham Eye Hospital and one of the best-known ophthalmologists in the Midlands He had a profound knowledge of the retina in health and disease and made numerous and valuable contributions to ophthalmic literature, but for the war he would have opened the discussion, at the postponed Oxford Ophthalmological Congress of 1940, on the prevention of operative complications following extraction of cataract As a lecturer he was a master of concise and pregnant exposition and his wide range of culture, his quickness of mind and his abundant human vitality and wit made him a teacher of unusual power Born at Carmarthen he was educated at Lampeter and Edinburgh where he qualified in 1892 with a wide range of honours After three years of surgical residence at the infirmary in his native town he secured a similar appointment at the Birmingham Eye Hospital with which he was associated for the rest of his life In all his work he united a wide and simple human sympathy with a helpfulness that made an abiding impression on those with whom he came in contact He leaves a widow, the daughter of Principal T C Edwards of Aberystwyth, and two sons both of whom are practising medicine He was never happier than at his home and on the links at Aberdovey

ANTHONY JAMES MOON

M B CAMB, LIEUTENANT, R A M C

THE death on active service is announced of Lieutenant Anthony Moon, son of Dr A T Moon of Wallington Lieutenant Moon who was 29 years of age was educated at Tonbridge School, Pembroke College, Cambridge, and the London Hospital, qualifying in 1936 After holding several posts in the outpatient department he was resident in the children's department and the septic block In between his appointments at the London he also spent several months as house-surgeon at the Queen's Hospital, Hackney

French & Co Wallington

"Tony Moon was especially fond of children and he often told me," writes E C B B, "that his ambition was to specialise in that work, as his six months in the children's department were the happiest of his time at the London When he was in charge of the septic wards he showed the greatest keenness in his work, and was at his best in cases of acute osteomyelitis, for its treatment combined his love of children with his interest in the modern therapy of surgical infections At the outbreak of war he was stationed under the E M S at Whipps Cross hospital and his ambition was to form a unit studying the problems of war-wound infection In the country he was never happier than when off on some trip into the wilds either walking, fishing or duck-shooting Tony was a great worker and a grand companion"

In December, 1939, Moon married Aileen Stafford and in March, 1940, he joined the R A M C He was soon transferred to France and died while being evacuated from that country He was last seen attending to the wounded on the deck of his ship five minutes before she turned over and sank

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MASS RADIOGRAPHY OF POLES IN GERMANY —In a circular issued on April 4 the German minister for the interior made it compulsory to examine by screen or miniature film the chests of all Polish civilian workers on their arrival in Germany The examination will be carried out with the cooperation of the labour exchanges and the workers' cards will be stamped with the date of the examination, but no indication of its result will be shown

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A NEW BRANCH OF NURSING

INDUSTRY needs for the proper care of its members certain social services which may at first sight appear to overlap those already in existence One of these is nursing The uses of the nurse are increasingly important in factory life and are by no means confined to the care of the injured but cover a wide field which is preventive as well as curative educational as well as administrative A man who has been injured at work differs in no wise as regards the burden to himself and to the community from one who has been sick or injured off duty Both are temporarily non-producers In either case if by skilled rehabilitation speedier return to full activity can be procured or if by a system of graded work function and health can be more efficiently restored everyone stands to gain The practitioner should be able to rely on an intelligent nurse to assist in aftercare and supervise the patient's first efforts to resume modified or full duty , the nurse must of course be well selected and properly trained and she should have certain temperamental qualities if she is to use to the full her opportunities for the education of juveniles and adolescents in the art of living Industrial and social legislation is putting more and more on her shoulders Hers is a very full-time job which demands a set of mental and technical equipment the nature of which it is not easy for her to find clearly defined Even our own profession is a little hazy about what it is reasonable and proper to expect from the nurse in any plant where as a result of Ministry of Labour initiative or employers' foresight, she has become installed Miss West has made a valiant attempt to remedy this with her handbook[4] She knows her job and writes well though some of the legalities might have found a happier shelter in an appendix Her little book is a definite contribution both to the war effort and to the process of social rebuilding that must follow There are omissions and debatable points, but she has got the spirit of the thing and the essential data, which are not otherwise readily obtainable, neatly packed into a concise and basically accurate survey Her book should appeal to practitioners in contact with industry, to employers of labour, and to nurses who are already in industry or who are among that band of energetic, ardent and yet practical women who are looking for some contribution to the war effort which will carry over into the process of redesigning and rebuilding our shaken social fabric This is a book to read and debate but not lightly to find fault with

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[1] Studies in War Economics Control of Food Prices Published in the *Studies and Reports* of the International Labour Office London 1941

[2] How to pay for the War London 1940

[3] Feeding the People in War time London 1940

[4] A Handbook for Industrial Nurses by Marion M West S R N , S C M London Edward Arnold & Co Pp 134 3*s* 6*d*

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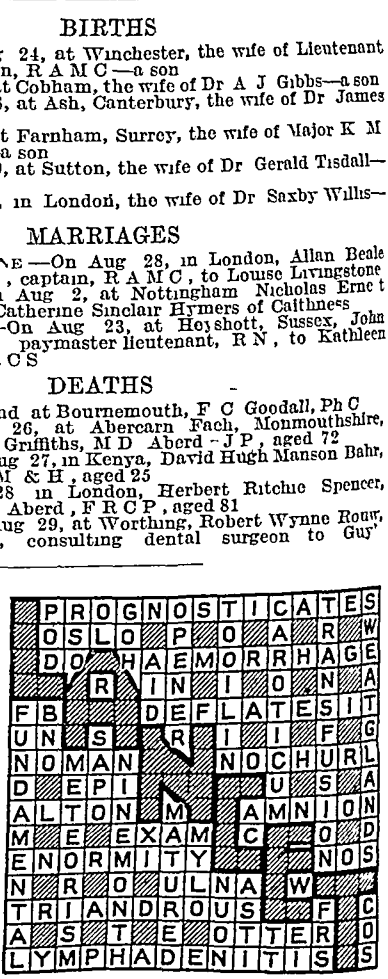
THE

LANCET

CROSSWORD

LAST WEEK'S

SOLUTION



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ORIGINAL ARTICLES

PREPARATION OF ALUM-PRECIPITATED TOXOID FOR USE AS AN IMMUNISING AGENT

M BARR,
M SC LOND , A I C

C G POPE,
D SC BRIST

A T GLENNY
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F V LINGGOOD,
B SC , PH D LOND , A R C S

(*Wellcome Physiological Research Laboratories*)

IT has been known since the work of Roux and Yersin (1889) that bacterial toxins are precipitated by the addition of potash alum In 1926 Glenny, Pope, Waddington and Wallace showed that toxoids were also precipitated by alum and that a suspension of the precipitate had much higher antigenic efficiency for the same combining power This was demonstrated with guineapigs, rabbits and horses (Glenny and Waddington 1928 Glenny 1930) In 1931 Glenny and Barr investigated the precipitation of diphtheria toxoid by potash alum and emphasised the necessity for removing, as far as possible, non-specific materials from alum-precipitated toxoid intended for human use Further developments of this work have since been published For example the production of toxoid suitable for conversion into alum-precipitated toxoid has been reported by Pope and Linggood (1939) These workers devised a medium of low nitrogen content, which overcame many of the disadvantages of earlier types of medium, and on which it is possible to secure consistently filtrates having an Lf value of about 50 units per c cm (The higher Lf values have been obtained by careful control of the iron content of the medium) These culture filtrates, after conversion into toxoid by formalin, can be purified considerably by suitable treatment with charcoal Other procedures for increasing the purity of the final product have also been introduced

In view of the great importance which these alum-precipitated toxoids have attained as immunising agents, and of the disturbing comments which have lately appeared (Bousfield 1941), we feel that a detailed account of the methods of preparation used in these laboratories would be of value

PREPARATION OF TOXIN AND TOXOID

The toxin is prepared essentially as described by Pope nd Linggood (1939) but the iron content of the medium adjusted by adding 0 025 mg of iron as ferrous sulphate ssolved in sodium citrate to each litre (1 24 g $FeSO_4$ H_2O and 12 g sodium citrate is dissolved in 500 c cm nd 1 c cm of this solution is added to 20 litres of edium) Culture filtrates containing from 40 to 60 f units per c cm are bulked together, and the amino-itrogen content (Pope and Stevens 1939) determined rom this value, the amount of formalin (40% formalde-yde) to be added is determined according to the followng figures

Amino N (mg /10 c cm)	Adjust pH of toxin with acetic acid to	Formalin %
5– 6	7 4	0 4
6– 8	7 5	0 5
8–10	7 6	0 6

The pH of the culture filtrates is adjusted to the value hown before adding formalin , this is necessary to keep the material at a pH between 7 and 8 during toxoiding nd so prevent the production of slow flocculating toxoid Toxoiding is carried out at 37–38° C for 3–4 weeks until the material passes the test described below

In view of the fact that no antitoxin is introduced nto this preparation, it is essential that the toxoid should contain no residual toxicity whatsoever It is our custom, therefore, when the material appears completely toxoided, as judged by the intracutaneous injection of undilute toxoid into guineapigs to repeat this test for non-toxicity using the skin of rabbits, which are even more susceptible than guineapigs to diphtheria toxin This final test is performed on every bottle of every batch intended for use in the preparation of A P T The completely toxoided material is then blended and purified by means of charcoal treatment

Much work has been done in these laboratories with the object of finding the most suitable brand of charcoal for this purpose The object of the charcoal treatment is to remove as much colour and non-specific nitrogenous material as possible, with minimal loss of specific toxoid Some brands of charcoal are quite useless, and one with a selective action is necessary The results of treatment of a single batch with three different brands of charcoal is shown in table I

TABLE I—EFFECT OF VARYING QUANTITIES OF THREE BRANDS OF CHARCOAL ON THE SAME BATCH OF TOXOID

Grammes of charcoal per 100 c cm of toxoid	Charcoal 1		Charcoal 2		Charcoal 3	
	Yield of specific toxoid	Increase in purity	Yield of specific toxoid	Increase in purity	Yield of specific toxoid	Increase in purity
	%		%		%	
1			91 3	1 42		
1 5			84 8	1 53		
2	100	1 36	76 1	1 62	89 1	1 34
3	93 5	1 46	48	1 26	84 8	1 53
4	92 4	1 54			82 6	1 9
5	80 4	1 5			76 1	2 21

The only brand of charcoal which will give a two-fold purification is charcoal 3, 4% of which yields a product containing 82 6% of the original flocculating units, and 1 9 times as pure 5% increases the purity, with a drop in yield to 76% Neither charcoal 1 which is weak in activity, nor charcoal 2, which is overactive and not sufficiently selective, give satisfactory results when compared with charcoal 3, though both will increase the purity of the toxoid to 1 5 times that of the untreated toxoid The amount of a suitable charcoal necessary to purify toxoids in this way varies from one batch of toxoid to another It is therefore necessary to determine the optimum amount to use for each batch of toxoid intended for the preparation of A P T This is done in the experimental laboratory by making mixtures of toxoid with known amounts of charcoal, allowing to stand for a definite period of time, filtering, and comparing the flocculating value and total nitrogen content of the filtrates with those of the untreated toxoid The amount chosen for use in the bulk preparation is one which shows a good increase in purity (Lf doses/mg N) with a reasonable yield of specific toxoid *

A sample of the charcoal-treated bulk toxoid is then investigated in the experimental laboratory to determine the optimal amount of potash alum to add Six different mixtures are made, containing a fixed volume of toxoid and varying quantities of alum (added in the form of a 10% solution) The mixtures are left to stand overnight , the supernatant liquids are then withdrawn and the precipitates washed with saline The saline washing is repeated twice, and is followed by a washing with a solution containing 0 5% disodium phosphate (see Linggood 1939) This washing dissolves out some of the precipitate, and the effect varies according to the quantity of alum added originally to the toxoid With some precipitates the loss of specific toxoid is considerable, but with others it is negligible although much non-specific nitrogenous material may be dissolved out This can be seen in table II After the phosphate washings, the precipitates are given a further washing with saline, and finally suspended in saline to the original volume Each precipitate is then tested for toxoid content by flocculation, and estimations of total nitrogen are made In order to test the alum precipitates by flocculation it is necessary to dissolve them , it is our practice to add a small quantity of sodium citrate crystals to a portion of the suspension and place the mixture in a bath at 45–50° C

The optimal amount of alum to be added to the main bulk of toxoid is decided from considerations of the yield of flocculating units and the purity (Lf/mg N) of the precipitates legalities might have found a happier shelter in an appendix Her little book is a definite contribution both to the war effort and to the process of social rebuilding that must follow There are omissions and debatable points but she has got the spirit of the thing and the essential data which are not otherwise readily obtainable, neatly packed into a concise and basically accurate survey Her book should appeal to practitioners in contact with industry to employers of labour, and to nurses who are already in industry or who are among that band of energetic ardent and yet practical women who are looking for some contribution to the war effort which will carry over into the process of redesigning and rebuilding our shaken social fabric This is a book to read and debate but not lightly to find fault with

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* We have found that ' Eponit C " charcoal is the most suitable for purifying toxoids, but owing to the war it is no longer obtainable We are now experimenting with various British charcoals and find that these tend to be somewhat overactive but can be used with success in smaller quantities

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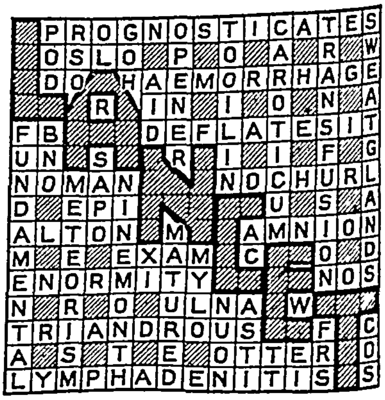
THE LANCET CROSSWORD LAST WEEK'S SOLUTION



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The only brand of charcoal which will give a two-fold purification is charcoal 3, 4% of which yields a product containing 82 6% of the original flocculating units, and 1 9 times as pure 5% increases the purity, with a drop in yield to 76% Neither charcoal 1 which is weak in activity, nor charcoal 2, which is overactive and not sufficiently selective, give satisfactory results when compared with charcoal 3 though both will increase the purity of the toxoid to 1 5 times that of the untreated toxoid The amount of a suitable charcoal necessary to purify toxoids in this way varies from one batch of toxoid to another It is therefore necessary to determine the optimum amount to use for each batch of toxoid intended for the preparation of A P T This is done in the experimental laboratory by making mixtures of toxoid with known amounts of charcoal allowing to stand for a definite period of time, filtering and comparing the flocculating value and total nitrogen content of the filtrates with those of the untreated toxoid The amount chosen for use in the bulk preparation is one which shows a good increase in purity (Lf doses/mg N) with a reasonable yield of specific toxoid *

A sample of the charcoal-treated bulk toxoid is then investigated in the experimental laboratory to determine the optimal amount of potash alum to add. Six different mixtures are made, containing a fixed volume of toxoid and varying quantities of alum (added in the form of a 10% solution) The mixtures are left to stand overnight , the supernatant liquids are then withdrawn and the precipitates washed with saline The saline washing is repeated twice and is followed by a washing with a solution containing 0 5% disodium phosphate (see Linggood 1939) This washing dissolves out some of the precipitate, and the effect varies according to the quantity of alum added originally to the toxoid With some precipitates the loss of specific toxoid is considerable but with others it is negligible although much non-specific nitrogenous material may be dissolved out This can be seen in table II After the phosphate washings, the precipitates are given a further washing with saline and finally suspended in saline to the original volume Each precipitate is then tested for toxoid content by flocculation and estimations of total nitrogen are made In order to test the alum precipitates by flocculation it is necessary to dissolve them , it is our practice to add a small quantity of sodium citrate crystals to a portion of the suspension and place the mixture in a bath at 45–50° C

The optimal amount of alum to be added to the main bulk of toxoid is decided from considerations of the yield of flocculating units and the purity (Lf/mg N) of the precipitates

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* We have found that ' Eponit C " charcoal is the most suitable for purifying toxoids but owing to the war it is no longer obtainable We are now experimenting with various British charcoals and find that these tend to be somewhat overactive but can be used with success in smaller quantities

This varies not only with the type of medium on which the toxoids are made but from one batch to another made by exactly the same method As in the case of charcoal treatment our aim is to obtain good purification with minimal loss of specific toxoid

TABLE II—EFFECT OF A 0 5% AQUEOUS SOLUTION OF DISODIUM PHOSPHATE ($Na_2HPO_4,12H_2O$) ON WASHED ALUM TOXOID PRECIPITATES

Alum added for precipitation (%)	Control (no disodium phosphate)		Precipitates treated with disodium phosphate	
	Flocculating units in precipitate (%)	Lf doses per mg of N	Flocculating units in precipitate (%)	Lf doses per mg of N
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2	89	125	89	248
3	86	137	86	201
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The bulk toxoid is precipitated aseptically with the amount of alum decided on from these experimental tests, and the same procedure of saline, phosphate, and final saline washings is followed The supernatant liquid is then drawn off and the volume of the suspension made up to about half that of the original toxoid, a sample is then taken This sample is dissolved by means of sodium citrate and tested by flocculation, by calculation from the value so obtained sufficient Merthiolate saline is added to make the A P T contain 50–55 Lf doses per c cm, and a final concentration of 0 01% merthiolate It therefore follows that all our batches are of approximately equal strength as measured by combining-power tests, and as we shall show later there is but little variation in antigenic efficiency as indicated by the antitoxic value of the sera of guineapigs injected with many different preparations

TESTS FOR ANTIGENIC EFFICIENCY

The antigenic efficiency of every batch of A P T is tested in guineapigs, which are injected with two doses either of 0 01 c cm or 0 05 c cm separated by an interval of four weeks Schick tests are done ten or eleven days after the second injection to comply with the regulations under the Therapeutic Substances Act The animals are bled two days later when the tests are read This interval after the injection of the Schick dose of toxin is too short for any immunity response to develop from this injection Determinations of antitoxic value are made on the serum from each guineapig by intradermic titrations in guineapigs or rabbits When sufficient animals are available the serum of each guineapig is tested at approximately 100% differences The final result of each batch of prophylactic is recorded as the geometric mean of the antitoxic values of each guineapig

Use of the geometric mean tends to lay too much stress on the occasional poor responder but is definitely to be preferred to the arithmetical mean or the value of pooled sera During a period of acute shortage of laboratory animals, preliminary tests were made on individual guineapig sera at wide limits, and separate pools were made of those between 0 1 and 1, between 1 and 10, and those over 10 units per c cm The geometric mean of the antitoxic values of the separate pools is taken as the measure of antigenic response We have recorded below only those sera which have been tested individually because the two methods are not strictly comparable When individual tests are done the values recorded are underestimates—e g, a value of 5 is recorded if a serum is known to be over 5 and under 10 units per c cm The method of pooling gives higher figures because the individual value of each pool represents the arithmetic mean of its constituents

Recently we have tested 70 batches of A P T, representing a total of several thousand litres of finished product Of 18 batches tested by means of two injections of 0 01 c cm one failed completely Other tests on the same batch were successful and it is almost certain that some technical error occurred in this test A total of 214 guineapigs were used for testing the other 17 batches Of these, 212 were Schick-negative, of the 2 positive reactors 1 was found to contain under 0 01 unit of antitoxin per c cm and the other over 1 unit, indicating that the Schick test was incorrectly read In experience a non-specific reaction read as positive is v rare, occurring only once in several thousand tests T geometric means of individual values varied from 1 2 to 3 3 with an average of 2 2 units per c cm

A total of 814 guineapigs were used to test 69 batches by means of two injections of 0 05 c cm, all were Schick negative The geometric means of 44 batches individually tested varied from 1 35 to 6 8, averaging 3 9 units per c cm Tests were made at all times of the year using guineapigs from many sources Of all the batches tested only one failed to produce a mean value of at least 2 units per c cm after two injections of 0 05 c cm or less The one failure occurred when rabbits were used for testing the guineapig sera Tests on individual sera show very little scatter (table III)

The majority of guineapigs with 0 005 unit or more of antitoxin per c cm are Schick negative Over 85% of guineapigs injected with two doses of 0 05 c cm contained at least 400 times this amount of antitoxin No quantitative measurement can therefore be made by means of the Schick tests until further work has been done on the effect of much lower doses of A P T The scarcity of experimental animals has prevented our working out the smallest amount of A P T that can be given by the two-dose method which will just produce a Schick negative state in guineapigs, or the dose which will produce this effect when given singly A few tests were made on the response to single injections of 0 05 c cm and all 23 guineapigs injected produced over 0 1 unit in four to six weeks It is possible, however that A P T administered in very small doses involving dilution may be absorbed so rapidly that a true measure of the antigenic efficiency of undilute A P T cannot be gauged by tests made using very small dosage The estimation of the amount of antitoxin produced in guineapigs by a reasonable dosage appears the most satisfactory way of assessing any particular product

TABLE III—TESTS ON INDIVIDUAL SERA

Antitoxic units per c cm	Number of guinea pigs injected with two doses of		Antitoxic units per c cm	Number of guinea pigs injected with two doses of	
	0 01 c cm	0 05 c cm		0 01 c cm	0 05 c cm
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0 01	1	0	2 0	85	205
0 1	2	5	5 0	43	169
0 2	3	2	10 0	18	61
0 5	12	19	25 0	1	1

An easier method that must be further explored consists of testing the immunity produced in guineapigs by a form of multiple Schick testing The test dose to be used is so large that it need no longer be measured in terms of Schick doses but in terms of the Lf dose of a toxin We have tested three batches of A P T on 44 guineapigs by this method The guineapigs received two injections of 0 05 c cm of A P T at four weeks' interval, twelve days after the last injection they were given 0 1 Lf (100 times Schick dose) and 1 Lf of toxin intracutaneously The smaller dose caused no reaction in any guineapig and 35 (80%) did not react to 1 Lf of toxin We hope shortly to link up the antitoxin produced in guineapigs with their tolerance to toxin in terms of Lf doses and to adopt this method as a routine

DISCUSSION

Our work has been done in the laboratories where the use of alum to enhance the efficiency of antigens was discovered, where alum toxoid was first used in the immunisation of horses, first prepared and recommended for human immunisation, and first given for brevity the name A P T We and former colleagues here have been concerned constantly to improve the product, by aiming at standards of purity and efficiency which have steadily risen with experience The preparation has acquired a wide reputation in the immunisation of children, particularly because of its effectiveness in two doses, in contrast to the usual course of three doses needed with the weaker preparations, T A F, F T and T A M But if a preparation is to be described as A P T, with the implication that it will thus safely immunise in two small doses, it must be prepared and tested by methods which will give it this efficiency, and it seems to us likely that methods which have recently been described by other workers will be found to fall short of this requirement at more than one point

We hope that the procedure we have here described, representing the stage now reached by some ten years of experience, will be further and progressively improved by workers in other laboratories, as well as by ourselves With a view to assisting such progress, it may be useful to set out the following points in our present practice to which we attach importance

1 The aim is to obtain, in the final product, an adequate concentration of flocculation equivalents (we require 50 Lf per c cm) without overloading it with unspecific materials To achieve this we have found it desirable to start with a toxoid having itself about 50 Lf per c cm There may well be methods by which the same specific potency and purity can be attained in an A P.T made from a much weaker toxoid, but we have not yet discovered them

2 Addition of alum is not adjusted to the point of producing the maximum yield of precipitate The amount added is that found, by trial, to give a precipitate of high activity, low content of non specific impurities and a reasonably good yield of the original toxoid

3 We use alum alone for the precipitation A complex containing toxoid can be obtained by adding aluminium hydroxide to formol toxoid, and another by adding alum and acid, but neither of these can be regarded as identical with that produced by alum alone It has been found by some of our colleagues that the precipitate with alum and acid, in particular, contains a more soluble "acid precipitate," in addition to the less soluble "alum precipitate," and it is not safe to assume that these are equal in immunising potency. It was to the alum precipitate alone that the name "A P T" was first applied We plead for its restriction to this original sense Some variation in the immunising potency of preparations giving similar flocculation values may still be inevitable, but it is the more important not to admit any which can be excluded

4 It has long been known that the use of phenol as a preservative, in the final suspension, damages the antigen, so that its immunising potency falls rapidly We avoid using phenol at any stage of the preparation, as well as in the final product

5 The official "test for potency as an immunising antigen," in the regulations under the Therapeutic Substances Act, was formulated in 1931, before A P T came into use, and must obviously have been framed with reference to the types of diphtheria prophylactic then generally available, of which *three* injections are required for immunising a human subject In the absence of any official test specially applicable to A P T, this stronger preparation has only to pass the minimum tests thus prescribed for the earlier and weaker ones It is easy to show that relatively very weak preparations of A P T will pass this guineapig test with ease A P T is a more potent immunising agent, not only of man but of the guineapig, and there is no ground for the assumption that the ratio of its superiority is the same in the two cases Our own evidence suggests that precipitating a toxoid with alum increases its immunising effect, on the guineapig as much as a hundred-fold We have accordingly demanded of our final product, made up to contain 50 Lf per c cm, that, with the two small doses we have indicated, it shall raise the immunity of guineapigs to the level at which they give a negative response, not merely to 1 Schick test dose, but to at least 100 such doses

The advance of knowledge of the properties of A P.T has been so rapid and so recent, and its publication has hitherto been so incomplete and scattered, that official regulations for its control could not be expected to keep pace with the development of its production We hope that the details here recorded will facilitate an early definition of requirements and tests for A P T as such We are familiar with the difficulty of measuring immunising potency with any approach to accuracy, but it is clearly important that official tests shall not be open to wide differences of interpretation It ought to be possible, at least, to ensure and to impose a common aim and understanding with regard to the measurement and notation of the strength of A P T and the consequent adjustment of its dosage

SUMMARY

A P T produced at these laboratories contains 50 Lf doses of toxoid per c cm

Guineapigs receiving two injections of 0 05 c cm (or less) at four weeks' interval produce 2 units of antitoxin per c cm of serum within ten days of the second injection

Such guineapigs can be tested by the intracutaneous injection of from 0 1 to 1 Lf dose of toxin The exact level of immunity to be used as a criterion of potency has not yet been fixed

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LIVER EXTRACT IN TREATMENT OF TROPICAL MACROCYTIC ANÆMIA

H C TROWELL, M D Lond, M R C P
MEDICAL OFFICER UGANDA LECTURER IN MEDICINE IN THE UGANDA MEDICAL SCHOOL

THE treatment of nutritional tropical anæmia is not nearly as satisfactory as that of the allied condition, pernicious anæmia Wills (1933) discovered the value of Marmite, and the textbooks still insist on it, but few patients can tolerate the necessary ½–2 oz a day, and the treatment is expensive Wills has now discarded marmite in favour of liver extracts

In pernicious anæmia ½ lb of whole liver daily is usually curative, but in tropical macrocytic anæmia about four times this amount is required, which is too much for any patient to consume Better success has attended the use of crude liver extracts administered by injection

Campolon has been more extensively used than any other product, 1 c cm of the extract is derived from 5 g of raw liver It has given uniformly good results in the hands of more than a dozen different investigators, and cases in which it has proved ineffective have been rare Dosage varies, but most workers find that 5–10 c cm daily is needed, the same dose given once a week is as a rule successful in pernicious anæmia Foy and Kondi (1939) give up to 12 c cm in the hæmolytic variety of macrocytic anæmia, in the non-hæmolytic variety, which seems to be commoner in India than elsewhere, many workers report that campolon is effective when given in doses of only 2 c cm daily This represents experience up to the outbreak of war, when it became increasingly difficult to get campolon I am aware of no reports on Hepatex Some reports, favourable on the whole, have been made on the more potent Neo-hepatex, Wills (1938) used it successfully on 4 cases of non-hæmolytic macrocytic anæmia, Anderson and Roberts (1940) gave 2 c cm daily for three days, and then 2 c cm weekly to 4 adult cases, 2 of which appear to fall into the hæmolytic variety of Fairley (1938) and 2 into the non-hæmolytic variety of Wills In 9 cases of my own, neo-hepatex was successful in 6 and failed in 3, owing either to intercurrent disease (chronic nephritis or tuberculosis) or to insufficient dosage When less than 2 c cm was given daily the response was poor, and in some cases 4 c cm was needed My experience confirms that of others that larger doses are required for the hæmolytic variety of the disease (Trowell 1940) As far as I know, nobody has reported total failure with neo-hepatex Hepatex-T contains liver, vitamin B_1, riboflavine, nicotinic acid and vitamin B_6 I have seen no reports on its effects, and it seems to me unsatisfactory to administer a mixture of liver and the vitamin-B complex

Earlier work on marmite led to the hope that the vitamin-B complex would yield either Castle's extrinsic factor or else some hæmopoietic factor needed in the

This varies not only with the type of medium on which the toxoids are made but from one batch to another made by exactly the same method As in the case of charcoal treatment our aim is to obtain good purification with minimal loss of specific toxoid

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LIVER EXTRACT IN TREATMENT OF TROPICAL MACROCYTIC ANÆMIA

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THE treatment of nutritional tropical anæmia is not nearly as satisfactory as that of the allied condition, pernicious anæmia Wills (1933) discovered the value of Marmite and the textbooks still insist on it: but few patients can tolerate the necessary 1–2 oz a day; and the treatment is expensive. Wills has now discarded marmite in favour of liver extracts.

In pernicious anæmia ½ lb of whole liver daily is usually curative, but in tropical macrocytic anæmia about four times this amount is required which is too much for any patient to consume Better success has attended the use of crude liver extracts administered by injection.

Campolon has been more extensively used than any other product: 1 c cm. of the extract is derived from 5 g of raw liver. It has given uniformly good results in the hands of more than a dozen different investigators, and cases in which it has proved ineffective have been rare. Dosage varies but most workers find that 5–10 c cm daily is needed: the same dose given once a week is as a rule successful in pernicious anæmia Fox and Kondi (1939) give up to 12 c cm. in the hæmolytic variety of macrocytic anæmia: in the non-hæmolytic variety, which seems to be commoner in India than elsewhere many workers report that campolon is effective when given in doses of only 2 c cm. daily This represents experience up to the outbreak of war, when it became increasingly difficult to get campolon. I am aware of no reports on Hepatex Some reports favourable on the whole, have been made on the more potent Neo-hepatex: Wills (1938) used it successfully on 4 cases of non-hæmolytic macrocytic anæmia: Anderson and Roberts (1940) gave 2 c cm. daily for three days and then 2 c cm. weekly to 4 adult cases 2 of which appear to fall into the hæmolytic variety of Fairley (1938) and 2 into the non-hæmolytic variety of Wills. In 9 cases of my own, neo-hepatex was successful in 6 and failed in 3 owing either to intercurrent disease (chronic nephritis or tuberculosis) or to insufficient dosage. When less than 2 c cm was given daily the response was poor and in some cases 4 c cm was needed. My experience confirms that of others that larger doses are required for the hæmolytic variety of the disease (Trowell 1940) As far as I know, nobody has reported total failure with neo-hepatex. Hepatex-T contains liver, vitamin B_1 riboflavine nicotinic acid and vitamin B_6 I have seen no reports on its effects, and it seems to me unsatisfactory to administer a mixture of liver and the vitamin-B complex

Earlier work on marmite led to the hope that the vitamin-B complex would yield either Castle's extrinsic factor or else some hæmopoietic factor needed in the pernicious-anæmia group Attempts to isolate these factors have failed, and the administration of fractions of the vitamin-B complex in tropical macrocytic anæmia rests on no certain scientific basis

Anahæmin an extremely concentrated liver fraction, though effective in the treatment of pernicious anæmia has been found to have only a limited action in tropical microcytic anæmia Wills (1938) has never found that non-hæmolytic cases in pregnant women respond Napier and his colleagues (1938) found anahæmin curative in 3 out of 6 cases of macrocytic anæmia I have made fair trial of anahæmin in only 3 cases of the hæmolytic variety of the disease, giving from 8 to 14 c cm in single doses and assessing the reticulocyte response and the change in the blood-count, the cases showed little or no response Recently Foy and Kondi (1939) found that anahæmin in very large doses produced a satisfactory response in these cases, and Fairley (1940) has reported 1 non-hæmolytic case in which 64 c cm of anahæmin was given before the blood-count became normal An ordinary case of pernicious anæmia recovers in a few weeks on 1–2 c cm of anahæmin a month, which gives some measure of the size of the dose required in tropical macrocytic anæmia Treatment is thus expensive if anahæmin is used, and Fairley recommends cruder preparations It seems that some fractions essential to the cure of tropical macrocytic anæmia are lost in the refining process I have received some of these fractions from British Drug Houses and it may be possible to test them later on proved cases, but it seemed wise to issue this preliminary note because the only preparation which will be on the market for some time to come will be their liver extract for injection

To test a new preparation it is necessary to find uncomplicated and proved cases of the disease Out of 12 cases of tropical macrocytic anæmia treated in my wards during 1940, 2 were chosen because they showed little or no evidence of intercurrent disease, many of our cases are complicated by malaria, hookworm disease, yaws, syphilis, tuberculosis or nephritis

CASE-REPORTS

Case 1 —A man aged 25, admitted on May 27, 1940, had had malaise for an indefinite time and abdominal swelling for 2 weeks Nutrition fair, temperature normal, pallor, no œdema, slight jaundice Border of spleen palpable at umbilicus, firm but not tender Liver not palpable No other physical signs A blood film showed no parasites Kahn test negative Stools no ova seen, tænia segments passed occasionally, occult blood test negative Test meal, normal free hydrochloric acid Urine a trace of albumin Van den Bergh reaction indirect positive 2 4 mg Blood-count on May 29 showed red cells, 1,500,000, 3 megaloblasts of Ehrlich to every 100 white cells, reticulocytes 8 5%, Hb (Sahli) 34%, colour index (corrected) 1 35; mean cell diameter, 7 6 μ, mean cell volume, 133 3 cu μ, white cells, 6200 (polymorphs 43%, lymphocytes 45%, eosinophils 12%) Examination of bone marrow on June 1 showed white cells 62%, red cells 38% (late erythroblasts 7%, basophilic normoblasts 9%, polychromasic normoblasts 11%, orthochromic normoblasts 7%, megaloblasts of Ehrlich 4%), smear rather acellular Splenic smear on the same day showed reticulo endothelial cells 78%, neutrophils 9%, lymphocytes 9%, eosinophils 1%, late erythroblasts 1%, megaloblasts of Ehrlich 2%, hæmosiderin pigment was present

June 3, injection of liver extract (B D H) 5 c cm given June 6, reticulocyte crisis to 13 2% June 10, 5 c cm of extract injected, June 20, 18 c cm Steady rise of weekly red cell count, at first slowly then more rapidly to 4,120,000, with Hb 60%, on July 4 Spleen decreased slightly in size and was four finger breadths below the costal margin on July 8 when he was discharged

Case 2 —A woman aged 30, admitted on May 11, 1940, had felt well until she developed bronchitis about a week before admission Nutrition good, pallor, moderate jaundice, border of spleen at umbilicus, very tender Temperature 100° F, pulse rate 140 Mild bronchitis and basal congestion No other physical signs Blood film, no parasites Kahn test negative Stools contained a few hookworm ova Occult-blood test weakly positive Urine normal Van den Bergh, 2 mg, indirect positive Test meal, hydrochloric acid normal Blood-count on May showed red cells 1,760,000, Hb 32%, C I 1 09 May bronchitis settling, blood count red cells 1,800,000 nucleated reds, including 1 megaloblast of Ehrlich, to every 100 white cells, reticulocytes 3 2%), Hb 35%, C I 1 16, M C V 100 cu μ, white cells 3800 (polymorphs 47%, lymphocytes 36%, monocytes 9%, eosinophils 8%) Sternal marrow hæmocytoblasts 2%, early erythroblasts 11%, late erythroblasts 32%, basophil normoblasts 1%, no myelocytes, metamyelocytes 6%, stab cells 8%, neutrophils 3%, proportion of red cells to white cells, 6 1, marrow very cellular, showing active erythropoiesis of normal type, with no tendency towards the megaloblastic change of pernicious anæmia Three subtertian schizonts seen in 100 fields, indicating chronic malaria in the latent stage, no parasites found in circulating blood, though doubtless a few would appear from time to time The blood picture showed no change after quinine, gr 30, had been taken for a week, and I believe malaria played no part in the anæmia

On May 23, *neo hepatex injections were begun, 4 c cm* being given daily until May 30 On May 28 there was a reticulocyte crisis of 12%, and the hæmoglobin rose rapidly to 46% On May 30 the red cells had risen to 2,840,000 Soon after the injections were stopped the blood picture became stationary and remained so from June 3 to 6, when *the red cells were 3,400,000, Hb 50% On June 7 liver* extract (B D H) 5 c cm was given and the hæmoglobin rose at once to 65% and the red cells to *4,420,000*, no reticulocyte crisis was detected, but there was a slight rise of reticulocytes from 5 4% on June 1 *to 7% on the 14th* The spleen was four finger-breadths below the costal margin when the patient was discharged on June 15

SUMMARY

Two cases of tropical macrocytic anæmia, uncomplicated by serious intercurrent disease, showed satisfactory response to liver extract (B D H) given in doses of 5–10 c cm weekly The extract may prove to be more effective in the treatment of this type of anæmia, as well as cheaper, than the refined liver extracts which are potent in the treatment of pernicious anæmia

I wish to thank the Hon D M S Uganda for permission to publish this article

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SIMPLE SYSTEM OF SPLINTING FOR LOWER LIMB

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In the last quarter of 1939 our attention was focused on the provision of accommodation and equipment for the treatment of increased numbers of fractures, both simple and compound For injuries of the lower limb it seemed certain that splints of the last war—the Thomas and Braun—and the more recent Bohler modification of the Braun splint would find almost universal favour Further consideration of the Braun splint for the tibia, and Bohler-Braun modification for femur, showed that certain disadvantages which these splints possess become accentuated by the conditions of modern war Being somewhat awkward and bulky they are difficult to store and not easily transportable They require some form of fixation to the foot of the bed, and for ease of nursing and the patient's comfort require to be constructed for both right and left sides An important disadvantage is the quantity of metal they contain

About four years ago a simple wooden bed-rest was constructed for use in conjunction with the Thomas plint and is now used in many hospitals It has been llustrated elsewhere[1] but not previously described he simple method of splinting for the lower limb bout to be described is based on this est It is proposed to describe its onstruction and mode of use in onjunction with a Thomas splint or simple fractures of the femur, and to explain the few additions which convert it into either a Braun or a Böhler-Braun splint

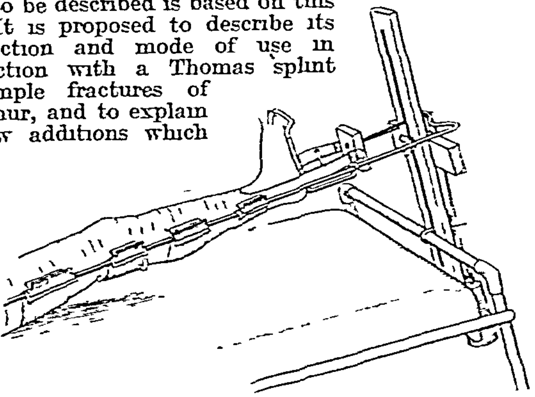

FIG 1—Wooden rest used for supporting and fixing Thomas splint to foot of bed.

The Thomas splint rest consists of two strips of wood 3 ft 9 in × 3 in × $\frac{3}{4}$ in and 12 in × 3 in × $\frac{3}{4}$ in In the larger a $\frac{1}{2}$ in slot is cut which runs almost from end to end, small sections of wood being retained intact at one extremity and in the centre to maintain the strength of the strip On the smaller, which is drilled centrally to carry a $\frac{5}{16}$ in bolt, are mounted two pulleys to carry the extension cord Two hooks, threaded $\frac{5}{16}$ in and fitted with wing nuts and washers of large surface area, pass through the slot and attach the upright portion to the bars at the foot of the bed, while the shorter horizontal portion is attached and adjusted for height by a straight $\frac{5}{16}$ in bolt and wing nut (figs 1 and 2)

Method of use with a Thomas splint—It will be seen from fig 1 that this rest has the advantage of maintaining permanent fixation of the distal extremity of a Thomas splint in the horizontal position at the desired height This fixation allows the lower end of the bed to be raised, which causes the patient s body-weight to exert counter extension, thus increasing the distraction at the site of the fracture while preventing undesirable pressure by the ring of the splint on the ischial tuberosity When the Thomas splint is too long in relation to the patient's height and the length of the bed, a point of fixation nearer the proximal end is obtained by inserting an adjustable "hand rest" between the horizontal metal rods of the splint All additional apparatus should be oided, but in certain cases where nursing is difficult may be necessary to provide weight suspension of the ring of the splint from a Balkan beam There is no known method of either "fixed" or "weight" extension which does not require constant care and attention if the optimum results are to be obtained However, it is claimed for this simple splint rest that the necessity for constant adjustments is reduced to a minimum

Conversion to Braun or Böhler-Braun type of splint—It will be seen from figs 2 and 3 that the Thomas splint rest is converted into a Braun type splint by the addition of two bent strips of $\frac{3}{4}$ in × $\frac{1}{4}$ in mild steel secured to the horizontal portion of the rest by bolts and wing-nuts and braced at their proximal ends by short strips of the same material hinged centrally to form an X and secured for ease of assembly by bolts and wing-nuts The two strips which form the horizontal platform of the splint are of different lengths and shape For the patient s comfort and ease of nursing the shorter side is placed nearest the perineum thus providing a splint for either the right or left side with the same basic material. The loop used for suspension of the foot or protection of the limb is of conventional pattern The provision of the extra pulley which converts the Braun splint for tibia to the Böhler-Braun type for femur is accomplished by the attachment of a further wooden horizontal section to the vertical portion of the original splint rest (fig 4)

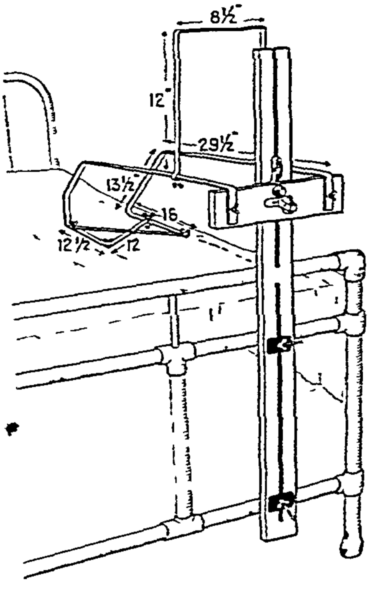

FIG 2—Components assembled as Braun splint for left side showing suspension or protection loop in position Addition of a further wooden horizontal section provides the extra pulley which converts splint into Bohler Braun type for femur

SUMMARY

A simple system of splinting for the lower limb is described This consists of a wooden rest for the Thomas splint, providing permanent fixation of the splint to the foot of the bed in the horizontal position at any desired height The method of converting this Thomas splint rest to either a Braun or Böhler-Braun splint is shown The system has technical advantages over the original types in addition to simplicity, portability and low cost

The original models of this system of splinting were made for me by Archibald Young and Son, Ltd , 57–61, Forrest Road, Edinburgh, 1

PHENYTOIN SODIUM (B D H)—An anticonvulsant for use in the control of epilepsy is available for oral administration in 1 g. tablets It is sodium diphenylhydantoinate, a derivative of glycolyl urea and an analogue of the barbiturates Its hypnotic effect is said to be negligible On beginning treatment with Phenytoin Sodium patients who are taking bromides or phenobarbitone should not stop at once these drugs but should gradually reduce the dose Mild toxic effects noted after the administration of phenytoin sodium include ataxia and vertigo, and treatment should be discontinued if a rash or pyrexia occurs After a long course of treatment gingival hyperplasia has been reported (*J Amer med Ass* 1939, 112, 1244) and vitamin C may be given concurrently to prevent this

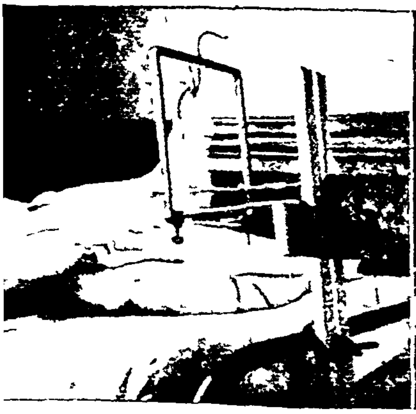

FIG 3—System in use as Braun type splint for a spiral fracture of tibia.

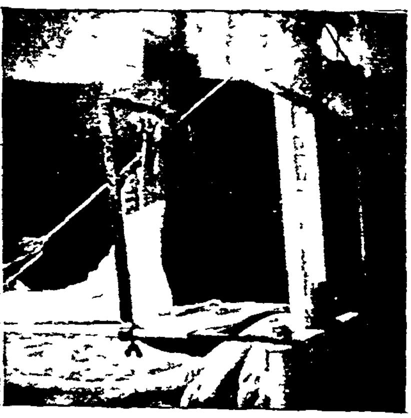

FIG 4—System in use as Böhler Braun type splint for fracture of shaft of femur.

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[1] Mercer W *Practitioner* 1938 141 304 Smillie I S Thomson and Miles Manual of Surgery 1939 vol i, chap 30 p 583 Mackintosh's War Time Nurse Edinburgh 1940, 125

Hubert's (1926) case is interesting. A man was stung by a wasp at about 9 A.M. with no effects beyond the ordinary; an hour later he was stung again on the same arm. In 2 or 3 minutes he collapsed and became unconscious and when seen 20 minutes later he appeared about to die. He survived and developed an intense and general urticaria which subsided in a few hours without further ill effect.

Hubert attributes the symptoms following the second sting to sensitisation from the first; but to suppose that an anaphylactic state could develop in so short a time is against all experimental evidence. Although the symptoms in non-fatal cases bear so close a resemblance to anaphylactic shock it is difficult to believe that they are anaphylactic in the generally understood usage of the term. It seems that some explanation other than sensitisation or idiosyncrasy must be found for the fatal cases. Roch and others have suggested that the immediately fatal and the severe reactions are probably due to the chance entry of the venom directly into the blood stream. This explanation seems to meet the facts as well as any. Roch points out that dangerous reactions are particularly liable to occur when the site of the sting has a relatively thin covering of skin and is of high vascularity; as examples he mentions the temples, the back of the hand and the lips. In case 1 the sting was on the temple.

In this country there seems, in spite of obvious evidence, to be a reluctance to admit that the sting of one of the common *hymenoptera may sometimes* be the sole and immediate case of death. As pointed out as far back as 1862 by the Husemanns, this fact has medicolegal implications and demands recognition.

SUMMARY

Death may occur as the immediate result of a single wasp-sting. Two new cases are placed on record, and similar fatal results from the stings of bees are recalled.

All immediately fatal cases show an identical chain of symptoms preceding death; within 2 minutes of the sting the person collapses, consciousness is lost and he dies within half an hour. Subjects surviving for half an hour may show severe symptoms of anaphylactic type but always recover.

I wish to thank Mr Cyril Jones, of Wrexham, for drawing my attention to case 1, and to Dr Trevor Hughes and Dr G. R. Kennedy for details of cases.

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PFEIFFER BACILLUS MENINGITIS

RECOVERY WITH CHEMOTHERAPY

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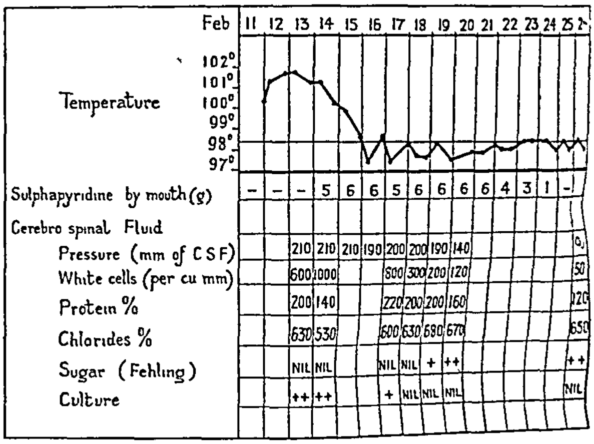
MENINGITIS caused by Pfeiffer's bacillus (*Hæmophilus influenzæ*) is uncommon, and complete recovery from the disease is rare. In the case here described complete recovery followed the administration of sulphapyridine only.

A dustman, aged 59, walked into St. Bartholomew's Hospital on the afternoon of Feb. 11, 1941, complaining bitterly of headache. His illness had begun three days before, with sudden severe headache all over the top of his head. On that day he had felt sick and had three times vomited small quantities of food, but since then had not felt sick or vomited again. The headache got progressively worse and greatly interfered with sleep during the next two nights. The day before his admission he several times experienced giddiness on stooping, and his legs felt so weak that on three occasions he fell. He had no visual disturbance and had suffered no recent injury to the skull, although eight years previously he had sustained a fractured skull, and had subsequently accustomed to occasional headaches, especially he said he "had the 'flu."

On examination he was found lying on his side facing the light; he was somewhat drowsy but answered questions both coherently and cooperatively. Temperature 100.4° F., pulse regular with rate of 60, and respirations 24 per min. Both pupils were small but regular, the right being rather smaller than the left, and both reacted briskly to light. There was no neck rigidity. Kernig's and Brudzinski's signs were both negative. The tendon reflexes in both arms and legs were all present and normal, and both plantar responses were flexor. There was no herpes and both ears were normal.



Feb	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	2
Sulphapyridine by mouth (g)	–	–	–	5	6	6	5	6	6	6	6	4	3	1	–	
Cerebro spinal Fluid																
Pressure (mm of C S F)			210	210	210	190	200	200	190	140						9
White cells (per cu mm)			600	1000			800	300	200	120						50
Protein %			200	140			220	200	200	160						120
Chlorides %			630	530			600	630	680	670						650
Sugar (Fehling)			NIL	NIL			NIL	NIL	+	++						++
Culture			++	++			+	NIL	NIL	NIL						NIL

At first it was believed that he was experiencing an exacerbation of headache due to yet another attack of "influenza." During the next 24 hours, however, his headache got worse, and he could be seen clasping his head between his hands; he had not slept at all and seemed more drowsy. Although there was still no sign of neck rigidity, the physical signs remaining the same as on admission, it was decided to examine his cerebrospinal fluid. Lumbar puncture was therefore performed and 30 c.cm. of a faintly turbid yellowish fluid was withdrawn at a pressure of 210 mm. of C.S.F. The fluid contained 600 cells per c.mm., most of them polymorphs. A gram film of the centrifuged deposit revealed no organism, but culture on blood agar yielded a pure growth of a small, gram negative, rather pleomorphic bacillus, morphologically and culturally resembling Pfeiffer's bacillus. It was decided to treat the case with sulphapyridine, 2 g. by mouth followed by 1 g. four hourly, with daily lumbar puncture to reduce the pressure to approximately normal to relieve headache and provide drainage. He became afebrile within 48 hours of beginning this treatment (see figure), although culture of the C.S.F. was positive three days later. Clinically, his improvement was less striking; apart from temporary remissions following lumbar puncture his headache continued to trouble him with decreasing severity until eight days after treatment began, when it disappeared altogether. His progress proceeded satisfactorily and was marred only by the disturbing late appearance of neck rigidity nine days after admission—due to a carbuncle on the back of the neck, which also healed with treatment. In all, he received 54 g. of sulphapyridine without ill effect, his white cell count on Feb. 26 being 12,000 per c.mm. On the 23rd day after admission he was transferred to a convalescent home feeling well and without symptoms.

COMMENT

Pfeiffer bacillus meningitis occasionally follows disease of the middle ear, but usually it arises as a primary disease. The strain causing meningitis is believed to be distinct from those which commonly affect the bronchial tree, and may readily be distinguished from them by bacteriological means (Pittman 1931). Under the age of two years this type of meningitis is relatively common, Pfeiffer's bacillus then being the third commonest organism causing meningitis, following closely after the tubercle bacillus and meningococcus. It becomes progressively rarer with increasing age and is very uncommon in adults.

Up to 1930 the fatality, irrespective of age, was estimated by Silverthorne and others (1937) to be 98.0%. At this time there was no standard treatment; repeated bar punctures were usually performed, and a single very was recorded after intravenous colloidal silver tions Since 1935 most cases have been treated by method described by Fothergill, which consisted in sera and human complement administered both athecally and intramuscularly According to Lind- and others (1940), this method reduced the fatality 3% Since 1937 drugs of the sulphonamide group e been used in combination with serum and com- nent and the fatality has fallen to 54% (Lindsay l 1940) Treatment by chemotherapy alone has been often tried Teggart (1938) records complete recovery a man aged 60 after 63 g of soluseptasine, and e 9 cases have been reported in the English journals ecovery after sulphapyridine alone, although most of se were in young children Experiments recorded by obsen and Neter (1940) suggest that sulphapyridine he drug of choice

am grateful to Dr E F Scowen for permission to publish case, and to Dr B M Wright for carrying out the many hological investigations

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LOOD AMINO-ACIDS IN HÆMATEMESIS

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It has been known for some years that severe hæmorrhage to the stomach or duodenum is followed within a few urs by a notable rise in both the non-protein nitrogen d the blood-urea The raised values persist for 24–48 urs and then fall to normal, except in those cases here hæmorrhage continues or extreme limitation of the od and fluid intake leads to dehydration and exhaus- on The rise in the blood-urea nitrogen is sufficient to count for the greater part of the rise in non-protein trogen, but the amount of residual nitrogen (non- otein nitrogen less urea nitrogen) is sometimes large ough to suggest an increase in some other nitrogenous nstituent of the blood, the most likely being the ino-acids Moreover, in other types of extra-renal otæmia large increases of residual nitrogen have been ported (Nonnenbruch 1939) It was therefore decided determine the amino-acid nitrogen of the blood in a mber of patients with azotæmia secondary to gastro- odenal hæmorrhage

METHODS AND RESULTS

Amino acid nitrogen was estimated by the gasometric ethod (Peters and Van Slyke 1931), normal value 5–9 mg r 100 c cm, non protein nitrogen by the micro Kjeldahl ethod, normal value 25–50 mg per 100 c cm, and urea trogen by the urease and nesslerisation method (Archer and obb 1925), normal value 7–20 mg per 100 c cm

Observations were made on seven patients with æmatemesis In five they were made at the height of zotæmia, and again after recovery, except in one atient, who died within a few hours of admission, the esults are given in the table, cases 1–5 More frequent stimations were carried out on two further patients cases 6 and 7) The data in all seven cases show an ncrease in amino-acid nitrogen at the time of bleeding, he average being 15 2 mg per 100 c cm This increase s specially striking in view of the anæmia which most of he patients showed, since the amino-acid content of lasma is only about a fifth of that of the red cells Martens 1928), and one might therefore have expected ow amino-acid values in these anæmic patients It is oteworthy that the highest value found (20 mg per 100 cm) was in a patient (case 2) whose hæmoglobin was 6%, presumably blood dilution had not occurred by he time the sample was taken The amino-acid nitrogen ell as recovery took place, normal figures were reached n some of the patients before they left hospital, in others slightly raised amino acid nitrogen persisted into the recovery phase While there was a general correspondence between urea and amino-acid values, blood-urea was not necessarily highest at the same time as the amino-acid nitrogen

OBSERVATIONS ON SEVEN CASES OF AZOTÆMIA SECONDARY TO HÆMATEMESIS

Patient	Date	Hb % (Haldane)	Nitrogen (mg per 100 c cm)			
			Non-protein	Urea	Residual	Amino acid
1	Aug 8, 1940	38	58	34	24	16 5
	Oct 2, ,,	70	36	15	21	12
2	Sept 2, ,,	96	58	32	26	20
	Oct 9, ,,	80	28	15	13	6 5
3	Aug 12, ,,	56	67	47	20	11
	Sept 11, ,,	62	40	20	20	5 4
4	Oct 10 ,,	52	90	70	20	16
	Nov 1, ,,	80		37		11
5	Nov 12, ,,		210	121	89	19
6	Feb 12, 1941	48	90	56	34	11 1
	,, 13, ,,			49		12 2
	,, 15, ,,	54	47	19	28	9 7
	,, 17, ,,		44	14	30	9 9
	19, ,,		34	16	18	9 3
	March 3, ,,	70	36	15	18	8 9
7	March 24, ,,	60	46	30	16	12 6
	,, 26, ,,	56	52	24	28	10 4
	,, 28, ,,		50	24	26	11 4
	,, 31, ,,	58	39	15	24	9 9
	April 29, ,,	82	36	10	26	9 6

DISCUSSION

There can be little doubt that in the patients studied there was an unusually high entry of amino-acids into the blood-stream, not only from the mass of blood protein undergoing digestion in the alimentary tract but possibly also from breakdown of tissue protein (Black and Leese 1940) In health and in most diseases, however, the liver is well able to convert into urea any excess of amino-acids which enters the blood-stream, and little change in the amino-acid content of the blood follows the ingestion even of large amounts of protein Nonnenbruch (1939) believes that a raised blood-urea indicates renal damage, but that an increase in residual nitrogen, which includes amino-acid nitrogen, is due to liver dysfunction On this basis there would seem to be in our patients some degree of hepatic dysfunction The amount of hepatic impairment is no greater than could be accounted for by a mild degree of tissue anoxia The condition of the blood and circulation in patients who have had severe hæmorrhage is such that significant tissue anoxia is probably present in all the organs, and there is objective evidence of cardiac muscle anoxia in the electrocardiographic changes described by Aschenbrenner (1934) The small degree of impairment of hepatic function is particularly striking when compared with the severe renal impairment which is suggested by the high blood-urea, and demonstrated by the fall in urea and inulin clearance (Black et al 1941)

The explanation of the very different extent to which hepatic and renal function are affected seems to lie in the arrangement of the circulation to these organs The liver receives its main blood-supply at a comparatively low pressure from the portal vein, and all the blood coming from the intestine has to pass through it, it is therefore little affected by fall in systemic blood-pressure, and amino-acids absorbed from the bowel are exposed to deamination in the liver before entering the systemic circulation On the other hand, the efficiency of glomerular filtration depends greatly on the state of the systemic circulation, Powell, Smith and I (1941) have shown that the renal insufficiency in hæmatemesis is largely due to a fall in blood-volume and blood-pressure leading to a diminished circulation through the kidney

SUMMARY

The amino-acid nitrogen of the blood has been determined in seven patients with azotæmia secondary to gastroduodenal hæmorrhage, and was found to be increased

The increase probably indicates hepatic dysfunction, though this is slight compared with the renal impairment which can be demonstrated by other methods

which the patient came back with all his former symptoms Resumption of thyroid treatment was again effective

DISCUSSION

The differential diagnosis between this syndrome and that described as angina pectoris vasomotoria of vagotonic origin deserves consideration The symptoms and some of the signs of the latter are similar to those found in cases 1, 2 and 3 above In angina pectoris vasomotoria, the left ventricle is often dilated in a rounded or pointed manner and the patient has a tendency towards bradycardia, and a low blood-pressure with cold extremities and pallor (pseudo-anæmia), the capillaries appear normal, however, in most cases Electrocardiography sometimes shows low waves and prolonged P-R intervals The B M R, too, may be decreased, I have found values as low as −30% in such cases Characteristically the values oscillate considerably, in contrast to those found in hypothyroidic patients In collaboration with Dr Kaatz I obtained the following values at intervals of 4 weeks,

Case 4	Case 5	Case 6
−12 6%	−17%	−30%
−30%	−3%	−13%
Normal	−22%	−10%

Patients with the syndrome I have just described so show a dilated heart with a rounded or pointed left ntricle, a tendency to bradycardia and a low blood-essure, the heart sounds are soft The electrocardioam is often normal, but in some cases shows changes milar to those found in myxœdematous patients The M R is abnormally low, the circulation time usually olonged, and the blood-cholesterol level high Thus, e circulatory system regularly shows some but not all the typical signs of myxœdematous heart We may erefore speak of an "abortive myxœdematous heart" this condition symptoms subside on administration thyroid (0 5–0 6 g thyroideum siccum weekly), us should be discontinued as soon as tachycardia evelops and resumed only if bradycardia recurs The ypofunction of the thyroid gland causes decreased mpathetic action on the heart and a resultant increase the vagal action. Primary vagotonia, as we have en, produces angina pectoris vasomotoria, which is in any respects similar to the hypothyroid syndrome It difficult, therefore, to decide whether symptoms are aused by a primary vagotonia or by relative vagotonia esulting from hypothyroidism, and at times it can only be ettled by the therapeutic test—that is, by giving thyroid

In case 2 the differential diagnosis was made easier by e history that the patient had previously suffered from raves's disease, had recovered completely and then swung o the opposite extreme, developing an abortive myxœdematous heart The transformation of Graves's disease into yxœdema has, of course, often been reported by myself nd others (Zondek 1923b)

Drugs depressing vagal action may also have a good ct in hypothyroid heart cases because of the relative otonia present Complete success, however, can only obtained with thyroid Thyroid acts, I think, by ucing the tissue-fluids, and thus dehydrating the rt muscle In 1918 I demonstrated that the fluid tent of myxœdematous heart muscle is abnormally ; this has been confirmed by Webster and ke (1936) Lately, in coöperation with Kaatz and hael, I have been able to prove that the capillaries hypothyroid patients are usually very narrow, with circulation In some cases only the loops of the illaries are to be seen in the form of small hooks, while limbs are completely invisible It seems that the ssure of the increased tissue fluids compresses the llary walls, causing deficient blood-flow The illaries gradually become normal under the influence thyroid It is reasonable to suppose that similar nges occur in the heart vessels and that thyroid roves the cardiac circulation, relieving symptoms by ydrating the heart muscle and easing the pressure on small vessels supplying it

he favourable effects of thyroid on patients with inal symptoms have special interest in view of the ommendation, made recently, of thyroidectomy in the atment of angina pectoris Cases of angina pectoris ch improve on partial thyroidectomy represent a syndrome fundamentally different from that described in this paper. The pathological process, in such cases, is sclerosis of the coronary vessels, if the thyroid hormone is eliminated there is a decrease in sympathetic tonus, and thus probably a decrease in the oxygen requirements of the myocardium and in the work of the heart Thyroid therapy in such cases may produce an increase in symptoms This may also occur occasionally in myxœdematous patients, especially after prolonged thyroid administration, since arteriosclerotic changes of the vessels are not at all rare among the middle-aged Thus the causes of anginal symptoms in cases with fully developed or abortive myxœdematous hearts may be various.

SUMMARY

The possibility of hypothyroidism must be kept in mind in treating patients with anginal symptoms Precordial distress and substernal pain, collapse recurring more or less frequently and accompanied by pallor, considerable fall in blood-pressure, bradycardia and a small pulse seem to be characteristic of the condition. The circulatory system shows signs typical of true myxœdematous hearts—cardiac dilatation of varying degree, a tendency to bradycardia and low blood-pressure In some cases the electrocardiogram shows changes corresponding to those found in myxœdema (flattening of P and T waves, negative T wave) in other cases there are no abnormal findings The peripheral vessels (capillaries) are narrow and circulation is slowed The basal metabolism is decreased, the blood-cholesterol level high (values as high as 400 mg per 100 c cm have been recorded) High blood-cholesterol is characteristic, and is often the earliest sign of the disease, as it is in fully developed myxœdema An increase in tissue fluids including those of the myocardium, leads to a secondary compression of the small cardiac vessels causing an "imbibition angina" Therapeutically small doses of thyroid (0 5–0 7 g weekly) are effective as a rule The treatment should be continued for several weeks with short interruptions, and should be repeated when bradycardia reappears Thyroid probably acts by dehydrating the heart muscle The cardiovascular syndrome here described may be designated "abortive myxœdematous heart" The ordinary vagal heart (primary vagotonia) may be accompanied by symptoms and signs similar to those of the condition described. The symptoms of such patients subside on administration of drugs decreasing the vagal tonus or causing vasodilatation (calcium, papaverine, atropine, diuretin or small doses of phenobarbital)

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— (1923a) Die Krankheiten der endokrinen Drüsen Berlin, p 89 (English translation of 3rd ed, London, 1935)
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INTESTINAL DAMAGE FROM A SMALL WOUND

L A LEDINGHAM, M B Aberd
ASSISTANT MEDICAL OFFICER AT PADDINGTON HOSPITAL (L C C)

THE following case was one of many air-raid casualties admitted to hospital on the same night

A married woman, aged 27, was admitted from a bombed building within ½–1 hour of the incident She had heard "something coming down" (a very large high-explosive bomb) and had quickly lain down prone Immediately after the explosion she felt a pain in the abdomen On admission to hospital she was pale and a little shocked, pulse rate 80, fair volume, respirations normal but with limited abdominal movement, temperature just under normal She complained of abdominal pain, generalised but of only moderate severity, and there was slight tenderness and rigidity One minute wound about ¼ in long in the right buttock just above the tuber ischii was the only external trauma visible The patient was unaware of this and no point of entry in her clothing has subsequently been found She was obviously badly frightened by the experience and a bromide and chloral sedative was given and shock treatment instituted After 1½ hours, in view of persistent and increasing abdominal pain and in spite of a steady pulse, it was decided to explore the abdomen At that time the abdomen was slightly rigid and very tender, moving poorly, liver dullness was present and no free fluid was definitely identified

Under gas, oxygen and ether anæsthesia a small para-umbilical incision was made Blood and fluid and solid fæces welled into the wound In all 16 entrance and exit wounds were found at intervals of about 8 in along the small gut with characteristic pouting mucous membrane, each oozing bowel contents and blood The largest admitted two fingers and the majority were ½–¾ in across One or two of the in and out wounds were confluent where the bomb casing had bitten out the antimesenteric border of the bowel and one perforation involved the mesentery as well as the adjacent bowel A solitary perforation of the lower sigmoid colon discharging solid fæces was also present The various perforations were repaired as rapidly as possible in the transverse axis of the gut by two layer inverting eyeless-needle sutures and after evacuation of the bulk of the free blood and intestinal contents, inspection of the liver and palpation of the spleen and left kidney the abdomen was closed with pelvic tube drainage Nothing more was done beyond the application of a small dressing to the entrance wound The repair took about 1½ hours

She was given a small blood-transfusion and for 4½ days subsequently fluids were supplied by intravenous drip (saline glucose 5%), only small sips of fluid being allowed by mouth -Morphia was given liberally Prophylactically, M & B 693 soluble (intravenous) was given via the drip tubing, one ampoule 6-hourly for 4 days

The bowel remained silent and apparently completely inactive for 4½ days No colic was felt and no flatus and only minor postoperative vomiting was noted On the 5th day there was slight distention and much flatus was passed The drainage tube which was removed after 48 hours left a track from which sero pus containing *Bacillus coli* cont to drain for 3 weeks Feeding was started on the 5th with citrated iced milk and, for want of oranges, rhu juice, which she tolerated well as opposed to sweet d On the 14th day evidence of a pelvic collection—diarrh and a tender mass in the pouch of Douglas with fixation the pelvic organs—was discovered, and signs of deep sup-puration in the buttock were evident Opportunity was awaited to open the pelvic abscess per vaginam but 3 days later the buttock wound discharged about ½ pint of pus and the pelvic inflammation started to resolve A threatened obstruction with visible peristalsis and distention evidently centred about the terminal ileum also resolved along with the pelvic condition and may have been due to ileus duplex

Now, 4 weeks after the original injury, she is getting about fairly well in the ward and eating ordinary diet Occasional very mild colic and a feeling of being lost without her manytail binder are her only complaints

This case seems to emphasise the importance of small wounds in war surgery where vital structures can be badly damaged by minute particles of high speed shrapnel In this case the shrapnel is still lodged in the left perirenal area having reached there via the right buttock right iliac bone, large gut, small gut and posterior peritoneum Her recovery is due to (1) careful examination by the receiving room staff with denial of morphia, (2) a well-given anæsthetic under difficulties, (3) unremitting aftercare by nursing staff and students, of whom the latter spent many sleepless nights attending to the case, and (4) morphia and intravenous saline which allowed the gut to rest and heal

I am grateful to Mr G M Gray, medical superintendent, for permission to publish the case

Reviews of Books

Macleod's Physiology in Modern Medicine

(9th ed) Edited by Philip Bard, professor of physiology at the Johns Hopkins University London Henry Kimpton Pp 1256 50*s*

Eight principal and three subsidiary authors (one of whom, W S Root, is not mentioned on the title page) have contributed to this book The sections on the nervous system (Philip Bard), the circulation (H C Bazett), respiration (C F Schmidt), the distribution and regulation of water and the kidney (M I Gregersen) are very well done, and in parts outstanding H J Curtis's lucid treatment of excitation and the nerve impulse is fully in keeping with the high standard of the section on the nervous system The special-sense section (J M D Olmsted) is adequate for medical students, but superficial in parts The subject of metabolism and nutrition, admittedly one of great diversity, receives a somewhat patchy treatment by C L Gemmill He begins well, but tends to tail off into the style of a review in which many findings are mentioned to the detriment of the exposition of fundamentals, the style becomes too hurried for a textbook G R Cowgill's chapters on the alimentary tract are sound, placid and dignified, but would be improved by more illustrations and tables The endocrine glands, and what there is about reproduction, are dealt with in 68 pages by R G Hoskins, and the exposition is clear The space accorded to these subjects in textbooks of physiology is traditionally small, but it is disappointing to find it still restricted in a book which is above all things modern A lesser example of lack of balance is seen in the 19 pages devoted to coagulation of the blood (3 in small print on clinical aspects) as against 5 on the urinary bladder Nevertheless this is one of the best of modern textbooks of physiology It contains upwards of 2000 references to original literature and authoritative sources, the table of contents is exhaustive, the index good, and it is beautifully produced and strongly bound The pale green tint of the pages is congenial to the eye

Williams's Obstetrics

(8th ed) By H J Stander, M D, F A C S London D Appleton Century Pp 1401 55*s*

In 1934 Professor Stander revised, and thus rejuvenated, the last edition of Dr Whitridge Williams's textbook of obstetrics, which on its own merits ranked as the premier reference textbook in obstetrics in the English language The new edition is completely rewritten and little of the original text remains, though the form is to some extent retained For sentimental reasons it is still called "Williams," but is in fact almost pure Stander The illustrations and diagrams are excellent and it covers every aspect of its subject The final year student can read and enjoy it, but its chief appeal will be to the more advanced practitioner who intends to specialise in obstetrics At the end of each chapter there is a generous bibliography in all languages The classification of the toxæmias of pregnancy will not, perhaps, be acceptable to British obstetricians—and so much the better The chapter on radiological pelvimetry is an eye-opener and shows us up badly in this country, it should be read by all who propose to perform measurement of the female pelvis by radiography Every English obstetrician who wishes to broaden his views beyond the orthodox and accepted teachings of his own school will value this as the splendid book it is

Pharmacological Basis of Therapeutics

By Louis Goodman, M D, and Alfred Gilman, Ph D assistant professors of pharmacology and toxicology, Yale University school of medicine London Macmillan and Co Pp 1325 50*s*

This is one of the most comprehensive books at present available on pharmacology from the clinician's point of view The material offered to the reader is inevitably much the same as in other detailed works on the subject, but the presentation is different in several important particulars By sifting the many doubtful theories which have gained credence through frequent repetition the authors have made the subject more reasonable and therefore more readable than usual References to original work are included, but no attempt has been made to give exhaustive abstracts of the literature, examples serve the main purpose of the book—to illustrate the application of drugs in medical treatment They discuss drugs according to the system of the body on which their action is greatest This is natural, having regard to the therapeutic approach which has been adopted, but they have evidently shared the experience of other writers in finding the heavy metals, the vitamins and the gases an awkward squad to classify Toxicology is dealt with in unusual detail, but is carefully correlated with pharmacological action There is a useful appendix on prescription writing for the student

THE LANCET

ONDON SATURDAY, SEPTEMBER 13, 1941

FIRST-AID FOR EVERY SOLDIER

With the open order attack of the British Army as devised in the Sudan, developed in South Africa, practised on Salisbury Plain and used in mobile warfare during the last war by regulars in the battle of the Marne and by territorial and dominion troops in Palestine later, there were two possible views as to the tactical use of field-ambulance stretcher-bearers One was to keep them back so that they would not be wounded and have to be carried off by their fellows who should be stretchering wounded combatant troops The other was to keep them right up behind the supports where they could get to work on the wounded at once, and where the combatant troops going into action would see them and know that if they were hit they were certain of being given first-aid quickly Of the value of this to morale there can be no doubt Time may change the superficial appearances of war as of medicine, the principles that underlie both are immutable, and the principles of medicine say that first-aid must be immediate and those of war say that the man fights better if he knows he has a chance if he is hit But today there is no front line, no firing line to be built up by the incorporation of supports behind which the stretcher-bearers can advance and pick up wounded as they fall. There are little pockets of men all over the place—France, Greece, Russia, tell the same tale—and if the man is to get first-aid he must get it from his mates An unnamed lance-corporal of the line wrote this in The Lancet of Feb 15 (p 231)

Soldiers expect to take risks, but some of the men with whom I served in France need not have died and many more are today minus limbs who might still be whole One of the important lessons we learned in France was the prevention, as far as possible, of serious casualties A wounded soldier is a liability to himself and everyone else, and practical first-aid should be included in a recruit's syllabus A soldier is taught how to kill and destroy how to operate and fire his weapons and the best way to protect himself against similar weapons, but not one lesson does he receive on how to save his comrade's life

And now there comes a soldier-doctor to tell how it should be done Mr Charles Keogh was a combatant in the last war and became a medical student after it Thus he knew the soldier, knows what he needs, and knows how to give it him He has produced a card called 'First-aid for Fighting Men'"[1] which contains—in twenty brief paragraphs and ten striking sketches—all that the fighting man *need* know of the subject 'First-aid saves lives and stops panic' he says, a principle of medicine which combines the physical with the mental "A lightly wounded man if given first-aid, can go on fighting", a principle of war which says that the first duty of the doctor is to keep men fit and fighting Of a badly wounded man he writes "Treat him like a child Calm him Calm the men in your post This is first-aid" There is beauty in this, the beauty of experience and of the mind that in tending one does not forget others, and finds the two the same "Any fool can be brave and get killed, be brave and don't get killed, and save your friend instead' Brave words and true "A man bleeds to death very quickly. Stop it with your hands There is no time to wash' A rigid coherence to the formalities of operative technique is far too often insisted on in teaching these things today "Give any wounded man a drink of anything you have—but do not give a drink to a man with a wound in the belly, or to a man who cannot swallow You will kill him if you do" We do not yet know what shock is, but no-one has put what we do know better than this. "Shock kills more men than bullets Shock is a mixture of pain, fear and cold Do what you can to stop all three Shock kills brave men" The card ends with "Courage in disaster Courage in the presence of a wounded man First-aid can save a situation and save a friend."

This card, if adopted by the Army, should be issued not to every man but to every subaltern with the responsibility of seeing that every man under him knows it by heart. It is for the Adjutant General and the Army Council to decide whether they will take the advice of the nameless lance-corporal and make the rehearsing of its simple precepts part of the training of every soldier

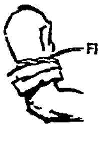
FIG.2

8 IF YOU CAN'T STOP IT that way slip a piece of string round the leg or arm higher up A pull through or sling will do tie it over his uniform Tie one knot (fig. 2) Put a pencil or piece of wood on the knot (fig 3) Tie twice over the stick Tie a reef knot. Tie any knot if you don't know how (figs 4 & 5) Twist the stick until the bleeding stops. Keep it in position by tying the ends down (fig 6) This is a Tourniquet.

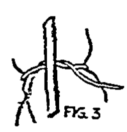
FIG.3

9 A TOURNIQUET can save a life and a limb. It can also kill a limb. Loosen a tourniquet every quarter of an hour Four times an hour If you don't, the limb will die

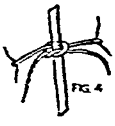
FIG.4

10. IN WAR, a wounded man may be hours or days before he gets to a Surgeon. If ever you put on a tourniquet, put a label on. Write "Tourniquet applied 9 a.m. Tuesday" Loosen four times an hour Tighten again if bleeding starts. Fix the label where it can be seen (fig 7)

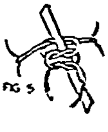
FIG 5

11 BROKEN BONES Place the limb in it's most natural position and you can't go wrong Don't let a broken limb flap. Sharp ends of broken bone can cut arteries and nerves to pieces. Tie a broken arm to the chest with any kind of bandage. But tie it firmly (fig. 8) Tie a broken leg to the other leg. Use as many bandages as possible Foot to foot, knee to knee thigh to thigh (fig 9)

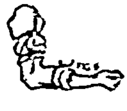
FIG 6

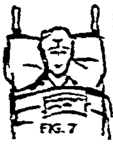
FIG.7

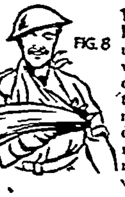
FIG.8

12. CARRYING A WOUNDED MAN under fire Keep under cover Tie his wrists together Crawl on hands and knees on top of him Put your neck under his wrists and drag him along underneath you. You can go miles this way and you will not give away the position of your post to the enemy (fig. 10)

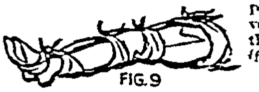
FIG.9

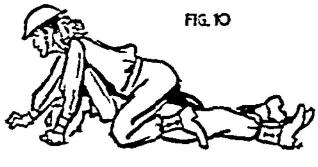
FIG.10

13. SMALL PUNCTURED WOUNDS are often more dangerous than dreadful bloody ones. A spent bullet from the air can go right through a man Punctured wounds must be seen by a Doctor

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[1] Published by Sifton Praed & Co Ltd, St James's Street, S.W 1 6d

HEPARIN AND A RIVAL

WHEN CHARLES and BEST in Canada and JORPES in Sweden purified heparin sufficiently to enable it to be given intravenously to patients, they opened up a wide field of possible therapeutics Could we, by rendering the blood less coagulable in vivo, control those processes of embolism and thrombosis that are so difficult to treat ? Would heparin help in operating on blood-vessels ? Were patients liable to serious hæmorrhage when heparinised ? The progress made in Sweden was described by various workers at a symposium on heparin held at Stockholm in December last [1] There was general agreement that heparin is most useful in the treatment of thrombosis of the leg veins, in operations on blood-vessels such as embolectomy, and in the prevention of postoperative thrombosis and embolism It is now clear that eparin cannot influence a thrombus once it has ormed, but if the onset of thrombosis can be detected at a very early stage the process can be aborted by heparinisation of the blood, BAUER [2] finds the classical clinical signs of early thrombosis very unreliable and he uses "venography"—radiographic outlining of the veins after injection of iodoxyl—to ecide whether thrombosis is beginning or how far has progressed Good results cannot be expected m heparin treatment if the thrombosis has spread o the thigh veins and especially if the femoral vein is involved If the case is suitable, he gives 100 mg intravenously three times daily until the pulse and temperature have returned almost to normal, this takes 4–7 days and he then allows the patient to get up He reports 21 cases successfully treated in this way LINDGREN and WILANDER [3] record the use of heparin in 8 operations on blood-vessels, 200–300 mg divided into four intravenous injections was given daily for 4–15 days and good results were obtained in all cases

The value of heparin as a prophylactic against postoperative thrombosis is more difficult to assess since these accidents are fortunately not common CRAFOORD and JORPES [4] selected a group of 325 patients all over 30 years of age who had to undergo operations more specially liable to thrombo-embolic complications, such as those on the appendix, gall-bladder, stomach, or male genitalia They were given regular heparin injections beginning 4 hours after the operation and continuing for 5–10 days Four intravenous doses of 50, 50, 50 and 100 mg were given every day, with an interval of 4 hours between each, in some cases the dose was increased At the end of heparinisation the dose was diminished gradually, because after sudden withdrawal pulmonary embolism sometimes occurred 10–15 days later No complications were recorded in these 325 patients As a contrast, over the same period 302 similar cases were operated on without heparinisation, 33 (11%) had definite thrombo-embolic complications and 9 died, in a control series of 809 similar cases from a previous period the incidence of thrombosis and embolism was about the same Treatment after thrombosis has occurred is far less satisfactory, in some patients there was considerable subjective relief and pulse and temperature rapidly returned to normal, but in many others there was no clear effect According MURRAY,[5] similar conclusions and results on all points have been obtained by Canadian workers, they prefer to give the heparin in a continuous intravenous drip instead of in separated intravenous doses

Heparin is non-toxic and can be safely given hours after a surgical operation or 24 hours after delivery in obstetrical cases, should excess bleeding occur it can be controlled by a small blood transfusion or injection of protamine sulphate But it is unfortunately difficult to make in quantity—the source is ox lung or liver and the yield is small—and it is therefore expensive Patients with venous thrombosis suitable for heparin treatment are not common, and embolectomy operations are distinctly rare, so that hospitals might be able to bear the expense of individual cases of this sort, but the prophylactic use of heparin involves the treatment of hundreds of patients At present rates the minimum prophylactic course costs about £6 (plus purchase tax) the hospital makes its own sterile solution from the dry powder and much more if the heparin solution must be bought This is obviously *not practicable* however desirable and MURRAY *hopes that some* equally non-toxic substance *with similar properties* will be found that is less expensive BUTT, ALLEN, and BOLLMAN [6] suggest that a substance with the desired properties has been found in 3,3' methylene bis-(4-hydroxycoumarin) This compound is chemically quite different from heparin *It* was originally found in hay or silage made from the common sweet clovers which had been improperly cured, this is known to cause a hæmorrhagic disease in cattle K P LINK of the University of Wisconsin and his associates isolated the hæmorrhagic agent of spoiled sweet clover and have succeeded in synthesising it Preliminary work has shown it to be non toxic in human patients It greatly prolongs the coagulation and prothrombin times of the blood but takes about 48 hours to develop its effect, but when the effect is fully developed, it is lasting It seems best to give it in a series of divided doses and it has the enormous advantage of being active when given by mouth in gelatin capsules Its effect can be rapidly checked by a small transfusion of normal blood This substance should be relatively cheap, and it may make general preoperative prophylaxis a practical possibility Let us hope its discoverers will think of a shorter name for it, preferably one that will recall its pastoral origin

NURSING RECONSIDERED

ENGLISH nursing is falling off for la candidates for training—not merely of s candidates, but of sufficient candidates of an The high standards set by the nineteenth pioneers can only be maintained if the best i woman in the country is willing to take up ni That the cream of our public and secondary girls—young women of character and promis present choose other callings in preference to n cannot be said to reflect on the girls They plenty of interest in public welfare, applying ir numbers to train as social workers, though ap ments for those who qualify are scanty, mor st women have an instinctive bias which makes h nursing as comes their way congenial When attractive occupation is neglected the fault must in the terms of service.

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[1] Acta med Scand 1941 107, 107

[2] Bauer, G Ibid, p 136

[3] Lindgren, S and Wilander, O Ibid p 148

[4] Crafoord, C, Jorpes, E J Amer med Ass June 28, 1941, p 2831

[5] Murray, G D W Brit J Surg 1940, 27, 567

[6] Butt, H R, Allen E V and Bollman, J L Proc May June 18, 1941, p 388

The establishment of a nursing division at the nistry of Health is evidence that remedies are ing sought and organisations up and down the untry are making suggestions One proposed state heme of training for nurses has lately been drawn p as a basis for discussion by the Manchester public-ealth department in which a plan is set out whereby e nurse might obtain basic general training. and also ecialised training within a period of four years wise proposal is that schools of nursing should be ttached to the universities so that student nurses ould have the same standing as students taking a iploma in social science This would go far towards ringing a nursing qualification into line with other academic and technical diplomas At present only two English universities, Leeds and London give diplomas in nursing in painful contrast with the copious references in the index of the Universities Yearbook to nursing diplomas in Canada and South Africa Special training for assistant nurses is also suggested in the Manchester scheme either in the form of a modified course in hospital, with examinations in practical nursing or as a special course at approved institutions If a second grade of ward helper is essential—and in the present straits she certainly is—it is wholly desirable that she should have a defined training and clearly specified duties she may then prove to be a reliable and even indispensable member of her profession But it seems at least equally important that she should be designated by some title other than that of nurse A constructive scheme based on wide inquiry has lately been outlined[1] by four members of the nursing profession who may justly speak with authority—Miss E C. EARCE Mrs B A. BENNETT Miss L SNOWDEN nd Miss G B CARTER They accept the principle at two grades of nurse have become necessary d suggest that students training for grade I ndard should hold the school-leaving certificate a higher qualification and should be in training 4½ years Grade II students would be drawn secondary or elementary schools and need hold ertificates their training would last 2½ years inating in an examination largely practical and They suggest the descriptive term sister he first, and nurse for the second grade to diminish the title of nurse seems unfortunate . y it should be kept for the state-registered woman the term student nurse for the woman ding to qualify For a helper of the second some other description must be found (e g lla) to call her a nurse—even an assistant —is to debase the currency of nursing and to e confusion in the minds of the public

e Manchester suggestions are timely, but they at nursing from within If recruitment is to nproved it is essential to look at the profession gh the eyes of the recruit and it is inept to say er The welfare of the patient must be the first uderation The nurse must be prepared to sacri-herself to that An appreciation of the patient s ns can only develop fully in a woman who has begun to study nursing and to love her calling A demand at the outset for sacrifices only alarms the hesitant · and in any case no more sacrifices should be required from a student nurse than from any other young person studying for a profession Few careers in medicine fail to include a sense of vocation but how many deans of medical schools find themselves extolling sacrifice to prospective students ? It is not at the outset a question of money · students in professions other than nursing expect to pay not to be paid At the beginning of this year the Minister of Health tried to overcome the shortage of applicants by raising rates of pay and by appealing for more nurses The rates of pay in the Civil Nursing Reserve were set at £40 a year for student nurses £105 for trained nurses £55 for nursing auxiliaries and £70 for assistant nurses in all cases with board lodging and laundry allowed There are objections to this arrangement . at present most auxiliaries and assistant nurses are only partly trained women who for one reason or another are not attempting to become state-registered nurses They are living in close association with student nurses and—though having a somewhat lower status—are receiving higher salaries The establishment of two grades trained for different purposes would help to overcome this difficulty It might then become possible to treat student nurses as true students and pay them nothing · but in that case the hospital should cease to depend on their labour for the care of patients They should be like medical students an accessory not an integral part of the staff To run hospital nursing largely on student labour as is done at present is unjust both to the trained nurse and the nurse in training It limits the number of posts open to trained women and subordinates the interests of the student to hospital convenience If she is being paid for service at however inadequate a rate the nurse is in a weak position to argue her cause as a student.

The salaries to trained staff are moderate when all emoluments are reckoned in but part of these emoluments take the form of board and lodging. and the trained nurse is thus compelled to live in hospital —a plan which makes for hospital convenience and economy, but has serious side-effects for the nurse Few people. male or female benefit by living in a circumscribed world composed largely of their own sex , maturity of the mind and emotions is difficult to achieve and maintain in such surroundings Intelligent girls contemplating the profession feel that nurses should have at least as much private liberty as women doing say secretarial work . and that they would be the better for it Nor are the prospects for the older nurse outside hospital such as to inspire confidence in parents seeking a safe livelihood for their daughters or in the daughters themselves In private nursing the young nurse is often prized above her seniors District and school nursing, though giving a measure of freedom are hard exacting jobs and not particularly well paid Mental nursing is interesting work and pensionable but the isolation of many mental hospitals and the need to live in (as well as that uninformed dread of mental patients which is almost universal) deters many · while the higher rates of pay offered attract those who are driven rather by their financial needs or responsibilities than by an interest in mental work

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[1] Nursing Mirror Aug 23

The logical way out of the recruiting dilemma is to ask the girls themselves what they want and to pay some attention to the answers These are reasonable enough they want equal freedom and leisure with other girls in training, prospects of a safe and adequate livelihood, and an opportunity, when training is complete, to live a normal home life outside working hours And if they cannot get these things they will not flock to become nurses it is as simple as that The national committee on nursing which the Minister of Health contemplates setting up is to have panels representing employers and employed It might be as well to add a third panel composed of parents, headmistresses and possibly of girls leaving school—or at least to hear evidence from these interested and interesting parties A real appreciation of fundamental issues appears in the scheme drafted by Miss **PEARCE** and her colleagues, and also in a bill on nursing lately drawn up by the Women's Parliament, at their first session on July 13 last This bill asks for reorganisation of the training system so that students should not required to perform full hospital duties simultaneo with their studies, for a forty-eight hour week, four weeks holiday annually for student nurses five weeks for trained nurses, that trained nu shall be allowed to live outside hospital and to continue their employment after marriage, and that nurses' homes for those in training shall be run as hostels, controlled by an elected committee of the residents There are other suggestions, about rates of pay, pensions, uniform and the training of nursing auxiliaries; but those set out above strike at the heart of the difficulty They are precisely those which the hospitals find it hardest to face, because they alter fundamentally their disciplinary and economic relations with the nursing staff If the best types of woman in the country, however, are unwilling to submit themselves to the traditional conditions, the conditions must give way We not only want the best nurses we can have them—but on contemporary terms

Annotations

INTRACAPSULAR FRACTURES

NEARLY 40 years ago Royal Whitman of New York began to teach that fractures of the neck of the femur—which for many generations had been regarded by surgeons as a lost cause—could be reduced by manipulation, and, if fixed in a plaster spica with the hip abducted and extended, could be expected to unite soundly In due course Whitman was able to demonstrate to unbelievers that the abduction plaster could be used with safety in old and frail patients This was a notable landmark in the evolution of modern fracture treatment, and the Whitman procedure soon became the accepted routine in surgical clinics throughout the world As experience increased, it became evident that there were many disappointments and failures still to be faced, even in experienced hands, and in recent years, the treatment of this type of fracture carried with it a mortality of 12–15%, and bony union was observed in not more than 50% of the cases In 1907 Pierre Delbet of Paris had devised an operation in which the fracture line was transfixed in the long axis of the femoral neck by a screw or nail, the whole procedure being carried out under X-ray control The Delbet technique attracted few followers, and it was not until 1931 when Smith-Petersen[1] of Boston reported the first series of cases in which he had used his now famous triflanged nail, that interest was reawakened in the problem of internal fixation of the fracture Smith Petersen's mode of attack was to reduce the fracture after exposing the fragments through an anterior arthrotomy, and to insert the nail under direct visual control The disadvantages and risks of a wide exposure of the hip-joint in the older patients led to a revival of the Delbet principle of nailing under X-ray control. Since 1934 this principle has gained almost universal approval, and the triflanged nail provided with a central canaliculus to allow its insertion over a guide, has been used in the majority of surgical clinics In the perfection of the technique of extra articular nailing, Sven Johansson of Gothenberg[2] and Thomas King of Melbourne,[3] amongst others, have played a notable part

In the United States, multiple wires of the Kirschner type have found favour as an alternative means of internal fixation, and more recently the advantages of a special screw so constructed as to exert a binding or impaction force on the fragments, were stressed by the late Vittorio Putti[4] in one of the last contributions made by this great intellectual leader of orthopædic surgery Some of the earlier reports of the results of extra articular nailing, which were based on comparatively short periods of observation, created the impression that the problem of the intracapsular fracture of the femoral neck was now finally solved But evidence which is now becoming available shows that this optimistic view is unjustified A valuable report of a commission set up by the American Academy of Orthopedic Surgeons[5] has been recently issued, the commission has analysed the late results of pinning in 247 subcapital and transcervical fracture, which—out of 923 documented cases—were accepted as fulfilling the following requirements the fractures were recent and showed definite displacement, pre reduction and post reduction radiograms were available for scrutiny, and radiograms of the fracture taken one year later accompanied the clinical notes In these 247 cases the fracture was secured by a triflanged nail in 144, by multiple wires (pins or spikes) in 83, and by miscellaneous means (screws, grafts) in 14 The commission found that bony union was obtained in 169 cases (70 1% with a slightly higher figure in fractures treated by the triflanged nail as compared with those fixed by multiple wires Arthritic changes of varying degree developed in a quarter of the cases in which bony union occurred, the most severe types of arthritis, which were characterised by aseptic necrosis and disintegration of the femoral head, were seen in cases examined 18 months and 2 years from the time of the operation In the non union gro (30%) there was a higher incidence of failures in fractures imperfectly reduced

The 923 cases (of which 682 were rejected in the sum of late results) yielded valuable collateral information The mortality was 11 6%—not very different from the figures for the Whitman method Failure to maintain fixation of the fragments, owing to breaking of the nail or shifting of the nail, was reported in 11% of the triflanged nail cases, in 21% of the multiple wire cases and in 2 of the cases fixed by miscellaneous means It was not that a shifting nail tended to be extruded when multiple wires tended to enter the joint cavity De these drawbacks the commission were in no doubt th in the hands of expert surgeons the modern method internal fixation had improved the results of the tr ment of intracapsular fractures of the femoral ne ey concluded with a note of warning—that many appointments and failures were bound to occur if the ethod was used by inexperienced operators

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[1] Smith Petersen M N Ca Vangorder G W
Arch Surg Chicago 1931

[2] Operative Treatment of Col nhagen,
1934

[3] *Med J Aust* 1935, 2, 521

[4] Cura Operatione delle Fratture del Colle del Femore, Bologna, 1

[5] *J Bone Jt Surg* 1941 23

There is as yet no comparable series of documented ses treated in Great Britain but a recent analysis of the te results of 75 consecutive intracapsular fractures eated in the Bristol fracture clinics[6] bears out the utious findings of the American observers In the istol cases which were all reviewed after one year or nger bony union (demonstrable by radiography) was btained in 58 7% necrosis of the femoral head eveloped in 14 7% (it was commoner in the younger atients) the operation failed for technical reasons in % and the mortality (within three months) was 3% Clearly the intracapsular fracture of the neck f the femur still presents a formidable problem

A BOOK ON BURNS

The flash of the exploding bomb fire in the air fire on the ship the burning house all the associates of war make burns one of the most important of war injuries Before the war we accepted the tannic-acid treatment of burns rather as the totalitarian states accept the dictates of the dictators—en masse Every wrinkle every finger every eye every degree of burn required only this one treatment The pace of war quickened the burns were severe and the misuse and maluse of tannic acid was soon to lead to some tragedies Then the pendulum swung to the opposite extreme and tannic acid came to have more horrors than the devil himself Saline baths bags, oils ointments a profusion of old treatments were revived or suggested The battle of burns was on and the practitioner has stood and stared and looked up at it pardonably a little bewildered The short treatise of a hundred pages by Mr A B Wallace[7] brings with it an ebullition of cooler reason "Up to the present and generally speaking the employment of one of the tanning agents is undoubtedly the method of choice in the treatment of burns" he says But he makes it clear that he does not like tannic acid for the hands and for what are now called deep or third-degree urns On the face he has had good results with anning and has not been troubled by corneal ulceration He describes in detail the various methods that may be mployed especially saline baths and comments that here are particularly promising hopes for the treatment of third-degree burns with Euglamide—a sulphonamide cod-liver oil glycerin dressing introduced by the Edinburgh school For first aid treatment he would have no ocal substance applied and the patient merely brought o hospital as soon as possible The whole book is packed with practical suggestions He gives charts how o estimate the extent of the surface lesion, details of how o maintain the water balance the amount of serum equired and even the details of serum preparation Particularly valuable are his constant references to the elative amounts required in the treatment of burns of nfants and children His suggestion of taking half-hourly rectal temperatures and blood-pressure records is not always feasible in time of war and frequent recordings of blood pressure are often distressing for the patient with wollen burnt arms His illustrations of how to set out rollers will be of particular value in organising burns units whose importance he urges strongly. Some of the ther drawings showing the cleaning of the patient are ot however very instructive and their space might have erved for greater encouragement of skin-grafting and fuller description of its technique Nor is it essential specially in the light of the E M S memorandum on he treatment of burns[8] in which soap and water are ecommended, to insist on the use of saline only for the cleaning of the burn But he sets out clearly the recent advances of this war—even to the air filter for the drier, since the danger of disseminating dust-borne bacteria has been recognised

BACTERIOLOGICAL DIAGNOSIS OF TUBERCULOSIS

DEMONSTRATION of the causative organism in material from an affected patient is with minor qualifications the most reliable method for the diagnosis of any infection Tuberculosis is no exception but the bacteriological diagnosis of tuberculous infection is far from satisfactory and attempts to demonstrate the organism are often made in too perfunctory a manner. In the case of pulmonary tuberculosis even when a diagnosis of parenchymatous infection is made by other than bacteriological means it may be all-important both for the patient and the community to know if tubercle bacilli are being expectorated The methods available are direct microscopic examination of the sputum before and after concentration culture on suitable media and guineapig inoculation whenever the diagnosis is in doubt all three methods should be used In the direct microscopic examination of sputum there are certain essentials which must never be omitted Among them are the need for examining several daily specimens of the morning spit and in the laboratory scrupulous cleanliness of glass-ware, preparation of the smear from a purulent speck diligent microscopic search and precautions against saprophytic acid-fast bacilli from cold-water taps, corks and the like The value of microscopic examination of the concentrated deposit after treatment of the sputum with antiformin or normal soda is not generally appreciated—for example in one recent series out of 112 specimens microscopically negative on direct examination 33 were positive on culture, and of these the smears of 16 concentrated deposits were microscopically positive so that an immediate report could be given

Where sputum is not available examination of gastric contents or of fæces is recommended, particularly in children who tend to swallow their secretions An alternative and easier, procedure is the use of the laryngeal swab and Nassau[1] has lately shown how the technique can be used culturally for the isolation of tubercle bacilli from apparently sputum-free patients; the results were particularly good in women in those undergoing collapse therapy, and in the diagnosis of early infiltrative lung lesions The swab moistened in water, is passed into the larynx with or without the aid of a mirror and the patient is asked to cough On receipt at the laboratory the swab is placed for 5 minutes in 10% sulphuric acid transferred to 2% sodium hydroxide for 5–8 minutes and then rubbed over the culture medium. In two groups of 166 and 107 patients who were originally sputum-free or had ceased to expectorate 37 9 and 54 2% respectively gave positive cultures from the laryngeal swab

The satisfying results obtained from culturing suspected tuberculous material in screw-cap bottles on the newer media—Löwenstein-Jensen,[2] Petragnani[3] Jameson's[4] medium, and now a bean-egg medium[5]—are gradually becoming more widely known but the best method for concentration of sputum or other contaminated material the amount of inoculum the number of culture tubes to be inoculated, and the optimum gaseous and pH environment are points about which there is as yet no finality. Failures occur inexplicably and in any large series in which the results obtained by smear, culture and guineapig inoculation are compared no one method gives 100% of positives In a recent analysis of a miscellaneous

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Eyre Brook A L and Pridie K H *Brit J Surg* 1941 29 113

The Treatment of Burns London Humphrey Milford Pp 106 5s

See *Lancet* March 29 1941 p 425

1. Nassau E *Proc R Soc Med* 1941 34 397
2. See Mackie T J and McCartney, J E Handbook of Practical Bacteriology Edinburgh, 1938, p 123
3. See Jameson S R. *J Path Bact* 1936 42 435
4. *Ibid* 1938 47 353
5. King, E S and Lucas, M *J infect Dis* 1941, 67, 216

collection of sputa, urines, pus, pleural and cerebrospinal fluids from tuberculous cases (total positive, 321) Whitehead[6] had 139 specimens positive on culture which were negative microscopically, but he also had 27 positive smears with corresponding negative culture Again, 31 specimens were positive on culture but negative in the guineapig (9 animals died prematurely), while 23 specimens, negative on culture, were positive in the guineapig Obviously there are factors concerned in the recovery of the tubercle bacillus from infected material which still need elucidation

ABSORPTION OF IMPLANTED HORMONE TABLETS

THE administration of hormones by the subcutaneous implantation of compressed tablets[7] may now be said to have passed the experimental stage and to have proved its value, especially when a long, steady dosage is required The technique has received considerable clinical attention and minor difficulties such as preparation and sterilisation have been largely overcome It is also generally agreed that, after the implantation of tablets into a pocket of the subcutaneous tissue and closure with a stitch the skin heals normally and no local disturbance results A tight capsule composed of connective tissue forms around the tablet It varies in vascularity, and is of doubtful influence on the rate of absorption Menopausal or postmenopausal women with symptoms controllable by œstrogens, eunuchs or eunuchoids, and cases of Addison's disease are typical examples of subjects in which the implantation of tablets gives continued therapy, without frequent injections, with substances of small or doubtful activity by mouth In these cases, the longer a single implantation is effective the better for the patient, hence it is necessary to know the level of dosage we can expect a tablet or nest of tablets to give after it has been in situ for some time Relatively few observations of the rate at which absorption continues as the tablet diminishes in size have been made in the human subject, but in one of the most detailed reports, Geist and others[8] conclude that tablets of œstradiol, implanted in women, become so isolated by the progressive formation of a thick capsule of connective tissue that after a period of about 3 months absorption almost ceases They prefer to use loose crystals for clinical implantations, for these produce less encapsulation than tablets On the other hand, Thorn and Firor[9] have studied the absorption rates of tablets of desoxycorticosterone acetate in man, and their results show that the absorption from a tablet left in situ for nearly 250 days continues at much the same rate as that from tablets implanted for shorter periods They comment on the regularity of the rate of absorption, and conclude that a single implantation of tablets of the hormone should supply enough material to last 9–12 months

This problem of the rate of absorption and its maintenance is more easily investigated with animal material Emmens[10] has implanted uniformly compressed disc-shaped tablets, of testosterone, œstradiol and diethylstilbœstrol, and a large series of their mono- or di-esters into male rats The tablets were as uniform in weight and size as could be obtained, and were removed at intervals of up to 85 days, weighed and reimplanted in a fresh site The variation in the rate of absorption from tablet to tablet of the same substance was small, especially for the steroids As found by Thorn and Firor with desoxycorticosterone, the rates of absorption tended not to fall but to remain at about the initial level even when a considerable percentage of the tablet had been absorbed Emmens concludes that a practically constant dose level may be maintained throughout the greater part of the life of such a ta as long as the danger of sudden crumbling is avoided care in manufacture Esterification of the substa reduces the rate of absorption, and it should be ex by choosing a suitable ester and using several tablets implantation, to administer a steady adequate do for very long periods by a single operation A similar investigation was carried out by Forbes,[11] who used cylindrical tablets of uniform compression Forbes excised tablets from his rats at various intervals after implantation, and did not reimplant them Unfortunately, he used tablets of such a shape and weight (6-10 mg) that 90% absorption took only 88 days with the most slowly absorbed substance, progesterone so that the effect of prolonged encapsulation was not observable However, he says that in cases where a tablet is surrounded by a thicker capsule than usual the rate of absorption tends to differ somewhat from the others—it appears from his figures to be most often *greater* than usual These data show conclusively that encapsulation in animals does not prevent absorption which continued at a steady rate in Forbes's experiments until 90% of the tablet was absorbed, except with progesterone, which showed a decrease in the absorption rate as time went on

Fears that the long-implanted tablet loses its usefulness, or even that its output decreases as much as theory might predict, thus seem to be ill founded The results of Geist and his colleagues with œstradiol cannot be ignored, but need confirming before they can be accepted as of general application Since these workers used physiological criteria by which to measure the output of the tablets, it is not impossible that they were working near the threshold of response, and that a slight decrease in absorption was erroneously interpreted as a cessation or near cessation

PLANNING FOR MENTAL HEALTH

IN 1938 the Council of the British Medical Association appointed a committee, under the chairmanship of Dr R G Gordon, to inquire into and report upon the provision for dealing with mental health in this country, with special reference to the psychoneuroses and allied disorders The work of the committee, apart from consideration of the report, was completed before the war broke out, the report[12] has now appeared and give a useful survey of our facilities for mental treatment up to that time, with a model scheme for an organised mental health service The committee emphasise the essential unity of mental and physical illness, they cannot be divorced from each other and in all diseases both the psychic and somatic components must be taken into account They quote Dunbar, Wolfe and co workers who found the psychic factor important for the illness in some 80% of hospital admissions, and on that and other evidence conclude that in any group of sick persons something like 30% will be found to be suffering from conditions in which it is helpful to have psychiatric advice The committee agree that no clear distinction can be made between the psychoneuroses and the psychoses, and that the conditions diagnosed can be ranged in such a way that the actually or potentially psychotic form one end of a scale at the other end of which are those psychoneurotics who are no more liable to develop a psychosis than anyone else The size of the mental health problem is manifest in their frank statement that it is at present impossible to provide treatment for all those demanding or requiring it, and they repeatedly urge the need for more doctors trained in psychological medicine, and for greater attention to psychiatric training in the medical curriculum The inpatient provision for chronic psychotic patients, they think, is reasonably efficient and the provision for intary and temporary patients in some areas is good , they recognise an urgent need for special accommodation for the treatment of those acutely ill patients o have a prospect of recovery These, they wisely d, should be treated in separate units from those vided for chronic patients Moreover they point t that there is at present no special provision for ronic neurotic patients who constitute a serious social oblem Among many valuable recommendations ey suggest that some uniform system of follow-up d assessment of results should be adopted by the rger institutions undertaking treatment Certainly e have much to learn about the value of psychotherapy, d uniform records would in a few years make a large dy of information accessible

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[6] Whitehead H G *Amer Rev Tuberc* 1940, 42 795

[7] Deanesly R and Parkes, A S *Proc R Soc Med* 1937 124, 279

[8] Geist S M Walter R I and Salmon, U J 1940, *Proc Soc exp Biol N Y* 1940, 43, 712

[9] Thorn, G W and Firor, W M *J Amer med Ass* 1940, 114 2517

[10] Emmens, C W *Endocrinology*, 1941, 28, 633

[11] Forbes T R *Ibid* 29 70

[12] From B M A House Tavistock Square, W C 1 6*d*

FATAL STINGS

SUDDEN deaths after a sting by bee or wasp are rare ut not unheard of The two examples recorded by r Dyke on another page can be supplemented by nother which was reported in the daily press last week n East London A married woman of 43 had kept bees or two years and had often been stung without more han the usual unpleasantness In the middle of July, however, she was stung on the neck and ten minutes later her chest felt tight and she found difficulty in breathing either in or out She looked blue and felt faint, but in half an hour was well again Six weeks later she was attending to her bees, wearing gauntlets and trousers, with a veil over her face, when she was stung four times in quick succession, on the left ankle, on the dorsum of her right foot and twice on her right calf She took little notice for seven or eight minutes, when she again felt tight in the chest, and hurried anxiously indoors to lie down After another two or three minutes she was deeply cyanosed, her chest seemed fixed and she was frothing at the mouth She died about twelve minutes after the stings No treatment was given All the stings looked alike, with a central weal 2 mm across and an outer ring of erythema 8–10 mm across , there was no rash elsewhere At the autopsy Dr Keith Simpson found no pre-existing disease The body was deeply cyanosed and there was slight œdema of the lungs, filling the terminal airways and producing some ballooning The cause of death was ‘ allergic shock due to bee-stings ” The woman had twin daughters, aged 15, and a month ago one of these developed sudden pain in the upper abdomen with generalised itching and widespread urticaria within five minutes of being stung by a bee Her sister has shown no unusual reaction to stings The coroner suggested that both of them should avoid bees in future

These people clearly die from the violent tetanic contraction of the bronchial muscles such as is seen in anaphylactic shock, but why they do so is not so clear Bee venom is a complicated mixture,[1] but the more reliable recent work points to the main toxic fraction being a dialysable protein of low molecular weight Wasp venom is probably much the same, though there s little cross immunity between the two Hypersensitivity seems to be the likely explanation, but this cannot be the whole one, for bee-keepers have noted severe general reactions at one time and not a day or two later Massive dosage may play a part, but deaths have followed single as well as multiple stings Dyke favours Roch’s view that the fatal sting happens to pierce a vein, and Ryle[2] has supported this view in reporting a severe general reaction after a sting which made no mark In the latest case, too, Simpson found a minute puncture n a vein underlying one of the stings in the calf Dyke points out that in all the recorded cases the patient has died within half an hour of the sting, but death is not immediate, and there would be time to give an injection of adrenaline if this was handy The cautious bee-keeper might keep a tube-type syringe containing adrenaline on the mantelpiece

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[1] Thompson F *Lancet* 1933 2 446
[2] Ryle J A *Ibid* 1932 1, 642

A NEW ANTIMALARIAL DRUG

So far all compounds which have a definite action against malaria of man have also proved effective against malaria of birds, although not always to the same degree The converse, unfortunately does not hold true, so that tests with bird malaria while they afford a convenient and indeed essential, method for the preliminary evaluation of the antimalarial properties of new synthetic compounds, serve principally as a means of selecting those which are worthy of further tests on human parasites, and for eliminating those which have no antimalarial action Testing by means of bird malaria (especially *Plasmodium relictum* in canaries) has been in progress on a large scale in Germany, Great Britain France and Russia for the past 15–20 years and all the new synthetic compounds with proved antimalarial action in human malaria—Plasmochin, Atebrin, Fourneau 710, Plasmocide and so on—have been discovered in this way Work on similar lines has been going on in America and now Hegner and his co-workers[1] report the discovery of another effective compound in the derivative of quinine known as hydroxyethylapocupreine which has been used for several years in the treatment of pneumonia[2] They claim that this drug is much less toxic than quinine (it produced no toxic manifestations in the pneumonia cases), and about equally effective against the parasites of bird malaria They made tests with three species of bird malaria—*P lophuræ* in young Pekin ducks, *P relictum* in pigeons, and *P cathemerium* in canaries The new compound showed antimalarial action, more or less similar to that of quinine hydrochloride, against all three parasites No precise figures are given for the maximum tolerated and minimum effective doses with respect to the different parasites, but it appears from the experiments on *P cathemerium* that the therapeutic index (minimum effective dose . maximum tolerated dose) is about the same as that of quinine, which is 1 4 The lower toxicity of the new drug would be valuable if this increased its therapeutic index, but if the minimum effective dose is correspondingly higher than that of quinine more of it will have to be given to achieve a similar antimalarial effect and there will be little practical advantage unless it is much cheaper than quinine

In birds the new compound proved equally effective when administered by mouth, intravenously, intraperitoneally and intramuscularly , it remains to be seen what its action will be in man

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[1] Hegner R West E Ray M and Dobler M *Amer J Hyg* 1941 33 101
[2] See *Lancet* 1941, 1 670

AMORY PRIZE—The first award of this septennial prize has been made by the American Academy of Arts and Sciences to Dr Joseph F McCarthy, professor of urology at the New York Polyclinic, Mr Carl R Moore, Ph.D , professor of zoology in the University of Chicago Dr Hugh H Young professor of urology in the Johns Hopkins University, and a European scientist whose name is temporarily withheld as he lives in a country dominated by Nazi Germany The prize, which is the income from a fund established by the late Francis Amory in 1912, amounts to nearly $16,000 and it will be equally divided between the four scientists It was offered for contributions to the treatment and cure of diseases of the genito urinary system Dr McCarthy has developed instrumental procedures for the diagnosis and treatment by way of the urethra, without external excision, of diseases of the bladder and prostate Dr Moore has investigated the physiology of the male reproductive tract, especially as it is influenced by the hormonal secretions of the male sex gland Dr Young has devised an operation of total prostatectomy by the perineal approach for the relief of obstruction of the bladder caused by cancer of the prostate gland

Special Articles

THE CHANGING FACE OF MEDICINE IN NEW ZEALAND

LAST year New Zealand celebrated the centenary of its separate existence as a colony, later a dominion, of the British Empire From a handful in 1840 its population has grown to somewhere near two million, 95% of whom are of British stock Its temperate climate is milder than that of Britain and its landscape more varied, but it has no great mineral wealth So its economy is based on farming and its farmers grow the same crops and the same animals as are raised by the farmers of this country. It is not surprising, therefore, that in its domestic life and its social and political institutions it is closer to the tradition of this country than is any other part of the empire This similarity of tradition, together with the small scale and relative simplicity of the New Zealand scene, make the social problems of that country peculiarly interesting to the students of social problems in this New Zealand's problems are test-tube versions of ours, and moreover the New Zealand people are enterprising enough to make experiments with the contents of their test-tubes In the 'nineties they attracted the world's political interest by their liberal legislation—the enfranchisement of women, for example, and the Compulsory Arbitration Act In 1935 a Labour government came into power and, taking control at the outset of the country's finances, has embarked on a programme of social legislation that, in conception at least, is bold, broadminded and progressive One of its measures is a Social Security Act, which includes a plan to nationalise the medical profession This has met with intense opposition from the profession, and has not yet been carried into effect

The background and the progress of this experiment deserve study outside New Zealand They are described in a small book, "Medicine and Health in New Zealand,"[1] by Douglas Robb, an Auckland surgeon in his early forties He sees the problem as one part of the major task of modern civilisation which is the adaptation of social institutions to the changed conditions of man's life brought about by applied science Social institutions are slow growers, and their adaptation lags, but it must inevitably come To resist it is as futile as Canute To study it, to influence its speed and form, is the only course open to an intelligent mind Robb describes the public hospitals of New Zealand, financed partly from rates and partly from the government, each controlled by a lay board elected locally in a political atmosphere He allows that they do a great deal of good work, but he finds that they fall short of what they should do—namely, dispense to the people of the country the best advice and treatment that modern scientific medicine can offer, and dispense it as soon as it is available They fall short because there are many of them and they do not work in cooperation Expensive equipment is not concentrated and made available in large centres and there kept up to date, but small hospitals attempt more than they can properly accomplish or maintain

The same is true of personnel Technical specialism is not sufficiently advanced—in one of the largest hospitals, for instance, gynæcology is still part of the field of the general surgeon The country's chest surgery and brain surgery are not in the hands of a few well-trained men, who alone could do them really well The reason for this is that the organisation of hospital staffs (who are still honorary although the hospitals are state-financed) is determined not by the fact that hospital patients need treatment but by the fact that members of the staff need to earn their living in private practice The two needs do not run parallel, and when in addition appointments are liable to be made and unmade capriciously by a politically minded lay board without professional advice, the standard of work done must be less than the best In general practice the same conflict occurs What the practitioner mostly does, and what he becomes most interested in, is what patients can and will pay for, not primarily what patients need He cannot help this attitude, for he must earn his bread He cannot help preferring the removal of one child's inflamed appendix to the patient investigation reasons for another child's wetting the bed It is individual fault that the economic rules under works do not allow him to do the best that medicine do for every patient The fact that he is in co private practice is the chief reason why he cont to preventive medicine, does nothing in the nature research, and does not even succeed in fully devel that aspect of the family doctor's relation to his which might be called pastoral care

By discussion of this theme, with variations, makes it clear that reorganisation of New Zeal hospitals should be attempted along what he "functional" lines The prime considerations are the patients' needs and how the resources of modern medicine may most efficiently be brought to meet them A loca elected hospital board in a small district cannot wei these, more coordination of districts, with a measure of central control, is needed, and that central should include non-political voices, many of medical Staff appointments should be made with those prime considerations in view, and by bodies on which the best disinterested professional opinion is well represented. Posts of the registrar type should be instituted Staff should be no longer honorary, but reasonably paid and pensioned He does not discuss in detail whether they should be full-time or part-time This problem is bound up with that of the future of general practice The Social Security Act of 1938 promised a free maternity and general practitioner service to the whole population, but the government has not yet succeeded in introducing it The B M A in New Zealand had already formulated a scheme based on the insurance principle, and applicable by an income limit to 70–80% of the population The government insisted, however, on universal application, and rejected the B M A scheme It began discussions with the B M A on how a universal scheme might be worked, whether on a purely salaried basis, on a capitation basis, or by paying the doctor so much per attendance on every patient coming to him It succeeded in getting an agreed scheme for a maternity service, which is now operating, on the attendance basis, but on the general practitioner service the discussions reached a deadlock which looks like lasting until the return of medical men from overseas service at the end of the war In February last the government actually brought into force a general practitioner service on a capitation basis (15*s* per patient plus mileage) but the president of the B M A announced the non-cooperation of members and since then only a handful of doctors have signed contracts Last week however the government amended the Social Security Act by changing the doctor's payment from a capitation fee of 15*s* to a consultation fee of 5*s* (6*s* 6*d* a home visit), plus mileage as before

Robb holds that reorganisation of hospitals and specialist services is more urgently needed than that of the general practitioner's conditions of work He favours the idea of the American community hospital which serves all members of its community, and elimin ates the ill-equipped uneconomic small private hospital He discusses the bearing of possible re organisation on medical education He describes the widely varying reactions of New Zealand medical men t reconstructive suggestions The younger ones, who i larger proportion than their seniors have had post graduate experience abroad, find it more difficult than their seniors to establish themselves in practice and earn a livelihood, they see the deficiencies, and itch to remedy them more or less radically The older ones, as a group are strongly conservative From their social origins Robb thinks, from the narrow and technical nature of their "university" education, doctors as a class tend to grow conservative, their detailed and absorbing daily work, their close dependance, when success comes in practice, on local conditions and relationships, make them more conservative as they grow older, more satis fied with the status quo There is considerable "feeling" between these age-groups, which is unfortunate unworthy, and hinders progress without directing it Robb concludes with an appeal for an informed an competent survey of the situation of medicine and health in New Zealand, adding gently that "amongst th surveyors there should be at least some whose in the future rather than in the past." From the ev an acceptable plan should emerge. for the total blem in New Zealand is a bagatelle compared with in Britain."

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[1] New Zealand Whitcombe and Tombs, pp 146, 8*s* 6*d*

ch a survey would certainly be of great interest to various bodies in this country in whom the yeast of lanning" is at work. and they would welcome still re warmly a serious attempt. made by the government d the profession in New Zealand. to realise a coöperative eme of medical services in which patients would be ter served than ever. and doctors freed from the straints of economic competition. yet not fettered by se of bureaucratic organisation.

MEDICINE AND THE LAW

A Masseur's Negligence

DAMAGES for negligence were awarded lately in the ymouth county court against George Carter who scribing himself as a masseur and medical electrician. d undertaken to treat Miss Winifred Snell. a woman of 2, for disseminated sclerosis. The patient's mother said at the defendant had been told of Miss Snell's condition nd had agreed to carry out four treatments a week at s. 6d. per treatment. He had told her that he was treating somebody else for the same complaint. Two treatments were given on successive days; the patient's back was massaged with oil and ray lamps were used. Soon after the second treatment. the skin began to come off the back which was severely burned. The burns became gangrenous and. after suffering great pain. the patient died of toxæmia. Dr. S. Noy Scott gave evidence that ray treatment was inadvisable and useless: the disease made the skin insensitive to heat. Anyone with medical knowledge. he said. would realise the danger of ray treatment in such a case. Carter. conducting his own defence. denied that he had been told the nature of the patient's illness: he attributed the wounds to chafing set up by incontinence. Answering the judge he stated that he had no certificate of competence. but he had long experience. having practised for twelve years. He had spent three years in the Victor Institute in Australia. an institution conducted by an American: he left it when the American died. He considered that he knew when ray treatment would be dangerous; he had books which told him when it should or should not be given. Before becoming a masseur. he had been a merchant seaman. Asked by the court if it was his practice to take a patient without proper knowledge of the medical attendant's diagnosis. he replied that patients were usually recommended to him by doctors.

His Honour Judge Scobell Armstrong said he must find Carter negligent in law: he awarded Mrs. Snell £59 1s 6d damages. He went on to offer the court's "full sympathy" to the defendant. regarding him as a person entirely competent to perform work under a doctor's recommendations in all normal cases: unfortunately this had been "a very unusual case."

If comment can be added without disrespect to a careful and courteous tribunal. the decision and its rider exhibit the national compromise between two views of unqualified practice. One view resents any control of such practice, because unsupervised masseurs like the defendant may possess or may at any moment discover some therapeutic secret overlooked by orthodox medicine and because there is much more scientific truth in the world about us than is dreamt of in the registered medical practitioner's philosophy. The other view is that it is unfair to the public to leave electrical or radiological treatment so utterly uncontrolled that an unqualified man can cause fatal burns to a patient suffering from disseminated sclerosis. On this view the sympathy is even more needed by the public than by the unqualified man. Accordingly many progressive municipalities and at least one county council have successfully promoted legislation authorising them to license and supervise establishments for massage and special treatment such as electric or radiant heat therapy. Unlicensed practice is prohibited and licences can be refused where applicants do not possess such technical qualifications as may be reasonably necessary. There is no need to wrangle over complaints of professional monopoly; the defendant at Plymouth had all the freedom he could desire. If the public interest alone be regarded, would it, or would it not, be "reasonably necessary" that an unqualified practitioner who takes money for administering ray treatment should possess and apply the knowledge that there may be "very unusual cases" where his ray lamps will do more harm than good?

Volition in Matrimonial Desertion

Desertion. for the purposes of our divorce law. must be a deliberate and intended act. A patient in a mental hospital if incapable of "the quality of volition required to produce legal consequences" cannot be guilty of desertion. This point was fully examined two years ago in *Williams v. Williams*. Each case. however. turns upon its own facts: the mere suggestion of mental ill health will not establish incapacity of intention. Recently in *Monckton v. Monckton* the facts were as follows. In 1937 the wife ordered her husband out of her house in which they lived and had told him to remove all his possessions. Two years later she went into a mental hospital as a temporary patient. After a year as temporary patient. she was re-graded as a voluntary patient on Dec. 20. 1939; she was discharged on Jan. 22 1940. While in hospital she wrote affectionate letters to her husband which held out some prospect of reconciliation. But on Jan. 9. 1940 when he went to France with his regiment. there was a quarrel and she declared that she never wanted to see him again. She refused to change this attitude when on his return from France. he appealed to her to join him. He then petitioned for divorce on the ground of her desertion.

Under the Herbert Act he had to show that she had deserted him without cause for at least three years immediately preceding his petition. Had her mental condition been such that she could not decide for herself whether she should or should not enter the hospital? If so the husband would be unable to prove her intention to desert and her persistence in that intention for the necessary three-year period. Mr. Justice Henn Collins said that, on the facts before him the court could not infer any such degree of insanity or lack of the "quality of volition." He granted a decree *nisi*.

Alleged Delay in Hospital Treatment

Hospital authorities are probably well aware that a few words hurriedly spoken at the admission of a patient can create the impression of some defect of care and sympathy. At a recent Manchester inquest upon a little girl who died three hours after being taken to the Crumpsall Hospital a constable and a police ambulance driver gave evidence of statements by the casualty ward sister that the child should not have been brought there but should have been taken to another hospital specially prepared to receive children. It was also alleged that an injection of morphia was not given till half an hour after the child suffering from severe burns had been admitted. and that it was a quarter of an hour before the policeman's cape in which she was wrapped was removed and warm blankets were applied. The ward sister denied saying that children were not admitted at the Crumpsall Hospital; there was no delay in giving the injection: the child was placed in warm blankets and the doctor sent for within five minutes of arrival. She denied that when the police officers asked her to give first-aid she replied that it was not a first-aid post. There was dispute about the entries and times recorded in the hospital books. Two medical officers at the hospital testified that the child received the best and quickest possible attention from the staff and that the hospital regulations had been faithfully carried out.

The coroner said it appeared to be a rule of the hospital that normally no child under 16 should be admitted as an inpatient, but these instructions included the order that, irrespective of age any patient should be admitted if his or her condition warranted it and that the doctor who saw the patient should judge his or her condition. He was himself satisfied that the dominant idea in the ward sister's mind was that the child being under 16, should be taken to the Booth Hall Hospital. In the result the child suffered some unnecessary pain and suffering. Life might not have been saved or even prolonged but proper treatment would have made her remaining hours a little more comfortable. He hoped that in future the administrators of the hospital and the medical superintendent himself would make sure that all orders issued to the staff were thoroughly understood and obeyed He recorded a verdict of death by misadventure He had found, he said several contradictions in the evidence and, as an old member of the bar with many years' experience, claimed to judge from the demeanour of a witness as well as from the testimony given He had by the way, asked the two medical officers who gave evidence to leave the court while the ward sister was in the witness-box This forensic precaution against possible conspiracy and perjury is not universally taken in the case of professional witnesses

AN ACCEPTABLE STATE MEDICAL SERVICE

AN open meeting of North London general practitioners from the City of London and the boroughs of Hackney, Finsbury, Stoke Newington, Shoreditch and Bethnal Green, was called by the Practitioners Coordinating Committee on Sept 2 at Islington, to discuss a state medical service

Dr M F MOLONEY, who was in the chair, mentioned the dissatisfaction which many doctors felt at the lack of representatives of general practitioners on the B M A Medical Planning Commission In medicine today he said, the doctor often worked alone in his own surgery with inadequate equipment for the diagnosis, investigation and treatment of disease The patient got the best treatment his doctor could give him with the means at his disposal, but not the best that could be had Nor was the doctor's position becoming any easier National Health Insurance had been extended to include those with incomes of £420 Public-health clinics though progressive and valuable, were encroaching on the territory of the general practitioner He urged that general practitioners should see that those representing their interests on the planning commission or other bodies really did advocate their policy, and that they were not mere yes-men Those doctors who were not members of organisations should talk to their friends and colleagues until an informed body of thought was available

Dr B HYNES thought that, to ensure that all general practitioners were properly utilised in a state scheme, three plans were needed an urban, a suburban and a rural plan Discussing the needs of an urban area he suggested that a large borough like Islington would be divided into centres serving 10,000–11,000 people There would be a unit or clinic housed in a two-story building, placed where it would be easily accessible to the residents of the neighbourhood The ground floor would contain the dispensary, surgery, nurses' side-room, waiting-hall and five small consulting-rooms with examination-rooms opening from each Clerical work, apart from medical note-taking, would be done by a secretary in the office by the front door Upstairs there would be sleeping accommodation for two doctors living quarters for the nurse, two small observation wards, a large sitting-room (also to be used for medical meetings and conferences) a pathology laboratory for simple tests and investigations, and a small X-ray plant by which the presence of fractures could be decided without loss of time The personnel would consist of 10 doctors, working on a rota, 4 in daily session for surgeries and visiting, 2 on night duty (one to take calls and the other to attend emergency admissions) and 2 off duty There would be a day and a night nurse, possibly with a relief a combined laboratory and X-ray attendant, a clerk and a porter Salaries should be appropriate to the posts, and the doctors should get three or four weeks holiday on pay and additional time off to attend periodical refresher courses There would be provision for sick pay, and for a pension on retirement

Dr W W FOX remarked that he had not been in favour of a state medical service in the first place, because he felt the practitioner could do better for himself than the state would do for him, but he had come to the conclusion that unless general practitioners made their wishes known a state service would be introduced based on an extension of the principle of the capitation fee Doctors had asked for an increase of the capitation fee in vain Lately the £420 income group from whom general practitioners until now had derived an appreciable part of their income had been brought under national health insurance, with an increase of a mere 9*d* on the capitation fee, whereas the dependants of persons—who really needed to be brought int scheme—were still left outside it The numl patients whom one doctor could attend were limit Russia they had begun by assigning 2500 to each d but had now decided that 1000 was a sufficient n for one man to attend In the British Medical tion the profession had the machinery by which it make its wishes known but those who dissented B M A policy were not sufficiently organised at p to give a unified opinion, and it was for this reason the Practitioners Coordinating Committee had formed

Dr P INWALD, discussing the loss of free choice doctor which any rota system must entail, said t patients attending hospital were willing to acc treatment from doctors whom they had not chosen pointed out that the prospects of the general practitio were not at present secure if he kept his health, and his investments were sound he might have an income £4–£6 a week at 65 If he fell sick or died he generally left his dependants unprovided General practitioners formed 55% of the profession, and should be represented in this proportion on any body planning for the futur of medicine

A RESOLUTION

In the discussion which followed most speakers accepted the view that a state medical service was likely and agreed that a united body of opinion from general practitioners would help to safeguard their interests One speaker, in the municipal service saw in a state medical service a welcome end to the rivalry between the public-health clinics and the general practitioners Another warned the meeting that salaries under a state service were likely to fall far short of those attainable in practice, but was reminded by Dr Fox that a net salary was a different thing from a gross income with high overhead expenses The following resolution was then presented by Dr D LENIHAN and seconded by Dr G W MACKAY

> In order to improve the medical services to the public and to provide the fullest facilities of modern medicine, preventive and curative, and in the light of recent development recognising the probability of some form of state medical service, this meeting of medical men is prepared to accept such a service provided it includes the following aims adequate consideration of the just requirements of the general practitioners of the country, adequate compensation for existing practices, salaries based on years of service and experience rather than capitation fees, pensions on retirement, limited daily hours of attendance and time off duty each week, annual leave on pay, periodical refresher courses on pay, opportunities for obtaining specialised experience and research, access to hospitals, clinics established as centres for general practice, fair representation of general practitioners on any planning board for the institution of a state medical service, and in its subsequent administration

A vote was taken immediately afterwards and the resolution was accepted by a large proportion of those present Representatives were then coopted from the members of the various boroughs present, to help in furthering the work of the committee

SICK BAY FOR SHELTERERS

THE first central shelter sick bay in the London re for those using public air-raid shelters has been ope by the Corporation of London in the basement of t Cheapside It is intended for the use of those shelt dwellers who have minor illnesses of the kind which would ordinarily keep them in bed at home for a day o two, but which, during severe raids, would not restr them from going to the shelter Children suspected of incubating an infectious disease can also be kept in bed there, under supervision until they make their intentio clear Thus the sick bay should prove a valuable bulwark next winter against the spread of upper respiratory infections and the exanthemata A doctor is attached to the post, on call, and three or four Red Cross nurses are in attendance

The white tiled basement two floors below ground level and protected by many stories of steel and co e, was an ideal site for the new venture No con- ction was needed apart from some plain wooden titions painted white by which the space was divided into two wards—one for men and one for women— d a consulting-room Water is laid on, and there are emical closets on the same floor, while on the floor above ere are water-closets and wash-basins The wards are ored with brown linoleum , each contains six beds but ere is room to put up twelve more beds if they are eded At present they are comfortably spaced out ith unusual lockers in white wood standing between em These lockers can be swung round so that the wer part slides under the bed and the upper part can e opened out as a bed-table To the newcomer the bed- overs come as a delightful shock to the eye they are atchwork quilts made by hand in the gayest of colours y the Canadian Red Cross for the W V S Nothing ould give a better touch of brilliance and homeliness to he wards The surgical equipment provided, with much lse, by Messrs Evans Sons Lescher and Webb is simple out plentiful, including Spencer Wells forceps, dressing scissors, ear speculums irrigators and such usual weapons of the doctor's surgery It is not intended, of course, that any major surgical procedures will be undertaken in the sick bay The firm have also supplied a useful assortment of drugs and stock remedies, and have met all the everyday needs of nursing in shaving tackle, bedpans air-cushions and tooth mugs , there is even an electric kettle The beds and mattresses were provided by the Ministry of Health and so were the cupboards which are of the type usually supplied to shelters Pyjamas, dressing-gowns, bedlinen and blankets have come from the W V S The consulting-room is spacious, with a desk a comfortable divan, and a good light A Turkey carpet, given by one of the medical staff, robs it of that bleakness which is apt, in hospitals, to have a discouraging effect on patients

The sick bay has only been open since the last week of August, and so far no patients have been admitted, but the patchwork quilts may soon find themselves on active service

CANADIAN MEDICAL TRAINING *

MEDICAL education in Canada is primarily the responsibility of the university rather than the hospital Preclinical subjects, biochemistry physiology and anatomy are taught in the university, which is closely associated with one or more general hospitals as well as with the civic fever hospitals, children's hospitals, and provincial hospital services for tuberculosis and mental disease The requirements for entrance to the various universities differ somewhat, but having enrolled at university the student spends one or two years studying physics, chemistry, biology and the other premedical subjects, or he may be required to proceed to a B A degree The medical course proper requires four, five or six years, the sessions of university in peace-time starting about the third week in September and ending in the third week in May There is a ten-day holiday at Christmas and a *long* week-end at Easter Since the outbreak of war some schools have lengthened the academic year by two months and made changes in the time-table thus shortening the course by a year

There is some variation in the plan of the curriculum from one medical school to another but in all great emphasis is laid on anatomy, physiology and biochemistry during the early years The teaching of anatomy, generally speaking, follows the British example of emphasising detailed thoroughness and completeness Courses in physiology differ but little from those in this country, although perhaps greater opportunity exists for Canadian classes, divided into small groups, to carry out a series of experiments on animals Research fellowships or appointments are available for undergraduates wishing to spend an extra year working at anatomy, physiology or biochemistry at the universities, particularly at the larger ones Pathology is a long and heavy course in all schools, and an outstanding effort is made to correlate all aspects of the course—the museum morbid anatomy and microscopical study—with the problems of clinical medicine In all clinical subjects teaching at the bedside occupies much of the student's time Closely supervised activity as a clinical clerk is a feature of the student's final year at university in most of the schools

Examinations are held at the end of each year and the degree of M D. is conferred upon successful completion of the final year Following qualification the almost universal practice is to spend a year as a house-surgeon while at least two schools require one year of internship in an approved hospital before granting a degree Excellent opportunities for postgraduate training exist in the hospitals associated with the universities in teaching In most hospitals, junior residents are appointed for a year during which they work on four or more different services It is possible to progress through a series of resident appointments in the larger general hospitals to the posts of R S O , R M O , resident anæsthetist or resident in obstetrics and gynæcology Fellowships and internships in pathology are filled yearly

The Royal College of Physicians and Surgeons of Canada conducts primary examinations which the undergraduate is encouraged to prepare for and to try after the second year of his medical course The final examinations, in medicine or surgery are commonly undertaken, as in England, after several years' training in hospital The universities of Alberta Dalhousie Manitoba, McGill, Queen's Toronto and Western Ontario are all English-speaking universities In the Universite de Montreal and Laval Universite, French is spoken, and teaching has been generally influenced by the French School of medicine

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In England Now

A Running Commentary by Peripatetic Correspondents

HOW eloquent and incisive are the orations that one makes in the bathroom, how halting and commonplace the speech of which one is delivered in the council chamber The other day I attended a meeting called by the local medical war committee which was addressed by E M S officials, R A M C officers and consulting physicians The audience, composed of consultants, public-health officials and battalion medical officers, took its medicine in glum silence broken only by a little tepid applause The hospital officer instructed the hospital staffs to *fill* in the forms promptly and with due attention , the R A M C explained to the consultants the inner meaning of the Army's funny little ways , the consulting physicians and a professor of medicine told the regimental medical officers that they must exercise more judiciously their diagnostic powers The outpatient clinics of the hospitals are apparently crowded with soldiers referred by the R M O 's—soldiers with coughs with a request that they should be investigated for pulmonary tuberculosis, soldiers with nervous dyspepsia for gastric investigation, soldiers with tachycardia requiring electrocardiographic examination These investigations were not only unnecessary it was said, but they were doing much harm to the soldiers "Come to your conclusions," exhorted the professor eloquently, "and come to your conclusions quickly " The medical officers in the face of the higher stars of their constellation, were silent Next morning while shaving and looking my audience steadily in the eyes, I spoke in their defence

"It is generally admitted " I began, "that the regimental medical officers of today show a distressing inclination towards second opinions and ancillary investigations No useful purpose will be secured in suggesting that they should change their habits of mind and practice The good doctors among them will continue patiently to separate the wheat from the chaff , the less good will by prodigious exertions reduce the number of the cases they send to hospital soldiers with ulcers will be kept in the *unit until final* breakdown the gastric neuroses will continue to be sent to hospital for investigation You must remember," I went on applying more soap, "that these Army doctors were the family doctors of yesterday and the medical students of the day before Some of them may have been Professor X s students Can it have been that their medical education was faulty ? Is it possible that they were taught to regard medicine in the professorial units as an applied science and not as a practical art ? Certainly they were taught that the proper investigation of a chronic cough made necessary a radiogram and a sputum investigation, that no chronic dyspepsia could be correctly assessed without chemical and radiological evidence, that cardiac neurosis was established as a diagnosis when electrocardiograms were negative In short, that neurosis was a negative diagnosis and not to be positively established Which of us was told by the professors that it was better to miss one case of active tuberculosis or cancer than to confirm five neurotics in their neurosis? When did a professor of medicine come to his conclusions quickly? These R M O 's too, were family doctors yesterday *Today they are told by consulting* physicians that they send their patients too readily to hospital for investigation This is apparently true today and it was equally true yesterday, and yet no-one has heard a consulting physician tell his family-doctor clients that it would be better for their patients if they did not refer them for a second opinion and that some patients are made worse and not better by investigation The experienced family doctor knows this, the consulting physician knows it too, but it would require a supernatural disinterestedness in him to preach the good news Moreover most family doctors serve in the national health insurance system which denies them the opportunity to investigate their patients at all deeply, so that reference to hospital with consequent loss of clinical experience or treatment of his patient without diagnostic certitude is the panel doctor's daily dilemma To learn in what circumstances radiology and pathology may safely be discarded in diagnosis requires a clinical experience which can only be acquired by daily contact with them The professors seem to have made a genuine discovery which will have incalculable effects on medical education We may again breed a race of family doctors for whom medicine is a practical art, we may one day give the family doctor a medical service in which ample diagnostic facilities are available for him and his patients "

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* This contribution to 'Grand Tour ' reached us too late to appear in the Students' Guide (*Lancet* Aug 31 p 260)

It seemed to me, as I looked in the mirror, that no words of mine had ever had such a friendly and intelligent reception

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We were due to arrive at Crewe station in about half an hour and I noticed with foreboding that little Hector had finished his copy of *Rainbow* He laid the paper on the seat beside him and looked expectantly at me, obviously inviting further suggestions for defeating boredom I had noticed, however, that a Polish airman sitting on the opposite side of the compartment had been craning his neck trying to read the outside page of the comic paper I offered it to him, not without misgivings for I wondered whether he would feel embarrassed To my surprise he not only accepted the paper with sincere but slightly incoherent expressions of gratitude, but promptly settled down to read the simple sentences in which the exploits of the Bruin boys are described Very soon Hector was by his side supplying the low-down on such famous characters as Tiger Tim, Joey the parrot, Georgie Giraffe et alii The Pole concentrated on the narrative with grim earnestness, and would not allow a page to be turned until he had read every word When we prepared to leave the train he folded the *Rainbow* carefully and with a courteous bow of his head handed the paper back to my son Apparently it is not only the British who take their pleasures sadly

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Present happenings in Iran bring back memories of the arrival in Tehran of our small party in September, 1915 It had left home three weeks before for Bergen and had come via Oslo Stockholm Haparanda (at the top end of the Gulf of Bothnia where a frozen river was crossed on foot into Finland), Petrograd and Moscow to Baku, thence by Caspian steamer to the Persian coast and so to the capital, at 3600 feet, by carriage with frequent changes of horses This meant 225 miles in three days and nights and crossing the Elburz chain at 7000 feet Our first sleep was rudely broken Was there anything that would destroy ciphers without smoke? Better not unpack The enemy legations were arming Austrian prisoners escaped from Trans-Caspia in the city, and the Swedish officer instructors were joining them with their native gendarmerie Ahmed Shah was wavering under heavy pressure Later there came a day when feeling sure of him German and Turk, and gendarmes, complete with hangers-on, moved to the shrine town six miles south on the road to which they hoped would once again become the c and waited Cabs disappeared from the streets as food from the shrine His Majesty's travelling was ready One final, day-long interview with our and the Russian ministers and the horses were taken Only the hangers-on and the cabs returned, hungry empty That was not the end of the Allies' troubles Iran remained neutral and the danger in the Middle was scotched, largely by resolute diplomacy, just as this week by *other means* The nightmare of a journey receded We unpacked !

Under Rezah Shah Iran has changed materially many ways since those days All credit to him ! two surprising departures from established policy reported There are only two things that really matter on the great upland plateau, water and bread Since no rain falls from May to October men fight and sometimes kill to maintain their immemorial irrigation right And bread? It was common in this vast area with the harvest dependent on the mountain snows, few roads and only animal transport for there to be famine in one province and plenty in another A good government was one that kept bread cheap and abundant, nothing else mattered But now we read of large scale selling of wheat to the Nazis by the government itself and hunger if not famine Famine in Iran means typhus and relapsing fever as well The second surprise is to find the Nazis in key positions, for these used to be given only to nationals of the smaller powers, thus there were Belgians in the posts and customs, Swedes in the gendarmerie and police, and so on True there were Frenchmen at the medical school, and in the Pasteur Institute and similar posts, but the interests of France were held to be purely cultural, and the Germans had the government hospital up to the last war when it returned to the Persians after two of our own countrymen had completely reorganised it To what a sorry mess this change of policy has led ! However, all's well that ends well the fighting has stopped at Kermanshah and we can hope that at Hamadan, the next city on the road to the interior, old Avicenna will continue to rest undisturbed by high explosives Sheikh Abu Ali ibn' Sina to give him his full name, was a Persian of the eleventh century who wrote their first great system of medicine, the " Qanun," it was translated into Hebrew and Latin and was still read in the seventeenth century at Montpellier so they say Physicians had many interests in those days and Avicenna was a minister of state and a poet as well, a judge of wine and other delights His tomb is still well preserved, and some twenty years ago British initiative led to the restoring of the domed building over it and of the garden in which it stands So much that is pleasant and lovely in life has come from Iran that one recoils sharply from the thought of her intelligent hospitable people being plunged into modern war

* * *

" Any Questions " in the Forces' programme at 5 1 on Sundays is an excellent turn After a bit one seems to know intimately the various members of the Brains Trust and can often predict the tenor of their replies, the scientific, basal approach of Professor Huxley, the god-like survey of Professor Joad, the not very penetrating but always cheery answers of Commander Campbell, which, I am sure, reflect years of tactful presiding at the Captain's table on liners Last Sunday the Trust seemed to be unanimous in advocating the same elementary education for all the children in the country and secondary education only for those who show promise With the justice of this I am in full agreement Quite a number of public schools really belong to the poor Harrow for instance was founded for thirty or forty poor scholars, but in fairly modern times the poor scholars have been legally robbed of their inheritance and pushed down the Hill But I am doubtful about this proposal on other grounds The cleverest man I know—cleverest in that he gets quickest to the kernel of a subject and expresses it pithily—is a gardener, the most instantaneous and devastating at repartee is an Irish-Cockney ex-paperboy the best informed works in an ink factory Presumably, if equal opportunity comes to all, the so of lads that these people were will become civil servants s and professional men and instead of getting the ion cleaved by monetary differences it will be by ellectual ones a deeper schism still At first glance it ms to me to be like robbing the soil of humus in order produce a bumper crop or two In any case it leaves character side out entirely Another point "showg promise" will probably mean aptitude in examinans, in memory, in writing answers in speaking in ord-proficiency Both Leonardo and John Hunter, to ither of whom words came easily even in adult life ould have failed here. By the exam method not only ould one miss the talented picture-thinker who develops late and is dreamily lazy (Why the devil should I orry about your wretched grammar when I can sit ack and watch glorious pictures ?), but one would get hose precocious caterpillars the early word-thinkers ith their excellent memories and no vision who as erfect insects have been responsible for so much of the ness the world's in today Perhaps the educationists ould devise an exam which would pick out these imaginative children "Come Jack (or Jill), tell us a story " I often think we should do the same thing in our professional exams, which at present are almost entirely memory tests Questions like this "Invent and describe (*a*) a new vitamin (*b*) a new venereal disease, (*c*) a brand-new site for the kidneys, showing what anatomical adaptations would be necessary The whole subject needs rumination

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Public Health

From the Annual Reports

SOUTHERN RHODESIA

Dr Martin's report for 1939, though delayed, is not curtailed The estimated population in mid-1939 was 60,720 Europeans, 5840 coloured and Asiatics and 1,436,560 natives Southern Rhodesia is not in the Commonwealth of the South African Union (though some politicians of the latter think that it should be) but is an English-speaking colony comparable in many respects with New Zealand The statistics for the Europeans are not far different from those of a large English county except for malaria which in 1939 caused 10% of all deaths The standardised death-rate was 10 3, an increase of 0 6 on 1938 ; the birth-rate 23 6, and the infantile mortality 45 The maternal death-rate was 2 1 against 2 in 1938, before which year it had been high, in the neighbourhood of 6 Of 1433 live births, 1029 or 71 8% took place in institutions

During the year 1160 lepers were under treatment at the four institutions in the colony The death-rate of natives employed in the mines sank from 11 9 in 1938 to 9 8 in 1939, the fall being due entirely to diminished mortality from pneumonia This in its turn was partly due to diminished incidence (1841 cases against 2215) and partly to a drop in the fatality from 20 4 to 13 2, attributed to the use of M & B 693 There was also a lowered incidence of scurvy, but still there were 209 cases with 2 deaths "Since every case of scurvy detected represents a condition of subclinical scurvy amongst practically all the natives in the area where the case was found it is obvious that methods of feeding employees still fall far short of satisfactory " A survey of children in the age-group 12 plus revealed infection with urinary bilharzia (*B hæmatobium*) in 6%, and with the intestinal form (*B mansoni*) in 4%

LEEDS

Dr Johnstone Jervis says "There was almost an entire absence of epidemic disease , indeed at no time in the city's history has there been less disease of an infectious character than during the eighteen months that have elapsed since hostilities commenced ' Epidemic diseases ebbed to a low level never previously recorded in all parts of the world in 1938 and this satisfactory state of affairs has continued until the present day The war has so far had no material influence on infectious diseases In Leeds scarlet fever in 1939 gave 960 notified cases with 2 deaths and measles 2274 cases also with 2 deaths As scarlet fever has been notifiable since 1889 and most cases are treated in isolation hospitals the fatalities of the disease are known with fair accuracy We know very little of the fatality of measles, but it has certainly fallen rapidly in recent years The Leeds 1939 rates of 2 deaths per 1000 from scarlet fever and 1 per 1000 from measles are about average for the present time Of 54 300 children found naturally immune or immunised against diphtheria in the past twelve years only 320 developed clinical diphtheria and all recovered In the three years 1936–38 of 158 children protected by measles serum 23 developed jaundice from four weeks to four months after injection all recovered At the time there was an epidemic of infective jaundice in the city, 309 cases being known The incidence of jaundice was therefore far greater in children who had received measles serum than in the general population The jaundice which follows injection of measles serum is not a serious matter clinically but is of great interest, for measles serum is of human origin whereas other sera, except that used for poliomyelitis are of animal origin and do not produce jaundice It is almost certain that the common form of infectious jaundice—formerly called catarrhal jaundice—is a virus disease and it is quite probable that many people are carriers of this virus

SWINDON

Dr Dunstan Brewer in his valedictory report for 1939 draws attention to several ways in which we failed to achieve what we might have done in the inter-war period The chief of these was the failure of hospital coördination and the failure to give children the benefits of physiological research in estimating and developing their endowments Our examination of children is designed to find out what is wrong with them, says Dr Brewer, "and our efficiency is gauged by the extent to which we meddle with their structure If we changed to discovering what was right in our children and give our energy to the direction of functions we should find that we can rear citizens to a degree of health happiness and efficiency which my generation never realised '

From the School Reports

DERBYSHIRE

In spite of coming from what is mainly a reception area Dr W. M Ash s school report shows that in 1940 there were fewer cases of uncleanliness discovered than in 1939, the actual numbers for the two years being 4782 and 5365 There were 12 816 more inspections and reinspections in 1940 than in the previous year, so the lower incidence is not due to diminished search On the other hand scabies (223 cases) was three times as common as in 1939 The number of official evacuees received by Derbyshire in 1940 was 12,115 nearly half of whom came from Southend-on-Sea The nutrition of the received children was distinctly good—slightly better than that of the natives

Infectious Disease in England and Wales

WEEK ENDED AUGUST 30

Notifications —The following cases of infectious disease were notified during the week smallpox 0 scarlet fever 958 , whooping-cough 3173 diphtheria 805 paratyphoid 197 typhoid 68 , measles (excluding rubella) 1112 pneumonia (primary or influenzal) 363 puerperal pyrexia, 136 cerebrospinal fever 99 poliomyelitis, 23 , polio-encephalitis, 5 , encephalitis lethargica 3 , dysentery, 82 ophthalmia neonatorum 87 No case of cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Aug 27 was 1270 including scarlet fever 115 diphtheria 222 measles 45 whooping-cough 576 , enteritis 22 chicken pox 38 erysipelas 28 mumps 7 poliomyelitis 2 dysentery 21 cerebrospinal fever 16 puerperal sepsis 15 enteric fevers, 16 german measles 1 , polio-encephalitis 2 other diseases (non infectious) 71 not yet diagnosed 73

Deaths —In 126 great towns there were no deaths from measles 2 (0) from enteric fever 1 (0) from scarlet fever 11 (2) from whooping-cough 24 (0) from diphtheria 35 (1) from diarrhœa and enteritis under 2 years and 6 (0) from influenza The figures in parentheses are those for London itself

Derby and Newcastle-under-Lyme each reported 1 death from enteric fever. Liverpool and Stockport each had 3 fatal cases of diphtheria

The number of stillbirths notified during the week was 190 (corresponding to a rate of 38 per thousand total births), including 5 in London taught that the proper investigation of a chronic cough made necessary a radiogram and a sputum investigation that no chronic dyspepsia could be correctly assessed without chemical and radiological evidence, that cardiac neurosis was established as a diagnosis when electrocardiograms were negative In short that neurosis was a negative diagnosis and not to be positively established Which of us was told by the professors that it was better to miss one case of active tuberculosis or cancer than to confirm five neurotics in their neurosis? When did a professor of medicine come to his conclusions quickly? These R M O 's too, were family doctors yesterday Today they are told by consulting physicians that they send their patients too readily to hospital for investigation This is apparently true today and it was equally true yesterday, and yet no-one has heard a consulting physician tell his family-doctor clients that it would be better for their patients if they did not refer them for a second opinion and that some patients are made worse and not better by investigation The experienced family doctor knows this, the consulting physician knows it too, but it would require a supernatural disinterestedness in him to preach the good news Moreover most family doctors serve in the national health insurance system which denies them the opportunity to investigate their patients at all deeply, so that reference to hospital with consequent loss of clinical experience or treatment of his patient without diagnostic certitude is the panel doctor's daily dilemma To learn in what circumstances radiology and pathology may safely be discarded in diagnosis requires a clinical experience which can only be acquired by daily contact with them The professors seem to have made a genuine discovery which will have incalculable effects on medical education We may again breed a race of family doctors for whom medicine is a practical art, we may one day give the family doctor a medical service in which ample diagnostic facilities are available for him and his patients "

It seemed to me, as I looked in the mirror, that no words of mine had ever had such a friendly and intelligent reception

* * *

We were due to arrive at Crewe station in about half an hour and I noticed with foreboding that little Hector had finished his copy of *Rainbow* He laid the paper on the seat beside him and looked expectantly at me, obviously inviting further suggestions for defeating boredom I had noticed, however, that a Polish airman sitting on the opposite side of the compartment had been craning his neck trying to read the outside page of the comic paper I offered it to him, not without misgivings for I wondered whether he would feel embarrassed To my surprise, he not only accepted the paper with sincere but slightly incoherent expressions of gratitude, but promptly settled down to read the simple sentences in which the exploits of the Bruin boys are described Very soon Hector was by his side supplying the low-down on such famous characters as Tiger Tim, Joey the parrot, Georgie Giraffe et alii The Pole concentrated on the narrative with grim earnestness, and would not allow a page to be turned until he had read every word When we prepared to leave the train he folded the *Rainbow* carefully and with a courteous bow of his head handed the paper back to my son Apparently it is not only the British who take their pleasures sadly

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Mr S S Zilva, D Sc has continued his work on the itamin-C content of fruits and vegetables With Mr T B Crane, he has shown that the amount of the vitamin n tomatoes does not depend to any great extent on the ariety but that tomatoes grown in the open contain much more vitamin C than those grown under glass

BIOCHEMISTRY

Mr W T D Morgan D Sc, continuing his researches on the antigenic complex of the Shiga dysentery bacillus, has by different methods isolated the specific polysaccharide of the organism in undegraded form This substance is not by itself capable of stimulating the formation of antibody but in combination with a polypeptide—e g, from the "O" antigen of *Bacterium typhosum* it becomes a powerful antigen These studies may explain the development of anti-agar immune-body during the immunisation of horses with agar-grown bacterial cultures, for the non-antigenic agar-polysaccharide probably becomes converted to an antigen by linkage with polypeptides derived from the bacterial growth

Mrs Ida Smedley-MacLean, D Sc and Miss Hume have carried on their investigations on the fat-deficiency disease of rats Animals which receive a diet lacking the essential unsaturated fatty acids, linoleic or linolenic become stunted and emaciated, and it seems that this is not due, as had been thought, to an inability to store or to metabolise fat The essential fatty acids are required in order to synthesise more highly unsaturated fatty acids such as arachidonic, without which the animal cannot produce new cells and tissues

The late Prof R Robison, F R S, and Miss Alice Tazelaar attempted to demonstrate the presence of a cycle of phosphorylation in the cartilage of rachitic rats during the earliest stages of healing They were able to do this in some experiments but not in others and suggested that there is still some other unrecognised factor in the chemical changes occurring during bone formation

ENDOCRINOLOGY

The institute has continued its work in endocrinology along several lines Dr V Korenchevsky and his co-workers have studied the effects of gonadectomy and of injections of sex hormones on the thymus They draw attention to the histological similarity between the epithelial structures in thymomata and in the thymus of rats treated with œstrogens but note that the epithelial hyperplasia in no case amounted to tumour formation Despite this, it is clear that œstrogenic hypersecretion must be borne in mind as a possible factor in the formation of thymic tumours It would be interesting to know whether any muscular changes were observed in the treated animals Though the diagnosis of myasthenia gravis in a rat might be somewhat difficult on purely clinical grounds, the histological examination of the muscles for lymphorrhages would be a useful extension of the work The same workers have considered the rôle of œstrogenic hormones in the normal development of he male sex organs and have concluded that added œstrogens produce a very small increase compared with hat produced by increasing the dose of androgens The significance of this is that in practice the synergistic ction of œstrogens when given with androgens can be eglected a conclusion with which most clinicians would gree Scanty as the evidence is for the beneficial effects f androgens in hyperpiesia and prostatic enlargement, here is still less in favour of combining the male and emale sex hormones Further work has been done on he effects of sex hormones on the livers and hearts of ats Taken with previous similar work on kidneys, he results make it clear that androsterone and testoterone esters have an important physiological effect in producing growth of these organs On the other hand, hese substances cause lipoid depletion in the adrenals, while neutralising the pathological effects of œstradiol on he zona reticularis

Sir John Ledingham, F R S, has continued his work on the relation between the sex-hormones and the Foa-Kurloff cell (*J Path Bact* 1940 50, 201, see *Lancet* 940 1, 749) Immature and castrated guineapigs howed a greater response, judged by the number of Foa-Kurloff cells in the circulation, to œstradiol diproionate than to stilbœstrol Immature guineapigs

Continued at foot of next column

THE LISTER INSTITUTE (*continued*)

were injected with emulsions of spleens from œstradiol-treated guineapigs killed at the height of the response when the spleen contains large numbers of Foà-Kurloff cells No clear response was obtained and it is concluded that the substance in the vacuole if of œstrogenic origin, probably represents some inactive breakdown product

Letters to the Editor

COMPENSATION AND IDLENESS

SIR,—The disablement training scheme recently introduced by the Ministry of Labour & National Service for assisting the return to useful civilian employment of disabled persons has much to commend it Circular 2449 makes it clear that the scheme is intended to apply not only to men and women from the Services and civilian air-raid victims but also to those disabled by industrial or civilian accident A very short acquaintance with the scheme shows that, whilst its success with the first two classes of persons is assured, in the accident class and especially in those disabled by industrial accident, serious difficulties arise

Many disabled workmen receive weekly compensation payments over long periods and their return to employment is effectively prevented by the failure of their employers to provide them with suitable work and the unwillingness of insurance companies to settle claims There are hundreds of able-bodied men scattered throughout the country who, although they are capable of doing essential war work, are kept in enforced idleness by the compensation laws Surely it should be possible to devise means whereby outstanding claims could be speedily settled or, where this is impossible, settlement postponed until the end of the war and the men released meantime for essential war work ?

With the present shortage of man power it does seem a pity that so much valuable labour should remain unutilised

Harley Street, W 1 J S BATCHELOR

"IN QUEST OF A CURRICULUM"

SIR,—Perusal of your valuable and instructive educational number this week prompts me to express some views which I have held for the past few years on the teaching, or mis-teaching, of surgery These views are based on a short experience as a teacher on the one hand and from contacts in practice with the products of this teaching on the other We must assume that the qualifying examinations constitute a licence to pursue general practice and they should be designed solely with this end in view We often hear that a particular individual is a good examination coach but an indifferent teacher and this must be considered an indictment of the examination and not of the coach If there is going to be a change in the type of teaching it must be initiated from the examination end For economic reasons students always have, and always will, make the passing of examinations their first consideration and I believe that examiners will have to study more sympathetically the needs of general practice I can only speak with any practical knowledge of the restricted field of surgery but my experience has been that mistakes in general practice derive almost exclusively from insufficient knowledge of the commonest ailments the delay in diagnosis of acute appendicitis, the failure to examine an unconscious patient with a head injury for other injuries, the mismanagement of a Colles fracture and so on I have yet to meet with tragedy consequent on failure to recognise actinomycosis, ignorance of the details of treatment of a tuberculous hip or inability to assess the relative values of perineal excision and abdominoperineal excision in a case of carcinoma of the rectum—all aspects of knowledge liable to be plumbed in the examination hall

Should we not do better to concentrate on the essentials and expect a higher standard in a more restricted field ? Students should have to memorise facts as little as possible, and think and act for themselves as much as possible In surgery I should like to see the requirements of theoretical knowledge narrowed to one set book on the diagnosis, preoperative preparation

A YEAR'S WORK AT THE LISTER INSTITUTE

DESPITE dispersal of staff and temporary transfers to the Services the 47th annual report of work done by members and associated workers of the Lister Institute makes heartening reading at a time when the war has brought research work to a virtual standstill in many of our teaching departments Much of the work to which reference is made in the report has already been published, and only an outline of what is already a condensed record is possible here

BACTERIOLOGY AND IMMUNOLOGY

A considerable part of the bacteriological research has a direct bearing on war-time problems Miss Muriel Robertson D Sc , and Mr James Keppie, M R C V S (see *J Path Bact* July, 1941 p 95), have studied a series of strains of *Clostridium welchii* from war wounds both as regards the optimum conditions for toxin-production and the relationship of toxigenicity in the different strains to the clinical features of the infection While there was some association between high toxigenicity and severity of the clinical lesion—e g most of the strains from cases of gas gangrene gave a high toxin yield—yet poorly toxigenic strains could cause gas gangrene and highly toxigenic strains were isolated from non-gangrenous infections It is true that the local conditions in the wound are all-important in the ætiology of gas gangrene but a study of the degree of capsulation (cf Butler *Med J Aust* 1941, 1, 33) and of the production of hyaluronidase by strains of *Cl welchii* from war wounds might throw light on other possible factors affecting the virulence of the organisms A study of the enzymic content of *Cl welchii* toxin by Miss M G Macfarlane Ph D , and Mr B C J G Knight, D Sc , has brought to light a lecithinase which hydrolyses egg-yolk lecithin with the production of neutral fat and a water-soluble phosphorus compound This finding obviously explains the Nagler reaction—the opalescence produced in human serum or diluted egg-yolk by toxigenic strains of *Cl welchii*—and may lead to an exact quantitative assay of toxin production by *Cl welchii* by a phosphorus estimation Dealing with another of the pathogenic anaerobes, Dr G H Eagles has found that the flocculation reaction cannot be substituted for in vivo tests in the standardisation of tetanus antitoxin

The treatment of bacillary dysentery has again assumed importance Miss Dorothy Steabben, Ph D , has prepared experimentally a protective antibacterial serum against the Shiga bacillus, and it may prove advantageous in treatment to combine such an antisomatic serum with the ordinarily used Shiga antitoxin With the help of the ultracentrifuge and electrophoresis apparatus, progress has been made in the identification of the active globulin fractions of antitoxic sera In the purification and concentration of antitoxins by pepsin-digestion and heat-denaturation, Mr R A Kekwick, M Sc , and Mr B R Record, Ph D , found that the resulting loss in potency was associated with the disappearance of the γ-globulin which has the short flocculation time and high in-vivo/in-vitro ratio characteristic of an " avid " serum Since avidity in the antibody may be important in the treatment of the more severe diphtheritic infections, over-refinement of antitoxin may as recently suggested by O'Meara, lead to therapeutic inefficiency The γ-globulin can be easily separated from human serum by salt fractionation but this method largely fails with horse serum, so that some other method for isolating this possibly important fraction in antitoxin needs to be devised Human serum reconstituted from the dried state after freezing usually has an opalescent appearance Dr A S McFarlane has found this phenomenon to be due to the coating of the finely divided fat-globules by a layer of β-globulin, and the milkiness can only be got rid of by treating with ether at a low temperature when globulin and fat become separated

Dr H L Schutze showed that spacing the two doses of a mouse-typhoid vaccine to a month's interval did not affect its protective value against artificial infection, and he concluded that it is safe to give T A B vaccine combined with tetanus toxoid in two doses at 4–6 weeks' interval Clinical trials with the agglutinin-response as the measure of protective value are in confor with this view The work of Mr A Felix, D Sc , a new T A B vaccine in which the Vi antigen is prese by killing the bacilli with alcohol and storing them in has already been discussed (*Lancet*, 1941, 1, 543) whi Dr Douglas McClean has recently reviewed his own an others' work on the bacterial production of diffu factor, now known to be a mucolytic enzyme call hyaluronidase (*Lancet*, 1941, 2, 797)

NUTRITION

Work has continued on the standardisation of vitami A and E For vitamin E, it is recommended that *dl* tocopheryl acetate should now be adopted temporari by the British Empire and the United States, since i acceptance by the International Conference on Vitam Standardisation is at the moment impossible Public tion of the results of the tests which have led to th adoption of the standards for vitamins B_1 and D hav likewise had to be postponed

Mr T F Macrae D Sc , and his collaborators hav continued their work on the factors in the vitamin complex required by rats Apart from riboflavin an vitamin B_6, the rat requires the " filtrate factor ", this i now known to contain three components, one of which i pantothenic acid The chemistry of the remaining two components is rapidly being worked out and active concentrates of them, each free from the other, have been prepared Dr Macrae and Miss Alice Copping, M Sc , have devised new methods for the estimation of vitamin B_6 and of the filtrate-factor complex They have also used with success their method for estimating riboflavin in foodstuffs Dr M M El Sadr has completed his studies on the ocular changes produced in rats by deficiency of riboflavin These changes are, in order of appearance, conjunctivitis, blepharitis, corneal opacity and sometimes cataract All except the last are cured by the administration of the vitamin Miss Harriette Chick, D Sc , and Dr El Sadr have examined the effect of deficiency of vitamin B_6 and of filtrate factor on the blood of rats Deficiency of B_6 results in a microcytic anæmia It is suggested that the rat might prove of value as a test animal in the study of human anæmia

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Miss E M Hume and Miss H Henderson Smith have studied the fat-soluble pigments in flour They find that only a small part of the yellow pigment is biologically active as provitamin A There is no difference in the amount of this in wholemeal and in white flour

Since yeast can be grown comparatively easily, and since it is an excellent source of the B vitamins, its consumption might be of value in maintaining the national health during the war A series of tests have therefore been carried out on a specimen of yeast (*Torula utilis*) which might be used for this purpose Miss Copping has shown that neither the composition of the culture medium nor the subsequent processing of the yeast appreciably affected the quantity of the B_2 vitamins White flour to which had been added 2½% of *Torula utilis* was found by Dr Chick to be as rich a source of vitamins of the B group as wholemeal flour Dr Macrae has noted that even twice this amount of yeast does not seriously affect the palatability of white or wholemeal breads He has also shown, in collaboration with workers at the Institute of Animal Pathology at Cambridge that the protein of *Torula utilis* was of high nutritive value, comparable with a first-class protein such as casein in supplementing biologically poor proteins

Mr S S Zilva, D Sc has continued his work on the tamin-C content of fruits and vegetables With Mr B Crane, he has shown that the amount of the vitamin tomatoes does not depend to any great extent on the riety but that tomatoes grown in the open contain uch more vitamin C than those grown under glass

BIOCHEMISTRY

Mr W T D Morgan D Sc, *continuing his researches* n the antigenic complex of the Shiga dysentery bacillus, as by different methods isolated the specific polysaccharide of the organism in undegraded form This ubstance is not by itself capable of stimulating the ormation of antibody but in combination with a polypeptide—e g from the "O" *antigen of Bacterium yphosum* it becomes a powerful antigen These studies may explain the development of anti-agar immune-body during the immunisation of horses with agar-grown bacterial cultures, for the non-antigenic agar-polysaccharide probably becomes converted to an antigen by linkage with polypeptides derived from the bacterial growth

Mrs Ida Smedley-MacLean, D Sc, and Miss Hume have carried on their investigations on the fat-deficiency disease of rats Animals which receive a diet lacking the essential unsaturated fatty acids linoleic or linolenic become stunted and emaciated, and it seems that this is not due, as had been thought, to an inability to store or to metabolise fat The essential fatty acids are required in order to synthesise more highly unsaturated fatty acids such as arachidonic, without which the animal cannot produce new cells and tissues

The late Prof R Robison, F R S and Miss Alice Tazelaar attempted to demonstrate the presence of a cycle of phosphorylation in the cartilage of rachitic rats during the earliest stages of healing They were able to do this in some experiments but not in others and suggested that there is still some other unrecognised factor in the chemical changes occurring during bone formation

ENDOCRINOLOGY

The institute has continued its work in endocrinology along several lines Dr V Korenchevsky and his co-workers have studied the effects of gonadectomy and of injections of sex hormones on the thymus They draw attention to the histological similarity between the epithelial structures in thymomata and in the thymus of rats treated with œstrogens but note that the epithelial hyperplasia in no case amounted to tumour formation Despite this, it is clear that œstrogenic hypersecretion must be borne in mind as a possible factor in the formation of thymic tumours It would be interesting to know whether any muscular changes were observed in the treated animals Though the diagnosis of myasthenia gravis in a rat might be somewhat difficult on purely clinical grounds, the histological examination of the muscles for lymphorrhages would be a useful extension of the work The same workers have considered the rôle of œstrogenic hormones in the normal development of the male sex organs and have concluded that added œstrogens produce a very small increase compared with that produced by increasing the dose of androgens The significance of this is that in practice the synergistic action of œstrogens when given with androgens can be neglected, a conclusion with which most clinicians would agree Scanty as the evidence is for the beneficial effects of androgens in hyperpiesia and prostatic enlargement, there is still less in favour of combining the male and female sex hormones Further work has been done on the effects of sex hormones on the livers and hearts of rats Taken with previous similar work on kidneys, the results make it clear that androsterone and testosterone esters have an important physiological effect in producing growth of these organs On the other hand these substances cause lipoid depletion in the adrenals, while neutralising the pathological effects of œstradiol on the *zona reticularis*

Sir John Ledingham F R S, has continued his work on the relation between the sex-hormones and the Foa-Kurloff cell (*J Path Bact* 1940 50, 201, see *Lancet* 1940 1, 749) Immature and castrated guineapigs showed a greater response, judged by the number of Foa-Kurloff cells in the circulation, to œstradiol dipropionate than to stilbœstrol Immature guineapigs

Continued at foot of next column

Letters to the Editor

COMPENSATION AND IDLENESS

SIR,—The disablement training scheme recently introduced by the Ministry of Labour & National Service for assisting the return to useful civilian employment of disabled persons has much to commend it Circular 2449 makes it clear that the scheme is intended to apply not only to men and women from the Services and civilian air-raid victims but also to those disabled by industrial or civilian accident A very short acquaintance with the scheme shows that whilst its success with the first two classes of persons is assured, in the accident class and especially in those disabled by industrial accident serious difficulties arise

Many disabled workmen receive weekly compensation payments over long periods and their return to employment is effectively prevented by the failure of their employers to provide them with suitable work and the unwillingness of insurance companies to settle claims There are hundreds of able-bodied men scattered throughout the country who although they are capable of doing essential war work, are kept in enforced idleness by the compensation laws Surely it should be possible to devise means whereby outstanding claims could be speedily settled or, where this is impossible, settlement postponed until the end of the war and the men released meantime for essential war work ?

With the present shortage of man power it does seem a pity that so much valuable labour should remain unutilised

Harley Street, W 1 J S BATCHELOR

"IN QUEST OF A CURRICULUM"

SIR,—Perusal of your valuable and instructive educational number this week prompts me to express some views which I have held for the past few years on the teaching, or mis-teaching, of surgery These views are based on a short experience as a teacher on the one hand and from contacts in practice with the products of this teaching on the other We must assume that the qualifying examinations constitute a licence to pursue general practice and they should be designed solely with this end in view We often hear that a particular individual is a good examination coach but an indifferent teacher and this must be considered an indictment of the examination and not of the coach If there is going to be a change in the type of teaching it must be initiated from the examination end For economic reasons students always have, and always will, make the passing of examinations their first consideration and I believe that examiners will have to study more sympathetically the needs of general practice I can only speak with any practical knowledge of the restricted field of surgery but my experience has been that mistakes in general practice derive almost exclusively from insufficient knowledge of the commonest ailments the delay in diagnosis of acute appendicitis, the failure to examine an unconscious patient with a head injury for other injuries, the mismanagement of a Colles fracture and so on I have yet to meet with tragedy consequent on failure to recognise actinomycosis, ignorance of the details of treatment of a tuberculous hip or inability to assess the relative values of perineal excision and abdomino-perineal excision in a case of carcinoma of the rectum—all aspects of knowledge liable to be plumbed in the examination hall

Should we not do better to concentrate on the essentials and expect a higher standard in a more restricted field ? Students should have to memorise facts as little as possible, and think and act for themselves as much as possible In surgery I should like to see the requirements of theoretical knowledge narrowed to one set book on the diagnosis, preoperative preparation

THE LISTER INSTITUTE (*continued*)

were injected with emulsions of spleens from œstradiol-treated guineapigs killed at the height of the response when the spleen contains large numbers of Foà-Kurloff cells No clear response was obtained and it is concluded that the substance in the vacuole if of œstrogenic origin, probably represents some inactive breakdown product

A YEAR'S WORK AT THE LISTER INSTITUTE

DESPITE dispersal of staff and temporary transfers to the Services, the 47th annual report of work done by members and associated workers of the Lister Institute makes heartening reading at a time when the war has brought research work to a virtual standstill in many of our teaching departments Much of the work to which reference is made in the report has already been published and only an outline of what is already a condensed record is possible here

BACTERIOLOGY AND IMMUNOLOGY

A considerable part of the bacteriological research has a direct bearing on war-time problems Miss Muriel Robertson, D Sc, and Mr James Keppie, M R C V S (see *J Path Bact* July, 1941, p 95), have studied a series of strains of *Clostridium welchii* from war wounds both as regards the optimum conditions for toxin-production and the relationship of toxigenicity in the different strains to the clinical features of the infection While there was some association between high toxigenicity and severity of the clinical lesion—e g most of the strains from cases of gas gangrene gave a high toxin yield—yet poorly toxigenic strains could cause gas gangrene and highly toxigenic strains were isolated from non-gangrenous infections It is true that the local conditions in the wound are all-important in the ætiology of gas gangrene but a study of the degree of capsulation (cf Butler *Med J Aust* 1941, 1, 33) and of the production of hyaluronidase by strains of *Cl welchii* from war wounds might throw light on other possible factors affecting the virulence of the organisms A study of the enzymic content of *Cl welchii* toxin by Miss M G Macfarlane Ph D, and Mr B C J G Knight, D Sc, has brought to light a lecithinase which hydrolyses egg-yolk lecithin with the production of neutral fat and a water-soluble phosphorus compound This finding obviously explains the Nagler reaction—the opalescence produced in human serum or diluted egg-yolk by toxigenic strains of *Cl welchii*—and may lead to an exact quantitative assay of toxin production by *Cl welchii* by a phosphorus estimation Dealing with another of the pathogenic anaerobes, Dr G H Eagles has found that the flocculation reaction cannot be substituted for in vivo tests in the standardisation of tetanus antitoxin

The treatment of bacillary dysentery has again assumed importance Miss Dorothy Steabben, Ph D, has prepared experimentally a protective antibacterial serum against the Shiga bacillus, and it may prove advantageous in treatment to combine such an antisomatic serum with the ordinarily used Shiga antitoxin With the help of the ultracentrifuge and electrophoresis apparatus, progress has been made in the identification of the active globulin fractions of antitoxic sera In the purification and concentration of antitoxins by pepsin-digestion and heat-denaturation, Mr R A Kekwick, M Sc and Mr B R Record, Ph D, found that the resulting loss in potency was associated with the disappearance of the γ-globulin which has the short flocculation time and high in-vivo/in-vitro ratio characteristic of an "avid" serum Since avidity in the antibody may be important in the treatment of the more severe diphtheritic infections, over-refinement of antitoxin may, as recently suggested by O'Meara, lead to therapeutic inefficiency The γ-globulin can be easily separated from human serum by salt fractionation but this method largely fails with horse serum, so that some other method for isolating this possibly important fraction in antitoxin needs to be devised Human serum reconstituted from the dried state after freezing usually has an opalescent appearance Dr A S McFarlane has found this phenomenon to be due to the coating of the finely divided fat-globules by a layer of β-globulin, and the milkiness can only be got rid of by treating with ether at a low temperature when globulin and fat become separated

Dr H L Schutze showed that spacing the two doses of a mouse-typhoid vaccine to a month's interval did not affect its protective value against artificial infection, and he concluded that it is safe to give T A B vaccine combined with tetanus toxoid in two doses at 4–6 weeks' interval Clinical trials with the agglutinin-response as the measure of protective value are in confor with this view The work of Mr A Felix, D Sc, a new T A B vaccine in which the Vi antigen is prese by killing the bacilli with alcohol and storing them in has already been discussed (*Lancet*, 1941, 1, 543) whil Dr Douglas McClean has recently reviewed his own and others' work on the bacterial production of diffu factor, now known to be a mucolytic enzyme call hyaluronidase (*Lancet*, 1941, 2, 797)

NUTRITION

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Notes, Comments and Abstracts

A GLYCERIN-GELATIN BASE OR IRRADIATION DERMATITIS AND BURNS

PERCIVAL P. COLE
M.B BIRM, F.R C.S
CONSULTING SURGEON ROYAL CANCER HOSPITAL; SURGEON, E.M.S

M LEDERMAN,
M.B LOND, D M.R.E
RADIUM THERAPIST TO THE HOSPITAL

THE cutaneous phenomena observed after radium or -ray treatment can be subdivided into two groups—ute and chronic. The first includes the reactions nging from erythema to a moist desquamation which re comparable to a first or second degree burn. The cond includes the persistent painful ulceration termed n X-ray or radium "burn" and various other sequelæ f treatment—e g telangiectases, atrophy chronic dema and hyperkeratosis. Apart from the cosmetically unwelcome ones, such as atrophy and œdema, the more pernicious sequelæ are, thanks to improvement of apparatus and technique not commonly seen nowadays, and the acuteness of any reaction can be controlled by suitable attention to treatment and dosage.

It has been customary since the earliest days of radiotherapy to apply unguents to these raw areas, but of recent years tannic-acid jelly has achieved some popularity. Whereas oily substances or unguents tend to obstruct drainage and spread infection a jelly forms its own dressing and has none of these disadvantages. It was found, however, that when used on skin surfaces that were normally prone to movement such as near the mouth on the neck or in the groin folds it was impossible to obtain a crust of even thickness. Owing to the irregularity of distribution and lack of pliability the crust fissured readily caused discomfort and required constant renewal. Some degree of infection was also encountered in an appreciable number of cases. The tendency to crack was exhibited, though in lesser degree by flavine when immobilisation of the area treated was either impossible or inadvisable. An attempt was made, therefore to find means whereby pliability could be increased. Finally the desired result was attained by the addition of a glycerin-gelatin base. The composition of this application is as follows —

℞ Proflavine gr 4⅘
Glycerin suppository (mass) gr 375
Distilled water ad 10 fl oz

Dissolve the proflavine in the water, making a solution of 1 in 1000, warm and add the glycerin suppository mass, when dissolved strain through gauze. Apply from an all-glass spray.

An extensive trial of this simple preparation has been carried out in the radium department of the Royal Cancer Hospital in cases where the skin shows moist desquamation—i e, loss of superficial layers of the true skin. We have been sufficiently impressed by its efficacy to justify us in bringing it to general notice. Its advantages are —

1 It is antiseptic—a point of importance when it is realised that irradiated skin resists infection but feebly.
2 The crust is of even thickness, flexible and forms its own dressing, the solution is easy to apply by means of a glass spray.
3 It is cheap and simple to make.

For cases which show an idiosyncrasy to proflavine, gentian violet, methylene-blue, brilliant green, or a combination of them, can replace the proflavine. The sole objection to the application is that it contains glycerin which is on the list of drugs in the use of which we are asked to exercise strict economy. We have been unable to find a satisfactory substitute.

We are indebted to Mr J H. Wood, pharmacist to the Royal Cancer Hospital, for advice and technical assistance.

BOMBS AND MILK

Rowland and Hinks[1] have studied the yield and the composition of the milk from herds near to which bombs had dropped. In some cases the yield fell, in others it remained unchanged but in all cases the milk immediately after the incident did not show any significant difference in composition from that obtained several days later. In one instance milk had been taken the day before the bombing for a partial analysis and this also confirmed the findings that bombing caused no change in the composition. The defence in prosecutions for the sale of adulterated milk has already shown a tendency to allege that the poor quality was due to the herds having been bombed and these investigations were undertaken to examine the validity of such a contention.

MAN OR SPIDER

MOST poets begin young and to publish a slender volume of verse in the early twenties used to be considered comme-il-faut. Indeed Hardy once said he thought that the shortest way to good prose was by the route of good verse. Dr. David Stafford-Clark is a poet living in swift exciting times and he has made the most of his chances.[1] His glimpses of May on the Cherwell chapel at Oxford his mannered valentines epitaphs and sonnets already have the gentle charm of something we—and he—have lost. But even in 1937 contradictions of the world amazed him. In his lines to the black widow spiders at the Zoo doomed to die when the first bombs fall he says

'. . For it would be dreadful
If, living through the gas and bombs his fellow men have dropped
Someone should perish
Of your pathetic poison "

His address to the modern poets who cannot bear any slavishly direct attempt to say anything is a withering blast of sarcasm.

In the later poems of the war Dr Stafford-Clark shows generous indignation at wanton pain and ugliness and an understanding of the exaltation of battle which exists alongside it

" the exultant lust
To destroy and risk destruction
Suddenly canonized by war "

SIGNIFICANCE OF FEAR

IN a recent Honyman Gillespie lecture in Edinburgh Prof D K Henderson said that the trend of medicine in general had been towards the protection of the unfit but emotional and instinctive needs had largely been left to chance. This neglect was followed by the occurrence of nervous and mental disease. There was a fatalistic outlook on the inevitability of mental disease and consequently a state of therapeutic nihilism. Modern psychiatry was striving to demonstrate that this attitude was false and that much valuable preventive or early curative work was possible. Fear, which was one of the most widespread human emotions could be both good and bad. Fear might provide for safety, as in the self-protection behaviour of animals and in the human it might also provide for social integration particularly the fear of punishment or ridicule. Fear resulted in disturbance of the autonomic nervous system with many physical manifestations and might lead to disorders which could not be cured by the physician or surgeon unless the underlying anxiety were removed. It was always to be remembered that a man might demonstrate bravery owing to his fear of being afraid and it was fear itself which was the fundamental cause of the adoption of superstitious practices. Professor Henderson believed that fear was more social than sexual in its origin and that it depended on separation from the mother both in children and adults. Fear and loneliness went hand in hand. In children fears and anxieties which might subsequently give rise to serious nervous disease were often initiated superficially by casual remarks of maids nurses or mothers. He criticised our educational system in which there was no attempt to differentiate between those children who were able to stand its rigours and those who by their innate constitution were unable to do so. He believed that this was important in the production of nervous and mental illness which might be avoided if more care were exercised in the choice of schools and in assessment of the stability of the child. Fear states initiated in childhood persisted into adult life usually in highly sensitive artistic people who disliked loneliness and might come to use alcohol and after-treatment of a limited number of disorders, written or at least approved by a competent board of teachers Outside the limits of this set book no other theoretical knowledge would be expected Students who would otherwise waste their time reading about problems which they are unlikely to meet in general practice would then have more time to absorb the atmosphere of the wards and would feel that time spent in the wards was not jeopardising their chances of passing their examinations, as some anxious students feel today They should attend the operating theatre only for the study of living pathology and to confirm the significance of physical signs which they themselves have elicited in the ward For the most part a student would make a better doctor if he spent the time at present devoted to watching operations in going for a walk in the country Examiners in the qualifying examinations should be continually on their guard against asking questions outside the scope of these essential requirements The rumour circulating in a medical school that even one examiner is prone to this vice will at once send students scuttling to the library to look up the pathology of brain tumours and Paget's disease of the nipple, the treatment of epithelioma of the anus and the development of hare-lip

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[1] *Analyst* August 1941 pp 327 and 328

[1] Autumn Shadow Oxford Basil Blackwell Pp 62 5s

Finally I should like to see introduced into the paper more questions such as these

Discuss in detail the technique of dressing (*a*) a wound healing by first intention, (*b*) an open infected wound

Describe the clinical picture of any abdominal emergency you have seen recently

The wife of a working man with a large family is found to have a moderate sized inguinal hernia Discuss what advice you, as her family doctor, would give her if (*a*) it was decided to operate upon this hernia, (*b*) she was to be supplied with a truss

Write an imaginary report for an insurance company on a patient injured in a motor car accident

Nuffield House, Guy's Hospital H J B ATKINS

BACTERIOLOGY OF IMPETIGO CONTAGIOSA

SIR,—Dr Cruickshank, while endorsing my plea for a more intensive investigation of impetigo contagiosa, makes some statements to which I should like to reply

Epidemiological data —There is a misconception implicit in this paragraph Dr Cruickshank states that impetigo "is not apparently a highly contagious disease" In fact, impetigo contagiosa cannot infect intact skin, but in the presence of any flaw in the skin surface—traumatic, by falls or scratching, or excoriations due to a running nose, or a herpes febrilis or labialis—impetigo is most contagious

I have several times heard the suggestion of some relationship between scarlet fever and impetigo contagiosa, but in the course of six years during which some thousands of cases of impetigo contagiosa have been noted I have found no trace of relationship Were the vaccinia-smallpox type of relationship present, scarlet fever should surely by now have disappeared

"Nephritis has been noted as a complication of impetigo" I know of one reference in an American journal which I was unable to obtain The association must be very rare It is however not uncommon for patients who are sensitive to white precipitate ointment to develop albuminuria and general anasarca while undergoing treatment for impetigo contagiosa If the presence of nephritis argues for a scarlatinal type of streptococcal agent, then the absence of it from thousands of cases of very severe impetigo contagiosa may suggest that the hæmolytic streptococci found are not causal

Treatment —I cannot understand the difficulties experienced in treating this complaint if three rules are observed

1 Never scratch
2 Never remove scabs
3 Never let water touch the skin

White precipitate ointment, calamine lotion or talc powder are my medicaments of choice, but probably almost anything else not too wetting would do equally well In the presence of seborrhœa or mercury sensitivity, calamine lotion is preferable Simple Elastoplast occlusion is often very convenient The only real difficulties I have encountered are seborrhœic skins, and impetigo contagiosa on an œdematous leg formed a large chronic ulcer)

Bacteriology —The consensus of opinion today may in favour of a hæmolytic streptococcus as causal agent, but I had hoped Dr Cruickshank was going to sub the premiss to re-examination Unfortunately he quite arbitrarily selects the 15 streptococcal cultures recovered from 23 cases as causal, whilst rejecting the 18 staphylococcal growths as secondary invaders May I repeat my plea for a search for a *constant* causal organism in impetigo It may be a streptococcus, a staphylococcu a diplococcus, a pleomorphic organism, a filter passing virus, a mite, a worm or a spirochæte, but it will be recoverable from all cases of impetigo contagiosa, and will probably have the following characters

1 It will produce impetigo contagiosa in humans
2 It will not produce impetigo contagiosa in animals
3 It will fail to produce erysipelas, scarlet fever and boils
4 It will not be recoverable from erysipelas, scarlet fever and boils
5 It will produce no, or very little, local or general immunity

Were I a betting man I should put my shirt on the very large diplococcus, often intracellular in the pu cells, constantly found in the direct smears, and fir *described in 1897 by Balzer and Griffon*

Beaminster, Dorset R E HOPE SIMPSON

Medical News

Epsom College

The council of the college will shortly proceed to award St Anne's scholarships to girls attending Church of England schools Candidates must be fully 9 and under 16 years of age, and must be orphan daughters of medical men who have been in independent practice in England or Wales for not less than 5 years The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected The conjoint committee will in November award a Challice annuity of £32 per annum to a qualified medical man who, on account of old age, has been compelled to retire and who is in need Forms of application can be had from the secretary's office, Epsom College, Surrey, and must be returned by Oct 14

Medical Honours

The George medal has been awarded to Mr R W Wye resident surgical officer at Salford Royal Hospital, and to Dr Leonard Findlay, medical superintendent of Mill Road Infirmary, Liverpool

Naval Casualties

In a recent casualty list T/Surgeon Lieutenant A T Leggate, M B Lpool, R N V R, is posted as missing, presumed killed Surgeon Lieut Commander William Greave M B Leeds, R N, is reported to be a prisoner of war

Tavistock Clinic

A luncheon in celebration of the 21st anniversary of the clinic will be held at Grosvenor House, Park Lane, London, W 1, on Monday, Sept 29, at 1 P M Further information may be had from the secretary of the clinic, at Westfield College, Kidderpore Avenue, N W 3

Liquid Paraffin Emulsions

A defence regulation is shortly to be issued prohibiting the manufacture of any emulsion of liquid paraffin containing more than 25% by volume of liquid paraffin Some proprietary emulsions contain proportions as high as 65%, but the Therapeutic Requirements Committee are satisfied that a 25% emulsion is as effective as the pure oil The National War Formulary, which is now in proof, will contain a 25% emulsion

Lecture on Industrial Health

The Henry George School of Economics have arranged six lectures on economic problems of today under the title Fact Behind the News In the series Dr H B Morgan, M P, will deal with industrial health on Tuesday, Sept 23, at 6 P M The lectures will all be held at the school, 13, Suffolk Street, Pall Mall, S W 1

Corrigendum —In Dr J D Robertson's letter of Sept 6, p 294, col 2, for "vitamin storage work" read "calcium storage work"

ORIGINAL ARTICLES

ENURESIS
TREATED BY URETHRAL DILATATION *

H P WINSBURY-WHITE M D Edin., F R C S
UROLOGIST TO THE PRINCESS ELIZABETH OF YORK HOSPITAL FOR CHILDREN, SHADWELL

IN this paper I have analysed 310 cases of enuresis examined and treated by me in the Princess Elizabeth Hospital In 98% there was a history of at least one of the exanthemata, which did not always precede the enuresis, in 16% the enuresis came on immediately after an infectious illness, as a rule one of the exanthemata, and in many others the enuresis became worse after measles, scarlet fever or some other infective condition. In 49% of the cases it began during infancy and in 84% before the end of the sixth year, 61% of the patients were girls Cases could be grouped according to symptoms as follows

Enuresis by day and night and daily frequency	40%
Nocturnal enuresis and daily frequency	35%
Nocturnal enuresis only	23%
Diurnal enuresis and daily frequency	2%

There were variations from these four main types and it was not uncommon for symptoms to alter as time went on Some patients became subject to attacks of cystitis or acute pyelitis Thirst without glycosuria was present in some, doubtless owing to the polyuria which was often present

FINDINGS ON EXAMINATION

Local inflammation —Inflammation of the external meatus was not uncommon in the boys under 3 years It was only seen in circumcised children and was commonly associated with constriction of the meatus In the uncircumcised, when there was retained smegma beneath adhesions there was always mild œdema of the external urinary meatus Vulvitis was present in 57% of the girls and was usually chronic I found it important to examine the vulva in good daylight, since artificial light made the hyperæmic areas difficult to detect Inflammation was commonly found in patches localised to the sulci at the junction of the hymen and vestibule with the labia minora ; it occurred in relation to the mouths of the glands in this region and to the urethral orifice, on either side of which a Skene's para-urethral gland was sometimes affected Less commonly the inflammation involved the labia minora, hymen and vestibule sometimes causing a scanty discharge apparent as slight moisture on the skin surfaces adjacent to the labia majora The vulvitis was not accompanied by vaginitis, in contrast with the hyperæmia of the vulva the mucous membrane of the posterior vaginal wall was pale and healthy looking Smears and cultures from vulva and urethra always gave a mixed group of organisms In one case diphtheritic membrane was present on the labia minora, from which Klebs-Löffler bacilli were obtained In a few older girls the cervix was examined and found to be chronically inflamed Smears and cultures gave results similar to those from smears taken from the vulva, except in one case not in this series where gonococci were identified

Hydrocele chronic epididymitis and non-purulent urethral discharge were noted in some of the boys in addition to the conditions described

Calibre of urethra —Working with metal sounds calibrated on the French scale I was able, after making numerous observations, to work out the average normal calibre of the urethra according to age By noting the size of the largest instrument which would lie in the urethra without being gripped I obtained these figures

Age (years)	Size of sound (Charrière)	Age (years)	Size of sound (Charriere)
2	10	10	18
4	12	12	20
6	14	14	22
8	16		

Allowance would sometimes have to be made for the fact that a child was large or small in relation to age More striking departures from the normal included generalised constriction of the urethra and its inability to dilate In 27% of boys the external meatus was obviously constricted Circumcised children were more often afflicted in this way than uncircumcised There were many lesser degrees of narrowing, some very slight but important when urethral dilatation was undertaken, since meatotomy had to be performed first Actually meatotomy was necessary in over 70% of boys requiring dilatation Construction of the meatus was rare in girls, and in every such case the meatus would only admit a much smaller sound than that normally taken by other children of the same age

Cystoscopy was carried out in 220 cases The posterior urethra was inspected in 173 cases For cystoscopy the child should be in the lithotomy position so that a good view is obtainable of the neck of the bladder, with the patient in this position a satisfactory view can also be obtained with the cystoscope of the floor of the posterior urethra In boys it is safer to pass metal instruments with the child lying flat, the thighs can subsequently be plexed on the abdomen I prefer the child to remain flat on the back while the posterior urethroscope is used Of the 220 cystoscoped, 70% showed signs of inflammation on the front of the trigone, and at the internal urinary meatus While of the 173 cases of which the posterior urethra was examined, 76% showed definite posterior urethritis There was usually no inflammation of the general vesical mucosa, but a fluffy appearance on the front of the trigone and œdema of the internal meatus were common In boys, polypi or granular patches were noted on the verumontanum or in the prostatic sinuses In girls polypi or inflammatory hillocks on any part of the circumference of the posterior urethra were common As the instrument was withdrawn the anterior urethra was inspected and always showed inflammatory changes when the posterior urethra was inflamed I have found similar evidence of inflammation of the bladder-neck and urethra in children with chronic frequency without enuresis and conclude that symptoms in both groups are due to such inflammation, especially since 76 of my enuresis cases had chronic frequency as well

Urine —Catheter specimens of urine were examined in 250 cases, but evidence of infection was found in only 15% In 108 cases the average pH was 4 4, the lowest reading being 3 8 and the highest 9 7 Thus enuresis does not seem to depend on acidity Several cases with chronic coliform infection had so much dilatation in the upper urinary tract that the infection was obviously a complication of urinary stasis, and where the dilatation was without remedy so was the infection

Urography —Of the enuresis cases, 150 were examined by urography and 60% showed abnormalities in the upper urinary tract which, though slight, indicated early changes due to the chronic inflammatory process below. They included mild dilatation of calyces, pelvis and ureter; poor renal shadow due to diminished renal function, and poor renal shadow due to renal hyperactivity The presence of mild dilatation on one side is established by contrasting the two sides Normal relaxation of the musculature cannot explain a dilatation which appears consistently in a series of films Evidence of impaired function is seen in the absence of definition in a particular group of calyces throughout the whole series, when there is no gas in the overlying bowel such an appearance suggests that the papillæ draining into those calyces are not doing their work. When any alternative explanation seriously arises, instrumental pyelography will settle the question Dilatation of the ureter is often present, indicated not only by a widening of the whole or a part of the channel but also by lengthening which produces a loop or sometimes two loops Slight localised dilatations not dependent on an obstruction are difficult to explain except as part of an inflammatory phenomenon, especially where subsequent urograms show that the dilatation has disappeared More than 1 oz of residual urine was present in 5% of cases Several children had quantities of less than an ounce as a means of maintaining a uniform state. They came to be dominated by unreal fears for health, life and so on, and at first they repressed their fears and put up a good show. This was usually because of the additional fear that they would be ridiculed or thought mad if they spoke freely. They usually avoided speaking of their fears even after these had been present for many years and a tremendous continual nervous conflict developed which was more fatiguing than the heaviest physical exertion. It was demonstrated externally by asthenia, lack of concentration and loss of spontaneousness, together with physical features which might be referred, for example, to the heart or the digestive system. Doctors should try to obtain the psychological background of their patients, particularly those suffering from psychoneurosis. It was necessary to know the background against which their symptoms had developed before modification or cure could be obtained, and in the long run time spent in this elucidation was time saved. We must study and supply the psychic needs of the child just as much as we did his physical needs but it was surprising how dangerously little attention was paid to this. Equally the subjective aspects of illness of all kinds were inadequately studied.

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* An abbreviated form of a paper which will appear in the *British Journal of Urology* for September, 1941

EAR, NOSE AND THROAT SPECIMENS IN THE ROYAL COLLEGE OF SURGEONS

ST C T writes: London possessed perhaps the largest and most valuable collection of museum specimens in existence illustrating the surgery of the ear, nose and throat. The museum of the Royal College of Surgeons received one of its earliest gifts illustrating the normal anatomy of this region from Toynbee, who presented 300 specimens of the temporal bone; these were later enriched with Arthur Cheatle's unrivalled series of sectioned temporal bones. The basis of the group of specimens related to rhinology was formed when the large collection of Onodi, from Budapest, was secured and presented by British oto-laryngologists. A valuable addition to the laryngological section of the museum was made by V E Negus, who presented the specimens on which he founded his classic study of the comparative anatomy and physiology of the larynx; these escaped damage when the museum suffered during the bombing in May last. Owing to the dispersal, for greater safety, of the specimens then undamaged it has not yet been possible to compile a complete statement of the loss suffered by the museum from enemy action, but the catalogues of the museum have been preserved and it will be possible to reproduce many specimens of normal anatomy from fresh material. The Onodi collection was heavily damaged but about 95 specimens are intact, and the others, being of normal human anatomy, can in time be replaced. The Toynbee and Cheatle collections have suffered even more severely, but it is to be hoped that after the war young aural surgeons will re-establish them. The 14 specimens of the anatomy of the paranasal sinuses recently presented by the late Professor Hajek, are intact. These formed part of the specimens which Hajek had shown, during nearly 50 years, in his famous practical classes.

ALMONERS CARRY ON

THE almoners department of the Royal Infirmary, Newcastle-on-Tyne experienced a lull in its activity at the beginning of the war. Admissions to the hospital were cut down and outpatients also became fewer owing to evacuation. A new task fell to the almoners, however, who had to arrange the transfer of convalescent patients to E M S hospitals. Outpatient attendances have gradually increased again but not to prewar level, since people are unwilling to travel far to seek advice—especially during the darker months—unless there is something urgently wrong. All convalescent homes on the north-east coast of Northumberland have been closed, the only convalescent homes for adults now available being at Ilkley in Yorkshire and Silloth in Cumberland. The Silloth home also takes children over six. Children from five to fourteen can go to the Children's Holiday Association Home at Whickham, and those between three and thirteen can go to the infirmary's own home at Greycourt Riding Mill, and to Newbrough Lodge. Children who need nursing—orthopædic cases with legs in plaster, for example, or children with chorea—can be looked after at these two homes and get complete rest. They have returned looking no and healthy, and showing a good gain in weight. convalescent home which took women and child including mothers and their babies, was in a much ru area and at last had to close; another was taken ove by the Government for other purposes.

Spa hospitals have remained open for patients wi rheumatic complaints, and the infirmary almoners hav continued to send patients to Harrogate and Buxto and to keep an eye on them when they returned to work. Acting as almoners in the original sense, they have arranged for grants from the National Society for Cance Relief to provide extra nourishment for needy patient. Of the 18 patients helped during the year, 10 died bu the grants for invalid diet did much to make their last illnesses more tolerable. Of the rest, 6 are still receiving weekly allowances and are making good progress, and 2 have been crossed off the list, as showing no further evidence of cancer. These 2, who were very poor, were treated with radium, one for three the other for ten months. They put on weight steadily, and the grant was not stopped until they were reported to have recovered from their treatment. Grants from the Soldiers, Sailors and Airmens Families Association have been administered to the wives of men in the Services. Their government allowances cover their ordinary needs, *but the grants have been* invaluabl for special expenses arising during illness—for example, to pay the cost of ambulances, of surgical appliances and of extra food. The Tyneside Council of Social Service has visited many of the infirmary patients during the year and has given grants for convalescence and to provide special treatment or appliances where these were needed. The almoners have also been able to help a girl who was crippled by arthritis to find work, and to find homes for two children whose parents were separated and whose mother was mentally unfit to look after them. These samples from the duties of an almoner give only a shadowy idea of the thought, tact and energy which go to the successful care and aftercare of even a single hospital case.

Appointments

CASSON F R C, M B Lond, D P M M O (A R P) for Southwar
CORY R A S, M B Brist senior M O at Jamaica
FORSYTH W W, M B Glasg examining factory surgeon f
Darlington, co Durham
RALSTON, MARGARET, M B Edin temp asst school M O f
Derbyshire
REID, J D, M B Edin, D P H, D T M & H asst bacteriologist
at Sierra Leone
UNGAR, EMIL M D Prague asst radiologist in the therapeutic
department, Royal Cancer Hospital (Free), London

Births, Marriages and Deaths

BIRTHS

ANSELL—On Sept 1, at Winchester, the wife of Dr J L B Ansell—a daughter

CARLTON—On Aug 5, at Epsom the wife of Colonel C Hor Carlton R A M C—a son

MASON—On Sept 6 at Derby, the wife of Captain James Mason R A M C—a daughter

OFFICER—On July 1, at Deolali India, the wife of Major W J Officer R A M C—a daughter

PROCTOR—On Sept 2, the wife of Captain Henry Proctor, R A M C—a daughter

MARRIAGES

HARBINSON—DICK—On Sept 1, at Taplow David Lowry Harbinson M B, R A M C to Nancy Kate Dick, M B

INGHAM—COOPER—On Sept 3, at Bolton, Arthur Ingham, M B to Lucy Angela Cooper

ILIFF—COX—On Sept 3 at Gulmarg Kashmir Arthur Durnford Iliff, M R C S C M S, to Elizabeth Vera Cox

LITCHFIELD—HATHERLY—On Sept 5, in London Jack Litchfield M R C P, to Nan Hatherly

OGILVIE—TORRENS—On Sept 6 at Lee on Solent Joyce Patr Heneage Ogilvie M R C S elder son of Colonel W H Ogilvie A M S to Jean Mary Torrens

SYMMERS—WRIGHT—On Aug 28 at Belfast, William St Cl Symmers, surgeon lieutenant R N V R, to Jean Noble Wr

DEATHS

DINNICK—On Sept 4 at Launceston, Oswald Tilson Dinnick M B Toronto, F R C S E

HARRISON—On Sept 8, James McKean Harrison, M B R U I Tunbridge Wells

HIGHET—On Sept 5, Robert Campbell Highet T D M D Gl

WOOD—On Sept 4 at Hungerford Berks, Guy Edward Mil Wood, M B Durh, M R C P

It is exceptional for enuresis cases not to be benefited urethral dilatation provided this treatment is carried ut in the proper manner

In many cases of chronic disturbances of micturition n adults the history dates from childhood

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TRAUMATIC ASPHYXIA

J Grant Bonnin
M.B MELB F R C S, M R C O G
FRACTURE REGISTRAR AT THE WEST LONDON HOSPITAL

Characteristic illustrations of traumatic asphyxia show the patient cyanosed from the mid-thorax to the vertex of the skull, with bright red subconjunctival hæmorrhages and grasping an oxygen funnel and so potent is suggestion that—overlooking the normal colour of the skin visible below the discoloration and the fact that the patient shows no distress—one is convinced that were it not for this life-giving supply of gas death must inevitably ensue In fact the patient probably has no oxygen lack This is one of many confusions which have crept into the literature.

Some observers record that the skin is a patchy blue colour (with streaks of normal skin between) which fades without intermediate colour change in an average of 4 days others that there is an associated petechial rash in addition which fades in 10–14 days. A few report the appearance of intermediate colour changes during fading which suggest that the blood must be extravascular: most fail to distinguish one discoloration rom another or to record the rate and method of fading t appears that there are certainly two types of skin iscoloration one a generalised bluish-purple tint, which may be of a patchy distribution, the other a petechial rash These two skin lesions are often present together and with them may be seen bruising of the usual type. Some surgeons who have sectioned the skin find red blood-cells outside the vessels, others find dilated capillaries or normal skin

I wish to report a case with special reference to the skin changes and to suggest a theory which may explain the discrepancies in reported cases

CASE-HISTORY

A shopkeeper aged 37, was admitted to the West London Hospital at 10 50 P.M. on Dec 9, 1939, having been knocked down in the street at 10 o clock. He and his wife were about to step on to a traffic island when a car struck him in the chest and threw him to the ground He was knocked out for a minute and then picked himself up He was dazed and unsteady, and was brought by ambulance to hospital. His wife stated that he was struck by the mudguard and thrown to the ground, the car did not pass over him or press on him in any way

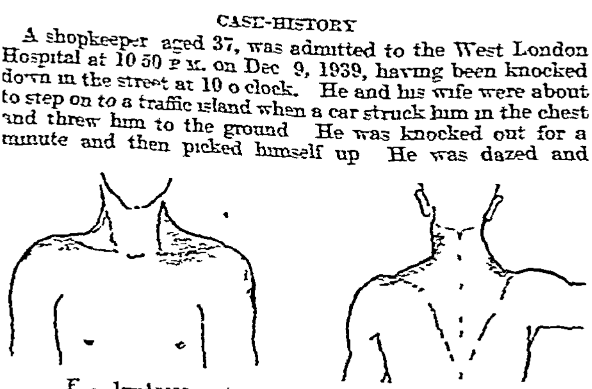

Fig 1—Areas containing petechiæ in case reported.

On admission, he was conscious and quite collected He had a faint bluish discoloration of the skin of the face and neck respirations normal pulse-rate 96, blood-pressure 120 70 mm Hg He had an abrasion over the left zygoma, and a laceration over the right which required three sutures The conjunctivæ of both eyes were scarlet the only remaining patch of normal conjunctiva being a small wedge at the upper and outer angle of the left eye There was extensive bruising around the right eye, and the nose was bleeding There was a bruise over the 5th left metatarsal and clinical examination suggested a fracture of the base of the metatarsal later confirmed by radiography, no other serious injury was detected clinically or radiographically The patient complained of pain in the left shoulder though he could move it freely There was discoloration of the skin in the areas shown in fig 1 This consisted of multiple dark petechial spots of irregular size evenly scattered and thinning towards the edges The soft palate and the posterior part of the hard palate also showed petechial spots and a few spots were noted on the under aspect of the tongue where there was one fairly large submucous hæmorrhage The ear drums were normal No petechiæ were found elsewhere His face was congested but not cyanosed

Congestion did not extend below the root of the neck, and disappeared entirely in 24 hours He had no hæmoptysis; vision and hearing were good

Progress—On Dec 10 he was comfortable Blood-pressure 128,76 Petechiæ had increased, a faint crop now being apparent from the level of the second rib on the left, extending down the arm to 1½ in below the acromion Temperature 99 2° F There was more œdema and swelling round the eyes and bruising had appeared round the left eye The conjunctivæ were chemotic and brilliantly red On Dec 11 the rash began to fade at the edges, and the skin between to assume a darker colour with a yellowish tint at the edges The chemosis subsided, though the conjunctival discoloration remained Blood-count red cells 5,700,000 white cells 9300, colour-index 0 96 Temperature 99 2° F Next day pigmentary changes of the ordinary hæmatoma were apparent in the affected skin A bluish-green discoloration united the petechial spots at the centre of the area, and faded to yellow at the edges Temperature normal From Dec. 13 onwards his condition rapidly improved The conjunctivæ remained scarlet, peri-ocular bruising rapidly subsided On Dec 14 a walking plaster was applied to the leg Next day the petechiæ in the mouth had completely gone Those on the skin were now blurred and indistinct, but the skin was coloured greenish-yellow The patient was discharged to attend as an outpatient On Dec 18 all discoloration had gone from the skin Conjunctivæ still bright red, but slowly clearing On Dec 25 the conjunctival hæmorrhage had almost gone, leaving a faint brownish yellow discoloration.

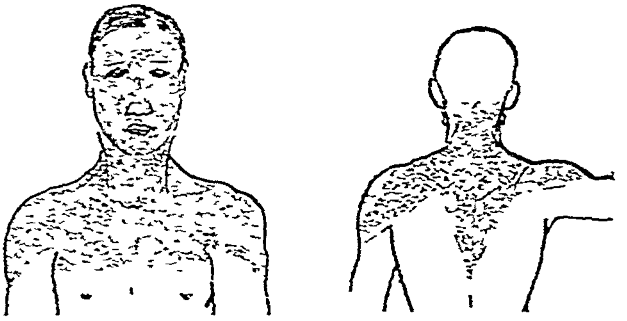

Fig 2—Areas in which petechiæ may appear in traumatic asphyxia.

DISCUSSION

The first recorded cases of traumatic asphyxia were noted by Ollivier (1837) after a panic on the Champ-de Mars in Paris The condition was recognised in Germany as Druckstauung or Stauungsblutungen, and in France as "masque ecchymotic In America Huer (1923) collated 127 cases from the literature to which a further 16 were added by Laird and Borman (1930) A further 12 cases (exclusive of Russian literature) have been recorded since Following the work of Braun (1900) Beach and Cobb (1902) removed a portion of skin for section and found no extravascular corpuscles this single observation seems to have carried undue influence in all the subsequent literature Perthes (1900) put forward a theory explaining the distribution of the discoloration on the grounds that the absence of valves in the vessels of the upper limb girdle allowed the development of back pressure He regarded the discoloration, however as due to extravasation of blood into the tissues, an idea discredited later by Braun (1904) Beach and Cobb (1902) and Winslow (1905)

TREATMENT

In all the 310 cases of enuresis the urethra was dilated with metal sounds on one or more occasions The treatment was given under a general anæsthetic which allowed me to conduct endoscopy at the same time

A firm rubber cushion was placed under the buttocks and the external genitals were inspected and cleansed In boys meatotomy was done if necessary , the calibre of the urethra was judged, the cystoscope passed, and the residual urine estimated Dilatation was then carried out In both sexes I used a special set of curved metal sounds marked in the French scale from 5 to 26 and made to my design (Willen Bros) , they are suitable for children up to the age of 14 It is not easy to pass an adult size metal sound of small calibre on a very young boy, and the attempt should not be made by anyone inexperienced in urethral instrumentation in children If a proper set of metal instruments is not available gum elastic bougies may be used, but these should first be well softened by soaking in hot water In the male treatment should always be carried out with the patient lying on his back

The cases fell into the categories indicated below Among those giving poor results were some for whom repeated treatment was advised but refused

	Per cent
Some benefit from urethral dilatation	97
Benefit from a single treatment	80
No further enuresis after a single treatment *	30
No further enuresis after 2 or more treatments *	25
Continued enuresis in spite of repeated treatments but symptoms improved	42

* Follow up covering from 3 months to 2 years

There is a striking variation in the extent to which the urethra can be dilated in children of the same age When repeated dilatations were necessary, no benefit resulted if too short an interval was allowed between the treatments , the shortest interval should be a month, and most of the repeated dilatations were carried out at intervals varying from 1 to 3 months

DISCUSSION

Inflammation figures predominantly in these cases of enuresis In some patients the enuresis developed suddenly in connexion with an attack of inflammation, generally associated with one of the exanthemata , in others enuresis merely became worse after one of these infections The fact that 84% of the cases developed before the sixth year reminds us that infections and other inflammatory diseases are common at this period of life The preponderance of girls (61%) is significant, since attacks of pyelitis (pyelonephritis) are commoner in females than males Folsom (1935) holds that pyelitis in children commonly arises as a spread of infection from the posterior urethra In many cases of acute pyelitis in women and children ,urethroscopy later reveals chronic posterior urethritis and it seems likely that the upper urinary tract infection is secondary to the lower focus, and may in the adult cases have originated in childhood

Chronic diurnal frequency of micturition was present in 77% of this series This is always an outstanding symptom in cases of inflammation of the posterior urethra and bladder neck , adults with chronic frequency in whom the urine is not heavily infected commonly have cystitis only at the neck of the bladder In diurnal enuresis the history shows that the symptom is a final expression of bladder-neck irritation which has previously shown itself as chronic frequency In nocturnal cases irritation of the posterior urethra, acting through the lower centres of the cord, results in micturition The presence of vulvitis in 57% of the girls suggests a strong relation between the inflammatory process and the enuresis, especially as the external urinary meatus was always affected Chronic cervicitis was rare, but it is important since it may have a bearing on the relationship between cervicitis and cystitis in adults

Independent observers have established the fact that in females, within and deep to the mucous membrane of the front of the trigone, the internal urinary meatus and the posterior urethra, there is a group of structures which may be true glands or epithelial rests derived from the overlying transitional epithelium, but which the microscope has shown to be commonly if not constantly inflamed Cabot and Shoemaker (1936) have failed to find these structures in the fœtus but they have identified in young children, which suggests that are acquired as a result of a local—probably inflamma-tory—stimulus In the male the gland orifices of the prostate open into the prostatic sinuses and the orifices of the ejaculatory ducts on the forepart of the verumontanum , in these localities inflammation is common. In anterior urethritis, whatever the infecting organism, all the gland orifices of the anterior urethra show evidence of infection in due course, and as a rule posterior urethritis is found later , thus the tendency to backward spread is well established, in children as well as adults In the female the vulval glands are the homologues of the anterior urethral glands in the male , and the paraurethral glands of Skene and any glands (except those of Bartholin) which open directly into the urethra are the homologues of the glands of the prostate , and an infection of the vulval glands automatically involves the urethral glands, as urethroscopy shows

Campbell (1935), in a cystoscopic study of 219 girls with persistent enuresis, found granular urethritis in 35% Spence and Moore (1939) investigated 50 girls aged 3-14 years with a history of acute pyelitis, previous pyuria, or unexplained frequency day and night with normal urine , 20 had enuresis From cysto urethroscopy they concluded that pathological urethral conditions are unexpectedly common in children and are comparable to those found in adult women Chronic granular urethritis was present in 76% of their cases, often accompanied by a reduction in calibre and a loss in elasticity of the urethra MacKenzie and Beck (1936), from histological study of 30 female urethræ obtained at autopsy, found chronic urethritis in 95%

My own observations on young adults with different degrees of stenosis of the urethra or the meatus convince me of the importance of inflammation in childhood It is a commonplace of cystoscopy and urethroscopy in adults that mild localised inflammatory foci are present at the bladder neck and in the posterior urethra, though the urine may give no evidence of infection The same findings are common in cases of enuresis in children The worst cases of construction of the external urinary meatus in boys always showed inflammation of the orifice or the mucosa within it , in many of the milder cases no meatitis was present Meatitis was only seen in circumcised children, which suggests that circumcision should only be advised after careful consideration Residual urine was present in a few of the cases , and even those with amounts of less than 1 oz sometimes had attacks of acute inflammation of both the bladder and the kidneys , these attacks usually ceased after dilatation Cases of construction of the whole length of the urethra respond particularly well to dilatation In some the urethral wall is generally fibrosed and the urethroscope shows the change to be inflammatory Variations in the calibre and capacity for dilatation of the urethra are also common in adults, and these patients too have chronic frequency and respond to dilatation

Where the bladder contains residual urine owing to a constriction at the bladder neck the reason for improvement after dilatation is obvious In the male, where the orifices of many glands open into the anterior and posterior urethra, stretching allows of improved drainage from the gland ducts The same results can be expected in the female drainage of gland ducts in the anterior urethra reduces inflammation In the posterior urethra of the female there are no glandular orifices, but inflammation here is also improved by dilatation which probably ruptures intra-epithelial cysts formed as a result of inflammation

SUMMARY

Enuresis in both sexes is commonly associated with chronic inflammatory changes in the posterior urethra and at the bladder neck

Chronic inflammatory changes in the urethra in females are often accompanied by a simple form of vulvitis In the male these changes are sometimes initiated by inflammation at the external urinary meatus

The urine is as a rule free from evidence of infection and no specific organism has been detected to explain the inflammatory changes

In many cases there are mild renal changes indicating some slight impairment of function of the kidneys a indicated by intravenous urography t is exceptional for enuresis cases not to be benefited urethral dilatation provided this treatment is carried in the proper manner

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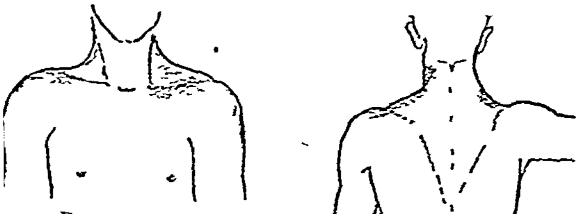

FIG 1—Areas containing petechiæ in case reported.

On admission, he was conscious and quite collected. He ad a faint bluish discoloration of the skin of the face and eck respirations normal, pulse rate 96, blood-pressure 20/70 mm Hg He had an abrasion over the left zygoma, nd a laceration over the right which required three sutures he conjunctivæ of both eyes were scarlet the only remaining atch of normal conjunctiva being a small wedge at the upper and outer angle of the left eye There was extensive bruising around the right eye, and the nose was bleeding There was a bruise over the 5th left metatarsal, and clinical examination suggested a fracture of the base of the metatarsal, later confirmed by radiography, no other serious injury was detected clinically or radiographically The patient complained of pain in the left shoulder though he could move it freely *There was discoloration of the skin in the* areas shown in fig 1 This consisted of multiple dark petechial spots of irregular size evenly scattered and thinning towards the edges The soft palate and the posterior part of the hard palate also showed petechial spots, and a few spots were noted on the under aspect of the tongue, where there was one fairly large submucous hæmorrhage The ear drums were normal No petechiæ were found elsewhere His face was congested but not cyanosed

Congestion did not extend below the root of the neck and disappeared entirely in 24 hours He had no hæmoptysis, vision and hearing were good

Progress—On Dec 10 he was comfortable Blood-pressure 128/76 Petechiæ had increased, a faint crop now being apparent from the level of the second rib on the left, extending down the arm to 1½ in below the acromion Temperature 99 2° F There was more œdema and swelling round the eyes, and bruising had appeared round the left eye The conjunctivæ were chemotic, and brilliantly red On Dec 11 the rash began to fade at the edges, and the skin between to assume a darker colour with a yellowish tint at the edges The chemosis subsided, though the conjunctival discoloration remained Blood-count red cells 5,700,000, white cells 9300, colour-index 0 96 *Temperature* 99 2° F Next day pigmentary changes of the ordinary hæmatoma were apparent in the affected skin A bluish-green discoloration united the petechial spots at the centre of the area, and faded to yellow at the edges Temperature normal From Dec 13 onwards his condition rapidly improved The conjunctivæ remained scarlet, peri-ocular bruising rapidly subsided On Dec 14 a walking plaster was applied to the leg Next day the petechiæ in the mouth had completely gone Those on the skin were now blurred and indistinct, but the skin was coloured greenish-yellow The patient was discharged to attend as an outpatient On Dec 18 all discoloration had gone from the skin Conjunctivæ still bright red, but slowly clearing On Dec 25 the conjunctival hæmorrhage had almost gone, leaving a faint brownish-yellow discoloration.

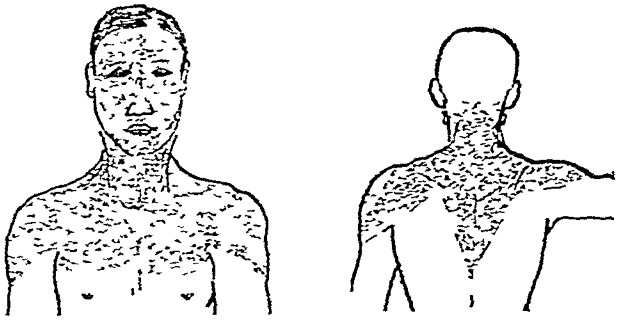

FIG 2—Areas in which petechiæ may appear in traumatic asphyxia

DISCUSSION

The first recorded cases of traumatic asphyxia were noted by *Ollivier* (1837) after a panic on the Champ-de Mars in Paris The condition was recognised in Germany as Druckstauung or Stauungsblutungen, and in France as "masque ecchymotic" In America Huer (1923) collated 127 cases from the literature to which a further 16 were added by Laird and Borman (1930) A further 12 cases (exclusive of Russian literature) have been recorded since Following the work of Braun (1900) Beach and Cobb (1902) removed a portion of skin for section and found no extravascular corpuscles; this single observation seems to have *carried* undue influence in all the subsequent literature Perthes (1900) put forward a theory explaining the distribution of the discoloration on the grounds that the absence of valves in the vessels of the upper limb girdle allowed the development of back pressure He regarded the discoloration, however as due to extravasation of blood into the tissues, an idea discredited later by Braun (1904) Beach and Cobb (1902) and Winslow (1905)

TREATMENT

In all the 310 cases of enuresis the urethra was dilated with metal sounds on one or more occasions The treatment was given under a general anæsthetic which allowed me to conduct endoscopy at the same time

A firm rubber cushion was placed under the buttocks and the external genitals were inspected and cleansed In boys meatotomy was done if necessary , the calibre of the urethra was judged, the cystoscope passed, and the residual urine estimated Dilatation was then carried out In both sexes I used a special set of curved metal sounds marked in the French scale from 5 to 26 and made to my design (Willen Bros) , they are suitable for children up to the age of 14 It is not easy to pass an adult size metal sound of small calibre on a very young boy, and the attempt should not be made by anyone inexperienced in urethral instrumentation in children If a proper set of metal instruments is not available gum elastic bougies may be used, but these should first be well softened by soaking in hot water In the male treatment should always be carried out with the patient lying on his back

The cases fell into the categories indicated below Among those giving poor results were some for whom repeated treatment was advised but refused

	Per cent
Some benefit from urethral dilatation	97
Benefit from a single treatment	80
No further enuresis after a single treatment *	30
No further enuresis after 2 or more treatments *	25
Continued enuresis in spite of repeated treatments but symptoms improved	42

* Follow up covering from 3 months to 2 years

There is a striking variation in the extent to which the urethra can be dilated in children of the same age When repeated dilatations were necessary, no benefit resulted if too short an interval was allowed between the treatments , the shortest interval should be a month, and most of the repeated dilatations were carried out at intervals varying from 1 to 3 months

DISCUSSION

Inflammation figures predominantly in these cases of enuresis In some patients the enuresis developed suddenly in connexion with an attack of inflammation, generally associated with one of the exanthemata , in others enuresis merely became worse after one of these infections The fact that 84% of the cases developed before the sixth year reminds us that infections and other inflammatory diseases are common at this period of life The preponderance of girls (61%) is significant, since attacks of pyelitis (pyelonephritis) are commoner in females than males Folsom (1935) holds that pyelitis in children commonly arises as a spread of infection from the posterior urethra In many cases of acute pyelitis in women and children ,urethroscopy later reveals chronic posterior urethritis and it seems likely that the upper urinary tract infection is secondary to the lower focus, and may in the adult cases have originated in childhood

Chronic diurnal frequency of micturition was present in 77% of this series This is always an outstanding symptom in cases of inflammation of the posterior urethra and bladder neck , adults with chronic frequency in whom the urine is not heavily infected commonly have cystitis only at the neck of the bladder In diurnal enuresis the history shows that the symptom is a final expression of bladder-neck irritation which has previously shown itself as chronic frequency In nocturnal cases irritation of the posterior urethra, acting through the lower centres of the cord, results in micturition The presence of vulvitis in 57% of the girls suggests a strong relation between the inflammatory process and the enuresis, especially as the external urinary meatus was always affected Chronic cervicitis was rare, but it is important since it may have a bearing on the relationship between cervicitis and cystitis in adults

Independent observers have established the fact that in females within and deep to the mucous membrane of the front of the trigone, the internal urinary meatus and the posterior urethra, there is a group of structures which may be true glands or epithelial rests derived from the overlying transitional epithelium, but which the microscope has shown to be commonly if not constantly inflamed Cabot and Shoemaker (1936) have failed to find these structures in the fœtus, but they have identified in young children, which suggests that are acquired as a result of a local—probably infla tory—stimulus In the male the gland orifices of the prostate open into the prostatic sinuses and the orifices of the ejaculatory ducts, on the forepart of the verumontanum , in these localities inflammation is common. In anterior urethritis, whatever the infecting organism, all the gland orifices of the anterior urethra show evidence of infection in due course, and as a rule posterior urethritis is found later , thus the tendency to backward spread is well established, in children as well as adults In the female the vulval glands are the homologues of the anterior urethral glands in the male , and the paraurethral glands of Skene and any glands (except those of Bartholin) which open directly into the urethra are the homologues of the glands of the prostate , and an infection of the vulval glands automatically involves the urethral glands, as urethroscopy shows

Campbell (1935), in a cystoscopic study of 219 girls with persistent enuresis, found granular urethritis in 35% Spence and Moore (1939) investigated 50 girls aged 3-14 years with a history of acute pyelitis, previous pyuria or unexplained frequency day and night with normal urine , 20 had enuresis From cysto urethroscopy they concluded that pathological urethral conditions are unexpectedly common in children and are comparable to those found in adult women Chronic granular urethritis was present in 76% of their cases, often accompanied by a reduction in calibre and a loss in elasticity of the urethra MacKenzie and Beck (1936), from histological study of 30 female urethræ obtained at autopsy, found chronic urethritis in 95%

My own observations on young adults with different degrees of stenosis of the urethra or the meatus convince me of the importance of inflammation in childhood It is a commonplace of cystoscopy and urethroscopy in adults that mild localised inflammatory foci are present at the bladder neck and in the posterior urethra, though the urine may give no evidence of infection The same findings are common in cases of enuresis in children The worst cases of constriction of the external urinary meatus in boys always showed inflammation of the orifice or the mucosa within it , in many of the milder cases no meatitis was present Meatitis was only seen in circumcised children, which suggests that circumcision should only be advised after careful consideration Residual urine was present in a few of the cases , and even those with amounts of less than 1 oz sometimes had attacks of acute inflammation of both the bladder and the kidneys , these attacks usually ceased after dilatation Cases of constriction of the whole length of the urethra respond particularly well to dilatation In some the urethral wall is generally fibrosed and the urethroscope shows the change to be inflammatory Variations in the calibre and capacity for dilatation of the urethra are also common in adults, and these patients too have chronic frequency and respond to dilatation

Where the bladder contains residual urine owing to a constriction at the bladder neck the reason for improvement after dilatation is obvious In the male, where the orifices of many glands open into the anterior and posterior urethra, stretching allows of improved drainage from the gland ducts The same results can be expected in the female drainage of gland ducts in the anterior urethra reduces inflammation In the posterior urethra of the female there are no glandular orifices, but inflammation here is also improved by dilatation which probably ruptures intra-epithelial cysts formed as a result of inflammation

SUMMARY

Enuresis in both sexes is commonly associated with chronic inflammatory changes in the posterior urethra and at the bladder neck

Chronic inflammatory changes in the urethra in females are often accompanied by a simple form of vulvitis In the male these changes are sometimes initiated by inflammation at the external urinary meatus

The urine is as a rule free from evidence of infection and no specific organism has been detected to explain the inflammatory changes

In many cases there are mild renal changes indicating some slight impairment of function of the kidneys as indicated by intravenous urography

The mechanism is always a thoracic crush

The distribution of the hæmorrhage coincides with that he valveless veins

Hæmorrhages have been seen in the tissues of the face neck, in the absence of local damage

Distended vessels have been found in skin sections each and Cobb 1902)

5 Rate of fading of the cyanosis is related to the length of ie the compression has lasted

6 Discoloration fails to appear under constricting bands, ggesting that if the skin is supported by an equal counter-essure, overdilatation is prevented This would also plain the absence of hæmorrhage or discoloration in the ain, where the C S.F presumably exerts a counter-pressure the vessels

7 Report of case by Kredel (1907) in which the liver of an ant 17 hours old was forcibly reduced into the abdomen m an umbilical hernia, at the end of the operation the ild's face was bluish and was marked by petechial hæmor-ages The raised intrathoracic pressure produced by the turn of the liver, together perhaps with the squeezing of ood along the inferior vena cava, produced the conditions esent in traumatic asphyxia

8 The observation of Young (1929) that in his case there as a definite concentration of petechial spots along the course f the superficial temporal veins

It would appear that back pressure dilates the vessels, nd that the anoxæmia which continues for the length f time the thorax is compressed, contributes to the aresis of the vessel walls which become overdistended nd so lose their tone The accumulation of unoxygen-ted blood in these vessels is responsible for the cyanotic ppearance, and it fades in 3–4 days as the vasomotor ontrol returns, without the intermediate colour changes een in a bruise Its rate of fading is related to the time or which the compression has lasted In a region such s the conjunctivæ, where the vessels are very lightly upported by tissue, such a wave of pressure always uptures them and produces the characteristic flame-oloured hæmorrhages These hæmorrhages, possibly rom the fact that their oxygen consumption is small, r that they can obtain some oxygen from the air, emain a bright colour for some days, and about the end f a fortnight begin to fade with the colour changes seen n other subconjunctival hæmorrhages

That long-continued low oxygen tension may result in damage to the endothelial cells lining the capillaries and capillary hæmorrhages is well known. The venous stasis produced by a paroxysm of whooping-cough, or in an epileptic seizure, may produce petechiæ, and the same mechanism may act in some cases of traumatic asphyxia If it were the usual cause one would expect that after any long-continued squeeze petechiæ would be found in addition to cyanosis This is not invariably so It appears that a further factor is involved

If the blow on the chest is sudden and violent, the sharp rise in capillary pressure may be sufficient to produce capillary hæmorrhages, and the duration of the subsequent squeeze, if any, will be of less importance The distribution of the hæmorrhages suggests that this rise of pressure is transmitted along the veins The irregular distribution of the petechial spots in some cases may be explained by the direction of the force and subsequent chest deformity, producing different waves of pressure in different veins This theory was suggested by the case reported here, in which small areas showed scattered capillary hæmorrhages, whereas cyanosis was almost non-existent Compression was of short duration, and the characteristic eye findings established the diagnosis A sudden wave of back pressure had produced petechial hæmorrhages, and the time of the compression was so short that venous tone was damaged very slightly—only temporarily shocked Only one comparable case of rapid compression has been reported, in most of the cases of slow compression there were no petechiæ In cases where a rapid onset of compression was followed by maintenance of the pressure, cyanosis and petechiæ were common Experiments have been carried out on rabbits by Perthes, but they were inconclusive The difficulty is to find an experimental animal in which valves are absent from the upper thoracic region and neck

It may be concluded that a slow squeeze produces cyanosis, a rapid squeeze is likely to produce petechiæ, and the combined type of injury produces cyanosis together with petechiæ I present this case as one of the rare examples of the rapid squeeze, thus producing petechiæ with minimal cyanosis

SUMMARY

Hæmorrhages into the skin often occur in traumatic asphyxia Two types of skin lesion are found—cyanosis, and petechial hæmorrhages—and these may coexist Petechial hæmorrhages alone have not been reported

The cyanotic coloration fades in about 4 days with no intermediate pigmentary changes The petechial hæmorrhages fade in about 12–14 days and undergo the characteristic colour changes of a bruise

The cyanosis is due to venous stasis in overdistended capillaries, temporarily paralysed as the result of continued back pressure, and to anoxæmia produced by a slow or continued squeeze of the thorax The petechial hæmorrhages are due to a sudden wave of back pressure in the veins producing capillary rupture, resulting from a sudden blow on the thorax If the sudden force on the thorax is not relaxed then the continued pressure may produce cyanosis as well

In the absence of severe associated injury, the prognosis is good, over 90% of cases recovering

There is no treatment, other than of the complications or associated injuries

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PLUMP TYPE OF GRAVES'S DISEASE *

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PROGRESSIVE loss of weight is generally regarded as one of the characteristics of Graves's disease but the disease may be associated with a gain in weight Means [1] for instance, says that "Occasionally a patient actually gains weight while thyrotoxic," and Joll [2] that "it occasionally happens that in the earlier stages of mild cases the increased appetite and additional consumption of food may actually lead to an increase of weight" Both these authorities evidently regard such an increase of weight as infrequent, and Joll considers that it only happens in mild cases It is, however, our experience that a gain of weight is not uncommon in untreated Graves's disease, and that the cases in which it is seen are often severe and of a characteristic type This type occurs in young women who usually show such classical features of Graves's disease as exophthalmos and lid-retraction, a large pulsatile goitre and pronounced tachycardia They are plump in appearance they have often gained weight before admission to hospital, and invariably do so when rested; they often give a history of amenorrhœa, and there is clinical enlargement of the lymphatic tissues The differentiation of this type is of practical importance because the results of thyroidectomy in such cases are less satisfactory than we have come to expect in other types of Graves's disease

In 100 cases of Graves's disease (toxic diffuse goitre) under our observation at University College Hospital,

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* These observations were made at a clinic for the study of thyroid disease set up in 1938 by the Medical and Surgical Units University College Hospital

[1] Means J H The Thyroid and its Diseases Philadelphia, 1937 p 308

[2] Joll C A Diseases of the Thyroid Gland, London, 1932, p 410

Characteristic features —Apart from the striking discoloration of the head and upper part of the thorax and the brilliant red conjunctivæ the following facts about the skin lesion are notable —

1 It is limited anteriorly by the third rib interspace, posteriorly by the triangle of skin over the trapezius, laterally it descends to the level of the insertion of the deltoid (fig 2)

2 The ears and the scalp may remain free from discoloration, or show it to a lesser extent

3 Areas of skin which have been supported by firm outside pressure at the time of the accident show little or no discoloration (such areas may be produced by the headband of a hat or the constriction of a collar)

4 The mucous membranes of the mouth, though seldom showing the general discoloration, often show petechial hæmorrhages

5 The ear drums have shown petechial hæmorrhages in a few cases

6 The subconjunctival hæmorrhage usually completely fills the visible conjunctivæ, but in milder cases may leave clear areas

7 Cases which have died from associated injuries have not been reported to show at autopsy discoloration or petechiæ in the meninges or pleura, though some subpleural hæmorrhages have been seen

8 After 24 hours, the petechial rash, if present, is found to have extended, the peripheral areas showing fainter and more scattered petechiæ

9 The characteristic skin lesions are often associated with ocal bruising and hæmorrhages into the tissues of the neck

The development of the discoloration seems to coincide with the compression In a mild case it may be almost the only sign of the condition A coloured plate of the condition in a child is to be seen in Linington's article (1915)

Associated injuries —In a third of cases consciousness is lost, usually for a short period, sometimes for hours Occasionally cortical irritation has been noted with associated convulsive movements, irritability, restlessness and disorientation Fractures of the skull have not been reported but spinal-cord and nerve injuries are sometimes seen (Ocular signs are found in 10% of cases) Associated thoracic injuries are common One or more ribs may be fractured, or the clavicle Damage to the deep thoracic structures when present is usually associated with a small hæmoptysis Pulmonary œdema has sometimes occurred, and hæmothorax has been recorded in 3 cases Injury to the abdominal organs is uncommon but when found follows the expected lines hæmo-peritoneum and ruptured intestine have been seen Not uncommonly there is moderate abdominal rigidity, possibly associated with vomiting after the accident, but this clears up rapidly

Progress —After recovery from shock, and if there are no complicating lesions, the patient makes a rapid and uninterrupted recovery In 3–4 days he feels well, and the blue discoloration has gone Discoloration from petechial hæmorrhages probably takes 12–14 days to disappear The subconjunctival hæmorrhages are slowest to subside, and faded in my case with the characteristic colour-play of a bruise at about the end of the third week Optic atrophy may be a late complication If the patient does not die immediately from associated injuries the prognosis is good, over 90% of cases recover Death at a later stage is usually due to an infective complication such as pneumonia or empyema Only the associated injuries and complications require treatment

Pathology —Huer (1923) has summarised autopsy findings in these cases Some indication of their variety can be deduced from the list of associated injuries Hæmorrhages have been noted post mortem into the tissues of the face and neck, and into the orbital tissues We are concerned here mainly with the skin findings, and these have been made on skin surgically removed from surviving subjects Sections of skin on 6 different subjects have been described No skin section was made in the case reported here because by the time I fully realised its importance the value of such sections was already lost Since, however, the play of colours seen in the skin indicates the hæmolysis of extravascular red cells, there must have been rupture of vessels with hæmorrhage into the skin Skin findings in reported cases are as follows

Beach and Cobb (1904) Normal skin

Winslow (1905) Distended capillaries No blood outside the vessels

Braun (1904) Blood present in the skin outside the capillaries (Section by Aschoff)

Bolt (1908) A number of sections showed normal skin, but a careful examination of further sections showed a few extra capillary red cells

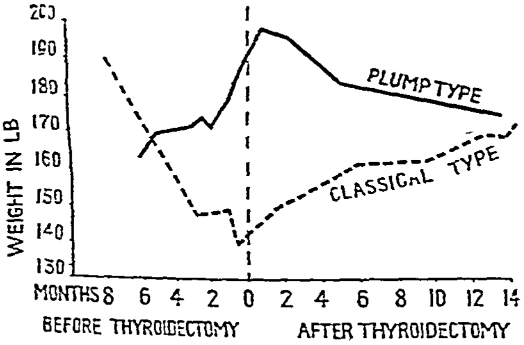
Robertson (1914) (two cases) (1) No hæmorrhage into the tissues, but "perivascular infiltration", (2) Blood pigment and hæmorrhage in the deeper layers of the skin and the subcutaneous fat

The evidence in favour of hæmorrhage occurring into the tissues in some cases may be summarised thus in 3 reported cases sections showed hæmorrhage into the skin, at some autopsies hæmorrhages were found in the tissues of the face and neck, suggesting that smaller hæmorrhages into the skin were likely, retinal hæmorrhages have sometimes been observed, in some cases, including mine, the skin discoloration fades with the colour changes of a bruise, petechiæ may be present even when such colour changes are not reported Cyanosis was accompanied by petechiæ in 14 of the reported cases So far no case has been reported showing petechiæ alone, though I believe that might be possible, in many cases, perhaps most, cyanosis occurs alone, though close examination of future cases will probably show petechiæ to be commoner than is thought The cyanosis tends to be patchy with normal skin between, and may mimic petechiæ

Ætiology —The condition has always been reported as the direct result of violent thoracic compression This has resulted from a variety of mishaps—crushes between vehicles, or between individuals in a terrorised crowd, street accidents, lift-shaft accidents and the like Less commonly it is caused by a "squeeze" (produced by the sudden failure of air pressure in a high pressure diving suit) when diving, or by the so called "jack knife" injury, in which a weight falling on the back brings the chest into forcible contact with the knees and thighs The compression may act briefly, 3–4 minutes being the most commonly recorded time, or, if less severe, for as much as 20 minutes, when the subject is pinned under a compressing weight The crush may have been rapid in onset and maintained, or may occur slowly and be released equally slowly The head and neck commonly escape injury, but the abdomen is often injured Most cases have occurred in young people, perhaps because of the greater elasticity of the chest at this time of life, and the fact that such a severe injury is likely to kill older people immediately from shock It has been recorded after epileptic fits (Alexander 1909, Coullie 1928) Hueter (1874) suggested that the cause was mechanical, the discoloration being due to back pressure in the veins, with dilatation, and that its distribution was due to disturbance of the cervical sympathetic supply to the upper limb-girdle and face The sympathetic disturbance was supposed to result in some way from the injury to the sympathetic in the abdomen While there is no doubt that the bluish discoloration is due to excessive unoxygenated blood in the dilated skin vessels, its peculiar distribution cannot be explained on Hueter's theory, nor is there any evidence of the sympathetic damage which he postulates Perthes (1900) first drew attention to the absence of valves in the veins of the head, neck and shoulder-girdle This finding fitted in with the distribution of the lesions, and has been accepted as explaining it by most writers since He supposed that compression of the thorax resulted in a regurgitation of blood back along the veins, with final rupture of the peripheral venous capillaries The only valves present in the area of veins affected—at the junction of the internal jugular, and innominate veins—he thought to be incapable of resisting an "injection mass" starting in the superior vena cava This more satisfying view of the condition held the field till Beach and Cobb cut their sections of the skin and found no hæmorrhage into the tissues, throwing discredit on the second part of Perthes' theory Subsequent writers have been in agreement or disagreement according to whether, in their own particular case, hæmorrhage was or was not found in the tissues The following points support the theory of a wave of back pressure in the veins ere described In all our cases the appetite was very large in none was there any fall of pulse-rate while the weight was increasing and in all the cases successfully operated on the weight fell steadily after operation The chart illustrates the fall of weight after thyroidectomy: and the following case demonstrates the large appetite and shows that weight can be gained without a coincident fall in metabolic rate

CASE 57—A girl of 16 while under observation in hospital gained 21 lb in 4 months During this time she was treated by sedatives alone, and was for the most part confined to bed Her food intake was estimated by the hospital dietitian at 4500–5000 calories per day, her basal calorie output remained remarkably constant at 2232–2304 calories per day (B M.R — 100–110%, calculated on the original weight) This demonstrates that her food intake was more than enough even for her very high metabolic rate and that the gain of weight was not due to any slackening of the metabolic rate

The prompt fall of weight in the plump type when thyrotoxicosis has been diminished by operation seems to indicate that the previous gain of weight depended on the existence of thyrotoxicosis It is therefore unlikely that the gain of weight was due to some chance caprice of appetite A large appetite is in fact a common feature of classical Graves s disease especially in the younger age-groups, but it is not sufficiently large to overcome the wasting tendency of the disease In the plump type the tendency to emaciation which is often so menacing a feature of classical Graves s disease, has been successfully overcome The same process may enable the patient to withstand better the other consequences of a high metabolic rate This is to some extent supported by our observation that patients of the plump type seem able to tolerate, without great discomfort levels of metabolism high enough to incapacitate patients of the classical type If this is so, cases of the plump type should stand a good chance of sustaining uninjured the thyrotoxic process over long periods and therefore of undergoing spontaneous recovery when the thyrotoxicosis eventually abates If we take into consideration this possibility of spontaneous recovery and also the unsatisfactory results of thyroidectomy, it seems reasonable to suggest that the plump type of Graves's disease is better treated medically than surgically



Weight curves in Graves's disease of plump and classical types

SUMMARY

A severe type of Graves's disease occurring in young women is characterised by a progressive increase of weight. There were 8 cases of this type in 100 cases of Graves s disease under observation

The other characteristics of this "plump type " of Graves's disease are the relative lack of complaints a history of amenorrhœa and pronounced overgrowth of the lymphoid tissues

In the 7 cases on whom partial thyroidectomy was performed there were 2 deaths and the operative results in the remainder were unsatisfactory

It is suggested that the gain in weight is an expression of the reaction of a young and vigorous organism to the thyrotoxic process, which in favourable circumstances might result in spontaneous cure

We therefore suggest that these cases should be treated medically

SIMPLE METHOD FOR ESTIMATING PROTEINS IN PLASMA OR SERUM

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IN a previous paper[1] I concluded that plasma transfusion was the correct treatment in cases of shock where plasma loss had occurred Since then plasma and serum transfusion have become more widely used but this measure is, for the most part carried out blindly without first determining the extent of the deficiency which is to be made good As was pointed out in a recent annotation in THE LANCET (1941, 2, 194) a simple and accurate method is needed for the estimation of the plasma proteins The method I have been using for the last five years is rapid and requires no complicated apparatus Only 20 c.mm of plasma is needed for accurate analyses It is an adaptation of Wong's modification of the method of Folin and Denis described by Peters and Van Slyke[2]

Materials—Pyrex boiling tubes 170 mm × 28 mm marked by a ring at 25 c cm (J A. Jackson, Ltd City Road, London)

"Anti-bump " device consisting of 5 mm of glass tubing fused to the end of a glass rod 160 mm long

Pure, nitrogen-free sulphuric acid (B.D H.)

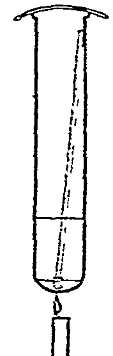
Pure nitrogen-free potassium persulphate (B D H.), saturated solution

Nessler s solution (special for blood testing, B.D.H)

Nitrogen standard Pure (Analar, B.D.H) ammonium sulphate, 0 03776 g per litre of distilled water containing 7 c cm of pure sulphuric acid It is convenient to prepare this by diluting to 1 litre 8 c cm of a 0 472% solution of the salt

Analyses may be done on heparinised plasma (using the minimum of heparin) or on serum

Method—After washing out the boiling tube with distilled water about 0 5 c cm of water collects in it. Using the hæmoglobin pipette wash out 20 c mm of serum or plasma into this water Add 0 25 c cm of pure sulphuric acid and mix Boil gently over by-pass flame of Bunsen burner with "anti-bump rod in position (see figure) When thick white fumes rise and fill the tube, cover with a watch-glass and boil for 3 min The solution is then quite black Remove the flame for 2 min and then add 0 5 c cm of saturated potassium persulphate solution Mix with anti-bump rod and replace flame Boil without watch glass until thick white fumes rise again then replace the watch glass and boil for a further 2 min after which the solution will be clear and colourless Cool dilute with distilled water to the 25 c cm mark holding the tube with the 25 c cm mark at eye level and the anti-bump rod removed Replace the rod and wash well in the solution Use any convenient volume (I use 5 c cm of the solution placed in an ordinary test-tube) and add 2 c cm of Nessler's solution A similar volume of standard solution is treated in the same way Mix by inverting twice and compare at once in the colorimeter Equal colour indicates 1000 mg of total nitrogen per 100 c cm of sample A direct reading may be obtained by fixing the unknown at "10 and moving the standard to match The reading of standard × 100 = mg of total nitrogen per 100 c cm of sample The reading is greatly facilitated by placing a spectrum blue colour filter (Ilford, Ltd) over the eyepiece Unless gross nitrogen retention is suspected a subtraction of 50 mg to cover the non-protein nitrogen gives the figure for protein nitrogen which when multiplied by 6 25/1000 gives the protein percentage The reagents should be tested occasionally by blank estimations



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[1] Walther W W *Lancet* 1937 1 6

[2] Peters J P and Van Slyke D D Quantitative Clinical Chemistry vol II Methods 1932 p 527

CLINICAL FEATURES IN 8 CASES OF PLUMP TYPE OF GRAVES'S DISEASE

Case	Gain of weight	Age	Complaint	Duration	Amenorrhœa	Eye signs	Enlarged tonsils	Palpable spleen	Pulse-rate	B M R
27	4 lb in 1 month	26	Goitre, prominent eyes, gain of weight	9 months	+	Exophthalmos, lid retraction	+	0	94–104	
57	21 lb in 4 months	16	Goitre, prominent eyes	6 months	+	Ditto	+	0	100–120	+ 102% + 100
60	10 lb in 3 months	18	Diplopia	8 months	0	Exophthalmos ophthalmoplegia	+	+	100–130	+ 79% + 65
93	10 lb in 3 months	27	Goitre	5 months	0	Exophthalmos, lid retraction	+	+	112–136	+ 90 + 100
129	17 lb in 1 month	17	Amenorrhœa	3 months	+	Exophthalmos	+	0	100–110	
172	14 lb in 3 weeks	19	Goitre	4 years	0	None	+	0	100–130	+ 76% + 68%
173	29 lb in 5 months	17	Giddiness	5 months	+	Exophthalmos	+	0	104–120	+ 37% + 34%
202	44 lb in 7 months	24	Run down	11 months	+	Lid retraction	+	0	112–128	

there were 8 characteristic examples of the plump type and 8 others which had many features in common with this type The existence of transitional cases shows that the plump and classical types are variants of the same disease' not sharply demarcated from each other All 8 typical plump cases were in young women between the ages of 16 and 27 Of the remaining 92 cases nearly two-thirds were over the age of 30 and the male to female ratio was 1 4

PATHOLOGY AND CLINICAL FEATURES

In the 7 plump cases which were operated on the thyroid was found to show all the usual features of Graves's disease The glands were large and very vascular and histologically all showed epithelial hyperplasia with some lymphoid infiltration In the 2 cases which came to autopsy enlargement of the lymphoid tissues elsewhere in the body was particularly conspicuous

An outstanding feature of the plump type is the paucity of complaints in spite of the severity of the disease Often the disease is first revealed by the comments of friends on the swelling of the neck or the prominence of the eyes, or noticed by a doctor who has been consulted for some other reason Such common symptoms of Graves's disease as breathlessness and palpitations were not complained of by any of our patients and were sometimes denied on questioning Yet these cases displayed to a marked degree the common physical signs of Graves's disease, they had high pulse-rates and high metabolic rates It was therefore surprising to find them so little incapacitated by what was manifestly a severe form of the disease that all were able to remain at full work until admission to hospital

It will be seen from the table that in all but one of the cases symptoms had been noticed for less than a year Nevertheless, physical signs were invariably prominent when the patient sought medical attention, and it therefore seems that in this type of case the disease develops rapidly

Amenorrhœa was present in 5 cases, this is in contrast to its incidence in Graves's disease as a whole, for it occurred in only 4 out of the 27 other female cases under the age of 30 A period of amenorrhœa lasting for several months is sometimes the only symptom and is liable to give rise to a suspicion of pregnancy

The general state of nutrition of these patients is most fairly described by the word "plump", but occasionally they show an obviously pathological adiposity They are, however, vivacious girls, interested in their surroundings and resenting long confinement to hospital They are not unduly worried by the fear of operation

In all 8 cases the thyroid gland was diffusely enlarged, firm and pulsatile Eye signs were present in all but 1 case, exophthalmos, however, was commoner than lid-retraction, which is contrary to our experience of the usual type of Graves's disease The fine tremor of the outstretched fingers, usually regarded as typical of Graves's disease, was slight or absent, but irregular choreiform movements were present in the hands cases The skin was obviously warm and moist, the pulse-pressure raised, indicating a high degr peripheral vaso-dilatation Definite tachycardia present in all cases, but cardiac enlargement, auric fibrillation and congestive failure were not encount

The increase in lymphoid tissue which was note autopsy showed itself clinically by enlarged non-infe tonsils, palpable lymph-glands in the neck and a palp spleen Of these, enlargement of the tonsils was most constant feature, being present in all our cases contrast to an incidence of 7 out of 34 other case Graves's disease under the age of 30

TREATMENT

Subtotal thyroidectomy was performed on 7 of cases, the remaining patient being treated by X therapy In spite of adequate preoperative treatm 2 cases died within 3 hours of the operation There only 1 operative death among the other 63 cas Graves's disease operated on which suggests that plump cases are poor surgical risks The cause of 2 deaths was not apparent, but since their cond deteriorated after a brief period of respiratory embar ment these patients may be unduly susceptibl anoxæmia In this connexion, it is perhaps recalling the supposed association of unexpected d on the operating table with generalised hyperplasia o lymphoid tissues—the so-called status lymphaticus

The late results of thyroidectomy in the plump of Graves's disease were also less satisfactory th had come to expect from our experience of the clas type Tachycardia decreased relatively slowly an no case did it fall to a level of 80 beats a minute u year had elapsed after operation In 3 cases the g has recurred Our impression is that surgical treat of this type of Graves's disease is both more dang and less satisfactory than in the ordinary type of ca

One case only was treated with X rays (case There was no immediate improvement, but a year treatment the patient was decidedly better, the th had become softer, smaller and less pulsatile and pulse-rate was 86 A year later the pulse-rate is 66, and the B M R + 23% When improvement occu gradually as this, it is difficult to decide whether to be attributed to any particular form of treatme merely to the lapse of time

DISCUSSION

An increase of metabolic rate, if not compens for by an increased intake of food, must inevitably to loss of weight, and there can be little doubt th increase of metabolic rate is the immediate cause of wasting so commonly met with in Graves's dis If a patient with Graves's disease is found to gain we there can be but two explanations either the meta rate is decreasing with the amelioration of the dis or there has been an increase in the consumption of sufficient to counterbalance the increased metabol The latter seems to be the correct explanation in the were apparently hard work and poor appetite, and the long interval between breakfast and dinner These conditions were not reproduced in hospital and no attacks occurred It seems likely that an adequate diet with suitably spaced meals would prevent the onset of attacks, though the patient was not under observations long enough to confirm this The low carbohydrate low protein diet, which Conn regards as affording a more slow and steady supply of glucose to the blood in functional hyperinsulinism, was tried, but no conclusion could be drawn from the small number of blood-sugar estimations carried out

SUMMARY

Symptoms of hypoglycæmia occur in cases of renal glycosuria, and may be of two types minor feelings of faintness and weakness, due to a low fasting blood-sugar level, or more severe attacks due to a relative hyperinsulinism following rapid loss of sugar in the urine

A case is described in which the determining circumstances for the severe attacks appeared to be poor appetite, hard work and long intervals between meals, and when these conditions were absent no attacks occurred

I wish to thank Colonel F. Whalley for permission to publish this case

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ICTERUS GRAVIS NEONATORUM CURED BY SPLENECTOMY

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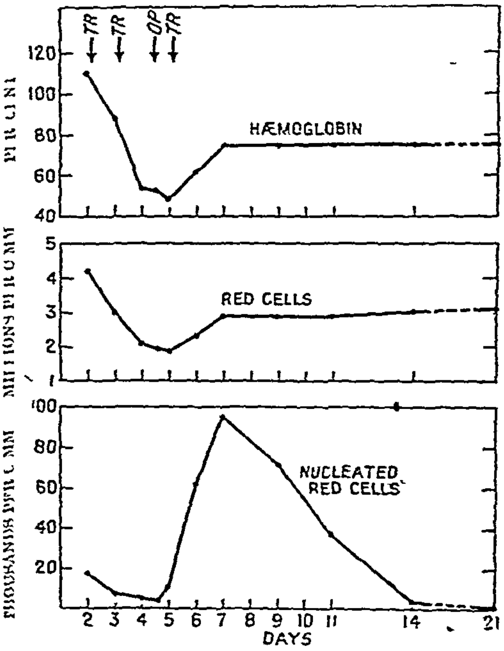
Icterus gravis neonatorum is a disease in which the outlook is always grave The mortality is high and even if recovery takes place many of the infants are mentally deficient or bear other serious stigmata In the following case removal of the spleen was brilliantly successful

CASE-HISTORY

The baby, a boy, was born at term on June 1, 1941, at 4 30 P.M The mother was a primipara and had been well during pregnancy There was no consanguinity and the father had healthy children by a previous marriage There was no family history of jaundice Delivery was by forceps owing to delay in the second stage of labour The birth-weight was 8 lb 4 oz The liquor and placenta were reported as normal

The child appeared well at birth but at 7 30 P M it was seen to be jaundiced This increased during the night and a blood-count the next day showed hæmoglobin 110 %, red cells 4,200 000, white cells 22,300 per c.mm, normoblasts 33 per 100 leucocytes, erythroblasts 51 per 100 leucocytes, total nucleated reds 17,700 per c mm A transfusion of 60 c cm maternal blood was given intravenously Examination on June 3, the third day of life showed a deeply jaundiced baby, with an enlarged liver and spleen No head retraction Blood count showed a drop in the hæmoglobin percentage and red cell count, and in the number of nucleated reds (see figure) A second transfusion of 60 c cm of group O blood was given On the morning of June 4 the child was not so well, the jaundice was intense, the scrotum was œdematous, sucking was feeble and the urine was bile stained Blood-count showed a further drop in the red cells and hæmoglobin

In consultation with Sir Alfred Webb-Johnson splenectomy was decided upon and this was performed at 7 P M on June 4 when the baby was 75 hours old General anæsthesia with gas, oxygen and ether was used and the operation was completed within 20 minutes Feeding was commenced 4 hours later and a 3 hourly regime was resumed in 24 hours Blood-counts an hour and 14 hours after operation showed that the fall in the red cells and hæmoglobin had been arrested and a reticulocyte response was beginning 60 hours after operation the nucleated red cells were 95,700 per c mm Much œdema fluid oozed from the wound, 1 c cm Kapilon was given and a further transfusion of 60 c cm of group O blood Thereafter the blood picture steadily improved and the child made satisfactory progress The spleen weighed 34 2 grammes and the histological report (R W Scarff) was "The spleen shows relative diminution of lymphoid tissue, hyperplasia of sinus reticulum with excessive phagocytosis of red cells and deposition of iron-containing pigment The sinuses contain large numbers of primitive red cells but there is little active erythropoiesis"



Blood findings TR = transfusion; OP = operation

Convalescence was prolonged by slight infection of the lower end of the wound, but the baby was discharged fit and well on July 5, fully breast fed On July 19 it weighed 9 lb

DISCUSSION

The baby showed the classical features of icterus gravis neonatorum It was severely ill, jaundice appeared early and became deep, the liver and spleen were enlarged, there was an increasing anæmia and an abnormally large number of nucleated red cells appeared in the circulating blood-stream Although spontaneous cure is well recognised, in this boy the early appearance and intensity of the jaundice made the prognosis especially grave, and by the evening of the fourth day the child had become drowsy, had refused its feeds and œdema had appeared Despite two transfusions the red cells had fallen by over two millions and the hæmoglobin by 55% The falling number of nucleated red cells suggested that the blood-forming centres were becoming exhausted Nevertheless the absence of head-retraction and convulsions encouraged the hope that if a cure was achieved the child would not have permanent cerebral damage

Dr C J C Britton of the Bland-Sutton Institute directed our attention to the possibility of performing a splenectomy The operation was first reported by Cooley (1932) in America, the child dying from peritonitis 10 days later In 1935 Cooley was able to report two successful cases but the operation does not seem to have been widely practised Despite its severity and obvious risks in one so young the operation has much to recommend it The disease has a mortality of from 50–80% (Hampson 1929, Colver 1938 McKinley 1941) and desperate measures are therefore legitimate The more orthodox treatment by repeated blood-transfusions only keeps the infant alive and tides him over until the disease process has ceased Transfusions probably have no effect on the duration of the disease and thus do not influence the ultimate prognosis Splenectomy appears to cut short the disease process and thus it may be hoped the ultimate prognosis will be correspondingly improved

In skilled hands the operation can be performed speedily, and this infant stood it well In this we were helped in that the child was mature and was a large baby weighing 8¼ lb The blood-count 4 hours after operation

If a colorimeter is not available a comparator or similar instrument can be used, but the reading of the yellow Nessler colour is greatly helped by using a blue light filter The accuracy of the method depends on individual skill in colour matching, but it is well within the limits necessary for clinical work

RENAL GLYCOSURIA WITH HYPOGLYCÆMIA

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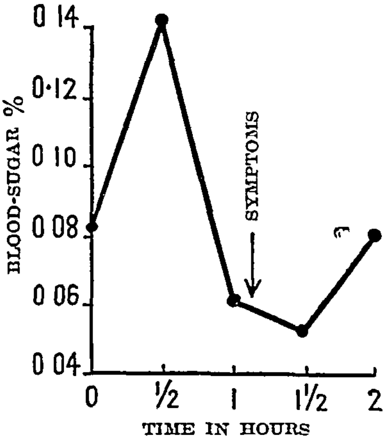
MAJOR, R A M C , MEDICAL TUTOR IN THE UNIVERSITY OF LEEDS

RENAL glycosuria is usually considered to be a harmless condition requiring no treatment, but cases have been described in which hypoglycæmic symptoms were present It is noteworthy at present because renal glycosuria may be detected in the routine examination of recruits and the significance of the findings may be difficult to assess

A soldier of 31 suspected of pulmonary tuberculosis was sent for a specialist opinion His father had died of tuberculosis and his sister suffered from phthisis He gave a history of recurrent cough and sputum since the age of 9 when he had pneumonia and pleurisy, 3 years ago he had pneumonia, pleurisy and " heart trouble," and since then he had complained of general weakness and tiredness particularly on getting out of bed in the morning and after being at work for three or four hours, he had also fainted once or twice a month, always in the morning while at work He worked very hard in civilian life as a baker's roundsman and usually had breakfast at 5 45 A M and dinner at 12–1 30 P M He had nothing to eat between these two meals because his appetite was not good He joined the Army a week before I saw him, and since then had fainted twice on getting up in the morning

His height was 5 ft 5½ in and weight 8 st 3½ lb He was nervous, tremulous, much under weight and had a pulse-rate of 100 Sputum was small in amount and mucopurulent and a few moist sounds could be heard at the bases of both lungs X-ray examination revealed no evidence of tuberculosis and a tentative diagnosis of recurrent bronchitis and anxiety state was made, but on examination of the urine, sugar was found in moderate amount and he was admitted for investigation



Blood sugar curve after 50 g of glucose

Urine —Approximately 20 g of sugar was passed in the urine in 24 hours on ordinary hospital diet No albumin or acetone found during his stay in hospital, no frequency or polyuria

Glucose tolerance test —50 g of glucose was administered after overnight fast, the patient being on ordinary hospital diet The blood-sugar had risen from a resting level of 0 08 g per 100 c cm to 0 14 at the end of half an hour (see figure), at the end of an hour it had fallen to 0 06 and the patient complained of a sinking feeling and fainted He appeared very ill with cold clammy skin, pallor and rapid weak pulse Recovery took place in 5–10 minutes without treatment This attack of induced hypoglycæmia seemed to him similar to the spontaneous attacks he had experienced previously The blood sugar sank still further, reaching 0 052 at the next examination but returning to resting level (0 08) 2 hours after the administration of the glucose

X ray of skull no change in sella turcica

Urea clearance test 40% above average normal No hepatic function tests were carried out

He was treated on various diets (meals being served in each case at 7 A M, 12 noon 4 P M and 7 P M) with the following results

1 *Ordinary hospital diet* he complained occasionally minor fainting feelings in the morning but was otherwise

2 *Ordinary hospital diet with glucose* 15 g t d s bef *meals* no symptoms but treatment was discontinued because of severe polyuria and frequency after taking the glucose

3 *High carbohydrate low protein diet* no symptoms Specimen blood sugars taken at noon, 1 P M and 2 P M were 0 112, 0 137 and 0 143%

4 *High protein low carbohydrate diet* he felt less energetic and faintness was more pronounced but he had no attacks Specimen blood sugars taken at noon, 1 P M and 2 P M were 0 08, 0 156 and 0 106%

He was discharged much improved in general health on ordinary hospital diet

DISCUSSION

Cammidge (1930) described 200 cases of hypoglycæmia, some symptomless and many with only minor symptoms In no less than 53% sugar was present in the urine, in most cases as dextrose, indicating abnormal permeability of the kidneys for this sugar Wauchope (1933) stated that most patients with a low renal threshold for glucose experience only slight symptoms or none at all, but on several occasions symptoms have been provoked by the glucose-tolerance test, blood-sugar falling below the original fasting level towards the end of the test More recently Conn (1940), discussing the ætiology and treatment of spontaneous hypoglycæmia, gave renal glycosuria as a less common cause, he regarded it as a fasting hypoglycæmia with the blood-sugar likely to be at its lowest level after the overnight fast He said that hypoglycæmic convulsions were rare, and that a diet high in carbohydrate is usually sufficient to control the hypoglycæmia It seems from these papers that minor symptoms of hypoglycæmia in renal glycosuria are not uncommon but that severe hypoglycæmic attacks rarely occur except after the administration of glucose, as in the glucose-tolerance test Gibson and Larimer (1924) described a case in which symptoms of hypoglycæmia and a low blood-sugar were induced by a double blood-sugar-curve test, the fall in blood sugar being much greater after the administration of a second 50 g of glucose The patient in this case had experienced spontaneous attacks similar to those induced by the test but could not associate them with any definite circumstance

In the case reported here the patient complained of minor feelings of faintness on rising and occasional severe attacks similar to those occurring in the glucose-tolerance tests The faintness on rising can be accounted for by the low fasting blood-sugar level and it is suggested that the mechanism of production of the severe attacks is the same as in those following the administration of glucose Theoretically hypoglycæmia may arise in two ways, either from an inadequate supply of sugar to the blood by the liver or from too rapid removal of sugar from the circulation In my case there was no clinical evidence of hepatic deficiency and the glucose-tolerance curve was not of the high plateau type curve (similar to that seen in diabetes mellitus but with a low fasting level) which Conn associates with hypoglycæmia of hepatic origin The fall in blood-sugar must therefore be explained by the too rapid removal of sugar from the circulation

Conn suggests that in functional hyperinsulinism a rapid rise of blood-sugar, associated with the ingestion of easily absorbed carbohydrate, may overstimulate insulogenesis, and that this produces a secondary abrupt fall of the blood-sugar to a hypoglycæmic level In renal glycosuria a normal insulin response with a simultaneous rapid loss of sugar in the urine may produce the same effect, and it seems likely that the severe spontaneous and induced attacks in my case were produced in this way This is borne out by the clinical findings which were similar to those described by Conn in functional hyperinsulinism, where the fasting blood sugar is usually normal and symptoms characteristically appear three or four hours after meals and are relieved by food The attacks only last 5–15 minutes and always disappear spontaneously even though no food is taken The glucose-tolerance curve in my case was also similar to that of functional hyperinsulinism The conditions which determined the onset of his spontaneous attacks

THE LANCET

NDON SATURDAY SEPTEMBER 20, 1941

IDEAL FOR WHAT?

"Workpeople must recognise that the conditions of industry ring war cannot in the nature of things be ideal, "
1st report from the Select Committee on National Expendi-re,[1] Session 1940–41)

This exhortation comes near the end of a report con-ining a long series of admirable recommendations esigned to improve output in war factories It minds one of the ' Don t you know there's a war n ? " used in defence of errors and omissions which o *not* arise out of a state of war Of course we must ll expect fewer of the amenities we enjoyed in the ays of peace when oranges and bananas made gay plashes of colour in the shops when petrol flowed ike water and trains ran to time But there is a *chadenfreude* which uses the war to make our lives arder than they need be It would be invidious to atalogue our grievances, because each has his own pecial ones, as well as his list like RUPERT BROOKE S, f the things he has loved Mature people would be urprised and even disappointed if they found them-elves living in Utopia and certainly factory workers o not expect the conditions under which they work even in peace-time to be ideal What they have a ight to expect is that their work shall be reasonably afe, healthy and well paid, that it shall be within he limits of their varying mental and physical capa-ities, and that they shall not be pressed to the point where the job becomes flat, stale and unprofitable

It is difficult to define more exactly what is meant by ideal factory conditions In the light of over 100 years' experience it took some 150 long sections of the Factories Act 1937 to outline them, and in the opinion of many people the 1937 Act put the minimum too low In any case it was passed too soon before the advent of war for its full effects to have been felt Yet on the whole factory conditions are better now than they have ever been and they will be better still for Mr BEVIN S drive to extend the medical, nursing and welfare services in factories and his intention to make hot meals available to the whole industrial army The new regulations require stand-ards of lighting well within the power of the average employer to provide the more enlightened had done so without legal stimulus But amenities do not make tired workers efficient, men are still working oo long hours, and some are working seven days a week, partly to meet the demands of Service depart-ments, partly because by so doing they can earn more money Overwork however, is never ideal in any ense, it is false economy both in health and output We shall never convince the so-called practical men of this except by putting into practice the findings of the Industrial Health Research Board and letting hem observe the results Fortunately for all of us here is legal control over the hours of work for women and young people The blackout too has worsened the ventilation of factories at night, wall ans and light-trap ventilators can ill replace the open door and window The select committee has its own way of screwing up production The workpeople should have their day of rest in seven but the factories should keep at it all the time Piece-rates require adjustment so as not to discourage improvement in the rate of output Managements are urged to take their workpeople more closely into their confidence All large firms should have a central personnel depart-ment and take advantage of the training courses for personnel managers and welfare supervisors organised by the Ministry of Labour Charge hands and foremen should be chosen for their qualities of leader-ship and organising ability as well as for their tech-nical skill The three days suspension without pay should be extended to cover slackness but the report recognises that the workers of this country are not to be treated as machines or as driven cattle, but as intelligent coöperators in a crusade The committee had evidence that idling is often due to bad manage-ment or lack of supervision, good management tends to reduce absenteeism Moreover lack of work and enforced idleness induce a sense of frustration which ultimately lowers morale

Much thought has been given to the removal of unnecessary hardships outside the factory People engaged on essential work should have priority passes on the transport services, while employers and work-people in neighbouring factories should be asked to relieve pressure on transport by staggering hours Fares in excess of 3*s* a week should be requited to workpeople at any establishment engaged in Govern-ment work Collaboration between the appropriate ministries should ensure that population movements are accompanied by corresponding diversions of food-supplies On less tangible issues, means should be taken to convince workers of the need for ever greater output of munitions and to help them realise the importance of their work At the same time the prevalent misconceptions about income-tax should be removed and it should be made crystal clear how the excess profits tax has snuffed out profiteering If accepted these recommendations would go far towards removing both physical and psychological inhibitions to the output of war material

THE GENESIS OF GALL-STONES

A REMARKABLE study of the ætiology of gall-stones has lately been made by MARTENSSON[1] of the Caroline Institute, Stockholm It proceeds from two primary observations, first that certain bacillus-like structures are visible in the organic stroma of cholesterol-rich gall-stones after extraction of the cholesterol and other lipoids with alcohol and alcohol-ether, and second that similar ' bacilli ' were seen, surrounded by areas of proteolytic necrosis, in the mucosa of two surgically removed gall-bladders which contained very small and apparently recently formed gall-stones The occur-rence and significance of these bacilli was systematic-ally investigated Gall-stones, obtained at operation or at autopsy, were washed in sterile saline and split open with aseptic precautions Their nuclei were scraped out, and nuclei and perinuclear layers separ-ately ground in mortars The ground material was transferred to various culture media, solid and liquid, and incubated aerobically and anaerobically for 2–6 weeks A variety of organisms grew, but attention was focused on a bacillus which resembled the struc-tures seen in the gall-stone stroma and in gall-bladder

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[1] Martensson K *Acta chir scand* 1941 84 Suppl 62

showed that the hæmolytic process had ceased and the usual reticulocyte response to splenectomy was already beginning, after 60 hours the reticulocytes reached 95,700 per c mm A transfusion was given the day after operation because it was thought important to restore the blood-count more nearly to a normal level as soon as possible, so that the child would be in the best possible position to combat any infection that might develop The subsequent rise to a normal figure without any further treatment was noteworthy

The operation was performed by Sir Alfred Webb-Johnson when the child was 75 hours old and was performed as a last resort In view of its success it is probable that we should recommend operation much earlier in future As Cooley has shown, there is a danger in waiting, however well they may seem these patients are always liable to sudden death owing to failure of the respiratory centre, and he reports a case which died suddenly the night before operation was to take place We suggest that operation should be done 24–48 hours after birth, this would give time for the child to recover from its birth and would allow a complete hæmatological examination to be made and arrangements for transfusion to be completed When last seen, at the age of 15 weeks, the child was in good condition it weighed 14¼ lb and showed no signs of any unto sequelæ

SUMMARY

In a male baby with typical icterus gravis neonat the early appearance and severity of the jaundice n the prognosis especially grave In spite of two bl transfusions the number of red cells and hæmogl percentage fell rapidly

Splenectomy was performed when the baby 75 hours old and was strikingly successful The l was discharged from hospital a month later quite

This treatment seems to cut short the disease, offers a hope that both the immediate and rer prognosis of the malady will be considerably improv

Thanks are due to Sir Alfred Webb Johnson and L Carnac Rivett for permission to report this case an Prof J McIntosh and the staff of the Bland Sutton Insti for the hæmatological and histological investigations

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Reviews of Books

The Life of Sir William Osler

HARVEY CUSHING London Humphrey Milford, Oxford University Press Pp 1417 21*s*

Harvey Cushing's life of William Osler was published sixteen years ago in two volumes with a number of illustrations The present edition in one volume is unaltered as to the text, which stands exactly as Cushing wrote it, but has been reproduced with only a quarter of the illustrations, so that it has been possible to present it to the reader at a price considerably lower than that of the first edition—a price, indeed, which will put it within the limits of the purse of the medical student This has been the aim of the editors Dr J F Fulton and Dr W W Francis who in their foreword dedicate the volume to the medical students for whom Osler planned and worked throughout his life

The merit of Cushing's "Life" has been thoroughly appraised and it long ago took its place among the great biographies of our time He had a great theme and handled it greatly The generation to whom Osler was personally known is almost past, and to the present generation his name is rapidly becoming a tradition but the work which he did lives, and it will be well if students of this and succeeding times learn at first hand what manner of man was he who revolutionised the teaching of medicine in his own western hemisphere, and left deep marks on that of England and Europe

Unlike many of the great physicians of the past Osler did not personally contribute any striking discovery to the science of medicine His pre-eminent service to medicine was that by his ideals and his example he infused a new spirit into the whole body of the English-speaking teachers of medical knowledge It is scarcely an exaggeration to say that until his time the education for the profession had become a stereotyped course of training for a business career, in which the majority of the teachers were content to impart their knowledge to the student with but little reference to the ideals of science and with an experience of the world of medicine outside their own country generally extremely limited Osler had prepared himself by years of work in England and Germany as well as in Canada, and when rather unusually late in his career, though still young in years, he entered upon clinical teaching at the bedside he was personally acquainted with a large number of the most active and inspiring scientific men of Canada, the United States, England and Germany, and in many instances had actually worked with them in their laboratories and hospitals Hence it was that he was able in Montreal and then in Philadelphia, but above all in Baltimore, to bring to his work the ideals and methods of the leaders of medical and scientific thought of his time His technical equipment was thus much in advance of that of the general mass of teachers, but it might have been largely wasted in another man not blessed with Osl supreme gift of friendship with his fellows, and capacity for tactful leadership Few men can have l so many devoted friends, and few are capable of retain that devotion throughout the changes of life Os was everybody's friend from the moment of meeti and neither he nor anyone whom he once met ever forg one another even after years of separation His memo for his friends and acquaintances was extraordinary, a he never lost an opportunity of renewing the bon generally by flying visits in person—moments snatcl from a busy day to forge the chain anew He was a voluminous correspondent as a rule, though when did write few could contrive a better or more satisfy letter Another characteristic served to enhance value of his teaching his medical writing was alw clear, always pointed, and often in single phrases turesque, and his numerous papers and addresses v crammed with allusions to the great writers of the p They are readily appreciated even in print, t quality was increased by an attractive delivery and a and humour which completely held his audience these attributes of a great teacher were comparati insignificant, his personality gave him his influence his fellow-travellers in this world No-one ever sp half an hour in his company without feeling him both in mind and body, a better man than he had posed himself to be He had the faculty of bring the best to the surface, largely because he gave freely best of himself—his knowledge, his experience, his id and his love of humankind without the sm reserve

Harvey Cushing wrote Osler's life from an intin acquaintance of many years, and succeeded, so far possible, in transmitting something of the charm of beloved teacher It has been a wise thought that made the work procurable to a wider public than c be reached by the original volumes

Methods of Treatment

(7th ed) LOGAN CLENDENING, M D, and EDWAR HASHINGER, M D London Henry Kimpton Pp 50*s*

ALL methods of treatment which a practitioner ma called on to advise or to use himself are described in first half of this comprehensive treatise from Kansas critical assessment of the indications and usefulnes these methods follows For the more specialised meth such as radiotherapy or anæsthesia, collaborators l been engaged but the whole is strikingly individual forthright and is leavened with shrewd wit and com sense No respect is paid to ephemeral, fashionable, pseudo-scientific treatment and omissions are as valu to the work as the emphasis laid on the simple orthodox methods New advances have been in porated in this new edition, and the whole has l revised nost important Physical training they visualise apable of building a bridge between contempla- and action, and through it almost every man woman can, they say, be developed to a level of iomic maturity Physical efficiency in their gment dictates largely the rate of industrial and cultural production, and is one of the primary erminants of military preparedness

But what is physical efficiency and how is it to be ured ? Jokl and his colleagues seek for quantitae information, as the instrument of precision dended in measurement they accept physical performce as the analogue of the divided circle in astronomy, e balance in chemistry, the thermometer in physics ius physiological, postural and anthropometric sts were correlated with athletic performances and e results are described as truly remarkable, these ibstandard youths being transformed into normal oung men On the medical side, ample evidence was orthcoming from improvement in height, weight, eneral physique and athletic capacity, employment ind subsequent career afforded evidence of full economic rehabilitation One can understand and sympathise with the enthusiasm of the leit motif Yet clearly it is difficult, even impossible, to assess the part played by the physical training itself For the ecruits were domiciled in a camp where for the first time in their lives they were subjected to discipline “ We are convinced,” say the authors, “ that most of them would have abandoned the training, which they found very strenuous, if it had not been possible to keep them under military rule Since an astoundingly large number of individuals will not seek, out of their own initiative, ways and means to develop and educate hemselves to the optimum of their potential abilities, t is necessary to introduce some system of compulsion under which the state would take charge of young citizens who are for any reason unable or unwilling to carry their weight in the economic life of the community ” They lived in well-kept tents and barracks, received a well-balanced diet, had to follow a carefully constructed time-table with ample opportunity for recreation How can one isolate any one factor in a properly coordinated regime which contrasts so strikingly with the conditions from which these recruits were salvaged, a life unsatisfactory in all ts details—bad hygiene, malnutrition, constant appreension of or resignation to a hopeless future with omplete lack of stimulation, not to mention undesirible habits and vice ? Even then the psychological ispect of physical training has to be considered—pride in achievement as well as the discipline with its epercussions which regular exercise exacts No-one wants to belittle the value of actual training in the egime, but it is right to consider the whole picture, specially since our own national physical-training novement of three or four years ago was obstructed by the claims of enthusiasts who advocated this, that or the other ‘ system ” as if it were the only factor of importance

Jokl and Cluver[4] have also studied the growth of physical efficiency in young people between the ages of 5 and 20, based on over 20,000 individual tests—in extensive survey on the principle that physical fficiency determines to a considerable extent the legree of “ fitness ” as it is understood under conditions of everyday life These tests, which were performed on English, Afrikander, Jewish, Bantu, Cape Coloured, Indian, and Chinese, comprised sprinting 100 yards, running 600 yards and putting the ten-pound shot, events selected to ascertain in exact terms the three basic principles of labour—skill, endurance and strength The results showed, first, the similarity of standards of physical performance found in the different racial groups, and secondly, the difference demonstrable between “ rich and poor ” children after puberty From the first, one is entitled to assume the basic equality of man , from the second it may be concluded that, while subnutrition (unless to the degree of true clinical deficiency) leads to no appreciable physical incapacity in the pre-puberal stage, its malevolent influence is very evident when the powerful additional strain of puberty is imposed They also quote the case-histories of athletes to demonstrate the fallacy of many generally accepted clinical concepts of the relationship between disease and physical efficiency They tell us of a champion swimmer with dementia paralytica, a first-class ski-runner with an artificial leg, a gymnastic instructor with myasthenia gravis who maintained her professional capacity with the aid of prostigmine, a first-class shot-putter with a congenital defect of the right pectoralis major , and perhaps most striking of all a very successful Marathon runner with aortic regurgitation and mitral stenosis Moreover, with L Melzer, Jokl[5] reports the results of 67 autopsies in all of which pre-existing lesions of the cardiovascular system were discovered, serious lesions which had nevertheless been consistent with outstanding athletic success These researches support the opinion often reiterated by Sir Adolphe Abrahams that physical development and athletic efficiency are basically dissociated phenomena and that a deficiency in physical development can be compensated by a high standard of functional efficiency Abrahams has maintained that given a healthy myocardium and coronary circulation no harm to the cardiovascular system can result from the greatest exertion of which a human being is capable, and he regards hyperpyrexia as the only potential danger in violent exercise under extremely unfavourable climatic conditions Even this solitary danger is not accepted by Jokl who, in his considerable experience, has not encountered an example

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[4] *J Amer med Ass* 1941, 116, 2383

[5] *S Afr J med Sci* 1940 5, 4

Dr W M Frazer in his 1940 school report tells us that during the year Liverpool started an enuresis clinic for children about to be evacuated In the 269 children explored at this clinic only 4% were found with some physical condition which might account for their enuresis, and 6% had subnormal mentality The aural clinic dealt with 1080 cases of which 409 were cured, 55 referred to hospitals and 355 failed to complete treatment Of 336 cases of suppurating otitis media 173 were cured, but of 231 cases of chronic suppurating otitis media only 31 were cured We are reaching agreement that the distinction between acute and chronic suppurative otitis media is not one of time but of bacteriology Cases are acute so long as only throat organisms are present, and the chronic stage begins if there is an invasion of skin organisms from the meatus The distinction is important in treatment and prognosis, for so long as there is no invasion of the middle ear by skin parasites cure can always be obtained, generally speedily If the skin parasites settle in the middle ear cure is always tedious and may be impossible This rules out syringing for discharging ears mucosæ in the initial observations. It was a gram-positive motile spore-bearing rod. It was found in 30 cases out of 75, and in 20 of these was unaccompanied by other organisms. Cultures of the corresponding bile were made at the same time and yielded the same organism in 15 of the 30 cases in which it was present in the stones, but in no case in which it was not found in the stones. *Bacillus coli*, on the other hand, though occurring almost as frequently, was found 1½ times as often in the bile as in the calculi, which suggested that it had invaded the stones from the bile; the other organisms found were also more frequent in bile than in stones. Furthermore, colon bacilli and various cocci included among the other organisms were found not only in bile from stone-containing bladders but also in the contents of many gall-bladders containing no stones, whereas in a series of 34 such stone-free specimens of bile the peculiar spore-bearing bacillus was consistently absent. At this stage the evidence that this bacillus had a specific relation to gall-stones appeared fairly strong, and was further supported by the intimate relationship of the bacilli with stony particles in thin sections of stones when examined by agar microscopy; colon bacilli and cocci were also seen in these sections, but appeared to lie rather in the spaces between the stony particles. However, since detailed bacteriological examination of the organism showed it to be closely allied to, though not identical with *Bacillus subtilis*, the possibility of its arising in some way as a contaminant had to be excluded. This was done by subjecting 50 sterile dried lumps of agar to the same treatment as the gall-stones; contaminants appeared in only 3 instances, and none of them was the organism in question.

The next step was an attempt to induce gall-stone formation in animals by injection of cultures of the organism into their gall-bladders. Many such attempts have been made with various other organisms but never with convincing success. The rabbit was chiefly used because it does not naturally develop gall-stones. Out of 73 rabbits whose gall-bladders were inoculated with pure cultures of the organism 55 were found at autopsy to have concretions. Tiny ones were found, surprisingly enough, 24 hours after the inoculation, larger ones after intervals of weeks or months. The structure of the older ones resembled that of human gall-stones, and from most of them the subtilis-like organism was recovered in culture. Control experiments with injections of sterile saline, and of killed cultures of the organism, yielded no gall-stones, nor did others in which *B. coli* and one or two other organisms were used. The spore-bearer under investigation, however, appeared to produce gall-stones in 3 out of 4 sheep, 1 cow, and 1 pig, but not in 4 dogs. In further experiments it was injected intravenously into 8 rabbits; one of them killed at 25 days showed a proteolytic desquamative process in its gall-bladder wall but no stones; about half the others, after several months, showed gall-stones at different stages of development. Even administration of the bacillus to rabbits by mouth was followed by stone-formation in a proportion of cases. Finally 10 rabbits were immunised against the organism by repeated injection of a centrifuged bacillary emulsion, proved to contain no living bacilli; subsequent inoculation of living cultures into their gall-bladders produced neither stones nor changes in the mu the end of 5 months, although in 3 of them the o was recovered and cultured from the bile. MART tentatively suggests that stone formation may d in some way on the activity of the specific an He therefore traces the origin of many human stones to the entrance of his subtilis like organism the biliary tract, possibly from the gut, since it o in fæces. It attacks the gall-bladder mucosa, ducing a local subepithelial cell necrosis with desquamation. It tends to precipitate choles from pure bile, and the gall-stone arises from preci tion of cholesterol and bile pigment on an org stroma composed of epithelial cells and a felt worl bacilli. The stone grows and its permeable s may become invaded by other organisms present the bile, but the original organism, or at least spores, remain viable within it. Cholecystitis in ordinary clinical sense is a complication, not a cause gall-stones. The stone-producing organism is antig and if it turns out as seems possible that its antige concerned in stone formation there is clearly a prosp that the antigen may be effective in "immunisin human subjects against the development of stor

MARTENSSON'S work seems on the whole so caref comprehensive and well controlled that it shou command attention and early repetition. Yet it surprising that his organism, since it grows on standa media, has not been demonstrated by earlier worke and it is noteworthy that OLIN'S[2] search for it another laboratory in another town succeeded o 3 times out of 41. OLIN produced early stone form tions in rabbits' gall-bladders by injecting the bacil much less often than MARTENSSON did, and he sugge that MARTENSSON may have used too low a temperat in sterilising his bacteriological implements. T report from Stockholm remains therefore under t heading "not yet confirmed," pleasant as it is think that the stout lady makes her gall stones the same technique as an oyster makes pearls.

PHYSICAL TRAINING AND PHYSICAL EFFICIENCY

FIVE years ago, out of a total European populati in South Africa of a little less than two millio 119,000 were unemployed and by implicati unemployable. Among the various causes for t calamity, the low state of physical fitness was evident that a special course of training was est lished to combat the deteriorating influence unemployment and provide discipline and train for unemployed youths between 17 and 22. Th educational qualifications were so poor that th were unsuitable for anything but manual labou circumstance which combined with their defect physique excluded them altogether from labour market. Between 1933 and 1939, 14, of them were attested to Special Service Battal courses. Of these, nearly 11,000 completed training course and 9400 were subsequently placed employment. This highly satisfactory result been achieved by a combination of measures of wh JOKL and his colleagues[3] regard physical training of jaundice after birth appears to be as follows: intramuscular blood at once and repeat in a few s, if the condition fails to respond (as shown by oglobin estimations if full blood investigation is ossible) make arrangements for intravenous transfu- of matched blood (itself a by no means easy pro- ure), if the downward progress continues splenectomy rs a reasonable chance of cure

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[2] Olin, G. *Ibid* May 15, 1941, p. 505.

[3] Training and Efficiency: an Experiment in Physical Economic Rehabilitation. By E. Jokl, E. H. Cluver, Goedvolk, and T. W. De Jongh. Johannesburg: S African Institute for Medical Research. 1941.

WHEN DOG EATS DOG

It has been known for a long time that some micro- ganisms produce substances antagonistic towards thogenic bacteria but until lately few attempts have en made to isolate these substances and study their logical and chemical properties Dubos[1] isolated m the soil a gram-positive, spore-forming organism, er identified with *Bacillus brevis,* which produces werful bactericidal agents Originally it was believed at the bactericidal agent isolated from culture filtrates crystalline form represented a single, homogeneous mpound which was termed gramicidin, but later it was und to consist of two bactericidal substances which re both obtained in crystalline state—gramicidin, pecially effective against gram-positive organisms, and rocidine, acting against gram-negative organisms as ell In vivo, gramicidin was shown to protect mice ainst pneumococcal infections and against infections ith group A and group C streptococci under certain con- tions which did not differ essentially from the in-vitro nditions in which the substance had been shown to be actericidal Given by the intravenous route gramicidin almost completely inactive against systemic infections[2] is highly toxic to animals Tyrocidin is ineffective ainst bacterial infections in vivo, it is hæmolytic[2] ubos and Hotchkiss found that a number of soil organ- ms produced substances similar to or identical with ramicidin and tyrocidin Nothing is known yet about e chemical structure of these J C Hoogerheide[3] des- ibed a crystalline antibacterial substance isolated from soil organism, which according to its chemical and bio- gical properties seems to be identical with gramicidin, is now being tried out clinically in Philadelphia under he name H1, only local application is so far practicable ecause of its toxicity but results are favourable Also rom the soil, Waksmann and Woodruff[4] isolated a hromogenic actinomyces (*Actinomyces antibioticus*) from hich they obtained two antibacterial substances, ctinomycin A and B Actinomycin A is bright red, nhibits the growth *of many bacteria in great dilution,* ut is very toxic to laboratory animals It is mainly acteriostatic, whereas actinomycin B, which is colour- ess, is bactericidal The chemical nature of these ubstances also has not been established

The nature of the antibacterial substances, produced y *Pseudomonas pyocyanea*, known for forty years since he work of Emmerich and Loeb[5] as "pyocyanase" has een reinvestigated by Schoental[6] She confirmed the actericidal action of these substances on *Vibrio holeræ, Staphylococcus aureus* and many other organ- sms and showed that it was due to at least three frac- ions, the blue pigment pyocyanine, its breakdown pro- uct α oxyphenazine, and a third colourless, chloroform- oluble principle, most easily extractable from old culture luids This last substance is bacteriolytic towards V *choleræ*, thick suspensions of which are converted nto a gel In contrast to the original assumption of Emmerich and Loeb none of the antibacterial substances roduced by *Ps pyocyanea* are enzymes, therefore the term pyocyanase does not seem to be justified for any of them A good deal is known about the chemical nature of pyocyanine and α-oxyphenazine their antibacterial action is probably much the same as that of other bactericidal dyes of similar chemical constitution The chemical nature of the chloroform-soluble colourless bacteriolytic substance remains to be investigated The antibacterial substances from actinomyces strains isolated by Waksmann and Woodruff differ from another antibacterial agent obtained from actinomyces strains, actinomycetin, which forms the subject of many papers by Gratia and others[7] This substance, which acts against a number of gram-positive and gram-negative bacteria, and lyses a number of them is a protein and belongs most probably to the class of bacteriolytic enzymes of the lysozyme type

Now Chain, Florey[8] and their colleagues have investigated the possibilities of penicillin, isolated from the mould *Penicillium notatum* In the state of purity used in their biological and therapeutic experiments it is a yellow substance, easily soluble in water It is not bactericidal, but even when very dilute (1 2,000 000) it inhibits the growth of many pathogenic organisms, such as *Staph aureus, Streptococcus pyogenes,* meningococcus, gonococcus, *Clostridium welchii, B anthracis* and others It differs from all the other antibacterial substances isolated from micro-organisms and, indeed from most antiseptics known, by its very low toxicity Laboratory animals infected with *Cl septique, Staph aureus* and *Strep pyogenes* were cured and the results of a number of clinical trials are promising Here again we have yet to learn its chemical composition

PSYCHIATRY IN THE SWISS ARMY

THANKS to the work of Forel Bleuler and Jung psychiatry is more advanced in Switzerland than in most European countries Its importance in practical medicine is well recognised and psychiatric principles have penetrated into law, education and other fields of public life Their application to military medicine is illustrated in three recent articles[9] Though the country is not at war, the army is in a state of constant full mobilisation—very different from the transient service of a few months each year which is customary in peace-time Mental and psychological cases are common amounting—so Dr R Brun estimates in the first article—to one in every sixteen admissions to the base hospital This figure he thinks, is if anything too low, because cases in the *medical and surgical wards are often not recognised* as psychological Like the authors of the two remaining articles—Dr M Boss and Dr Kurt Binswanger—he urges the need for closer coöperation between consultants so that cases in which neurotic symptoms are grafted on the residue of an organic illness—healed gastric ulcer or an attack of sciatica or lumbago—will not be wrongly diagnosed and thus wrongly treated Boss cautions his fellow psychiatrists about their approach to their medical colleagues physicians, he *reminds them*, are descendants of the old medicine-men, and demi-gods are jealous of their godhead This is a *caution* which might well work both ways, mutual forbearance achieving harmonious liaison between physician and psychiatrist

Psychiatric cases are treated in special wards in the Swiss base hospitals, there is also a psychiatric clinic attached to each group command, in which cases sent from the unit can be examined and treated sent to military boards, or otherwise disposed of Early psychotics, neurotics and psychopaths form the bulk of the patients, in most of them the illness has been present before they were called up, but symptoms have been evoked or exacerbated by *the* strict conditions of military

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Dubos R J *Proc Soc exp Biol N Y* 1939 40, 311 *J exp Med* 1939 70 1, 289

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Waksman S A and Woodruff H B *J Bact* 1940 40 581, *Proc Soc exp Biol N Y* 1940 45 609 *J Bact* 1941 41 32

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Schoental R [illegible] 1 22 137

[7] Gratia A and others *C R Soc Biol* 1924 91, 1442 1925 97 461 1125 128 1172

[8] *Lancet* 1940 2 226 1941 2 177

[9] *Schweiz med Wschr* June 7 1941 pp 701 706 and 711

Annotations

ANGLO-RUSSIAN ALLIANCE IN MEDICINE

THE Russians today, beyond all other races, are using fully our renaissance inheritance, the experimental method They have shown again and again that they are willing to try new things to discard what is useless for their purpose and to hold fast to what they find good In their present struggle they are gaining experience of mass woundings which may prove of high value to us in the future while we, with recent experience of raid injuries may have developed methods which would be serviceable to them The need to pool our knowledge led a group of doctors to call a meeting to establish a responsible body which would place and keep the medical professions of Great Britain and the U S S R in touch with one another The inaugural meeting, which was attended by the Soviet Ambassador, was held on Sept 10 at the Medical Society of London, with Sir Alfred Webb Johnson, president of the Royal College of Surgeons, in the chair The presidents of the other two Royal Colleges are also among the supporters of the movement M Maisky was in full sympathy, victory and future peace, he said, depends on the close cooperation of our two countries, and an alliance in medicine will be beneficial to both He comes of a medical family, and as a small boy contributed to his father's scientific work by looking after the laboratory guineapigs He left his hearers with no doubt of the value and importance of the task they were undertaking Dr Elizabeth Bunbury, who had been among those arranging the meeting, said that the idea had arisen when she and several other doctors, members of the Society for Cultural Relations with Russia, had found that Russian medical publications were not being thoroughly used in this country One task of the proposed committee, she suggested, would be to find translators and provide means of circulating Russian medical information She could already offer fifteen names of translators, and suggested that the Soviet Embassy might be willing to obtain medical literature from Russia, among which she mentioned the Red Army handbook The meeting agreed to form an Anglo Soviet Medical Committee, and elected Sir Alfred Webb Johnson as president, a letter setting out the aims of the body and asking for helpers appears on p 352 It was agreed that since the importance of any committee tends to be measured by the number and distinction of its vice presidents, a representative group of those who had shown interest in the project should be invited to serve in that capacity It was left to the organisers and the chairman to suggest an executive committee which could be submitted to members for their approval Lieut -General A Hood, director-general of the Army Medical Service, said that the War Office would welcome as much information as possible about Russian methods, especially those relating to evacuation of civilian population The medical directors general of the Navy and R A F had also sent messages to say they were in full support of the aims of the meeting All agreed that the organisation should be purely professional, distinct from other bodies, though, of course, willing to form liaisons with them where this was to the advantage of either Sir Philip Manson-Bahr remarked, in this connexion, that the tropical diseases bureau of the Medical Research Council had been publishing for more than a year, under the direction of Sir Harold Scott, *War Medicine*, which embraced the literature of the world, and much Russian work had already appeared in it The bureau has many Russian translators at its disposal and Sir Philip suggested that the new executive committee should work in close association with it Sir Harold, he said was anxious to obtain more Russian publications There was Russian news of two new virus diseases—a variety of nephrosis and an encephalomyelitis transmitted by ticks—about which it would be useful to have information Dr P D'Arcy Hart agreed that it be valuable to keep in touch with the bureau pointed out that the new committee wished to information from this country to Russia as well as to ceive it The chairman suggested that *War Medicine* well be translated into Russian Dr Aleck Bo felt that the new committee had a wider reference the mere exchange of views on war medicine it sh have an eye to peace, and should aim at arran exchange visits between us and our Russian collea Prof Wood-Jones asked that when the execu committee was formed the provinces might be borne mind A message of greeting was sent to the med secretary of the Academy of Sciences at Moscow and all medical workers in the Soviet Union, in which Anglo Soviet Medical Committee pledged itself to w for the utmost exchange of medical knowledge betw the two countries, now and in the future

SPLENECTOMY FOR ICTERUS GRAVIS NEONATORUM

SEVERE jaundice of the newborn often familial, is now regarded as one manifestation of a disorder of the hæmopoietic system of the developing embryo known as "erythroblastosis fœtalis" As its name implies it is a serious malady and had a high mortality until some years ago when Hampson asserted that normal adult blood serum contained a factor which counteracted the excessive hæmolysis present in icterus gravis and that intramuscular injections of blood or serum were of therapeutic value It seems likely that the disease terminates naturally after some days and hence if the infant can be tided over the neonatal period hæmolysis stops and the overactivity of the red cell forming apparatus—as shown throughout by the presence of large numbers of nucleated red cells in the peripheral blood—restores a normal blood picture in due course Unfortunately by that time irreparable damage may have been done to the nervous system because head retraction spasticity and mental defect are found in a proportion of survivors Hence workers have sought to improve upon Hampson's method and some have urged intravenous transfusion of matched blood as a preferable measure But severe forms of this always serious disorder are met with from time to time which fail to yield even to repeated transfusions and such a case successfully treated by splenectomy is recorded by Dr Hardwick and Mr Lloyd in this issue They mention that this heroic method was first used by Cooley in America in 1932 and again in 1935 It has the merit of stopping the hæmolytic process at once, in the present case this had apparently been achieved within 4 hours after operation, as shown by a blood count Transfusions before operation had failed to arrest the downward progress of child and red cell counts alike One transfusion was given after operation, and thereafter the red cells rose to normal figures, as is strikingly illustrated in the curves given Some authorities might differ from Hardwick and Lloyd when they say that splenectomy cuts short the disease process, because it is not yet clear whether hæmolysis or an excessive formation of primitive red cells is the primary fault Prevention of the disease in familial series by treating the mother during pregnancy with large doses of liver extract is sometimes successful and is an argument in favour of some disorder of blood formation as the fundamental lesion However splenectomy deals with the immediate postnatal problem of excessive hæmolysis, and as performed on this case in 20 minutes by the President of the Royal College of Surgeons on a baby of 8½ lb it represents a technical achievement of high merit leading to a result as satisfactory clinically as it is thought-provoking scientifically The programme for a practitioner faced with a baby who rapidly develops the severe

Special Articles

OFESSIONAL PROBLEMS IN WAR-TIME

REPRESENTATIVE BODY OF THE BRITISH MEDICAL ASSOCIATION

A CONFERENCE of representatives—the first since the tbreak of war—was held in B M A House on Sept and 12 with Dr H G DAIN in the chair During e course of the conference the annual general meeting as held under the chairmanship of Dr THOMAS FRASER Aberdeen at which the gold medal of the association as presented to Sir Kaye Le Fleming in recognition of tinguished work for the association and for the ofession

MEDICAL PLANNING

In presenting the annual report of Council to the presentatives Mr H S SOUTTAR told of exciting days d nights in the past year The great hall where the nference was held would have been lost by fire but r the skill of the janitor in dealing with incendiaries he Central Medical War Committee had provided ctors for the E M S and for the Services and was gaged to find many more The Medical Planning ommission had undertaken to study the future of edical practice, and was formed of the best group of en who could be found to advise on every branch of e subject The commission had the close cooperation the Royal Colleges and could claim he said, to represent the whole profession It was essential that in their ndings they should carry the whole profession with them d when a scheme had been drafted it would be submitted to every doctor in the country He believed at unless the profession was prepared to make its own heme, a scheme would be impressed on it by the overnment

In the discussion on various aspects of medical planning which followed it soon became clear that the ouncil would have had warmer support for the commission if instead of appointing it they had borne in ind the old democratic principle that committees to e representative must be elected Several of those resent spoke their minds on this point and no doubt lt the better for it, but in the end they were persuaded o admit that their commission however dubious its egetting was a fine baby of which much could be xpected In proof of this several duties were immediately laid upon the nursling Dr FRANK DALLIMORE Stockport) led off with the English doctor's hunting ry "Free choice" The family and the family doctor f their choice should still constitute the primary unit n the health service of this country, he felt and the Medical Planning Commission should be invited to regard his as a fundamental principle They were so invited—em con Dr NORTON STEVENS (West Suffolk) asked or an early interim report from the commission There vas bound to be delay he said before the final deliberations of the commission would be available and this nterval would give a good opportunity for discussion Otherwise there might be resentment of any scheme dopted by the commission no matter how good it was Mr SOUTTAR assured them that no report would be ssued until the whole profession had been consulted ut he was equally clear that there would be no interim eport though he undertook that members of the ssociation should be fully informed of progress Prof R M F PICKEN remarked that "early" was the most erious word in the motion, and reminded the meeting f the controversial subject matter before the commission nd of a few practical obstacles connected with paper and rinting In the end it was agreed the commission hould be expected to publish interim reports from time o time

Mr J S HUTCHISON (Halifax) moved that no further hanges should be made in the conditions of medical ractice until opportunity had been given for full discussion by all members of the profession The increase n the panel to include those with incomes up to £420, e said had been thrust on the profession without opportunity for discussion and the council should give the meeting some assurance that this would not occur again for no other reason than because it was the duty of all doctors to safeguard the interests of colleagues away on active service He was supported by Mr H J MCCURRICH and the motion was carried

Mr E H RICHARDS (Stoke-on-Trent) proposed that in view of the efforts of some political bodies and groups of doctors to further the introduction of a state medical service the association should be prepared for such an event and should forthwith consider essentials of administration and maximum remuneration His motion was carefully qualified by a clause indicating that by taking such a step the meeting would be expressing no opinion for or against a state service but by the very mention of such a thing he had let a serpent into the doocot which in happier days would have provoked stirring words The meeting however was being kept sternly to time by the chairman and the explosions detonated were not in the old H E tradition Major R SCOTT STEVENSON did remark that it was time someone said bluntly that a state medical service was not the policy of the B M A Not he seemed to feel, that official circles paid proper attention to the association's policy as set out in the well-known grey book there it was specifically recommended that the first extension of panel practice should be to the dependants of insured persons this had been ignored in favour of an extension of benefit to those under the £420 income limit Dr G W MILLER reviewed the association's policy since 1920 showing that it had been modified to suit events 'Everything we do he said is subject to the laws of evolution But a false impression had lately got abroad that the B M A was ceding the position it had always taken up in regard to a state service During the last war he had been told that a state service was inevitable yet it had not come Dr H W POOLER suggested that the motion should be accepted since it made no suggestion that affected the policy of the association but merely asked that the profession should be prepared if a Government scheme was put before them Neutrals were apt to be overwhelmed when an attack came He believed that opinion in favour of a state service had in any case been gaining ground within the profession, he had found that in Derby over 50% of doctors were in favour of such a service, and among the 25–40 age-group the proportion was 70% Mr MCCURRICH thought that if the profession went half-way to meet a state service they would be in trouble In replying Mr RICHARDS pointed out that if the policy of the association was to be overridden it was as well to be prepared with a state scheme but his motion was lost

OPHTHALMIC BENEFIT

A motion by Brighton protesting against the recommendation of the Ophthalmic Group Committee that non-insured persons and dependants with incomes between £250 and £420 per annum should be included for treatment under the national eye service was answered by Mr N BISHOP HARMAN The committee he said had sent out a questionnaire to every ophthalmologist on the B M A list and had had 481 replies to the 870 letters these showed a high majority to be in favour of the scheme and of the increase in the fee from 10*s* 6*d* to 15*s* 6*d* which the committee recommended Mr MCCURRICH who presented the motion suggested that the man with an income between £250 and £420 could afford to pay a specialist fee once every two or three years and that the change would create an unwarranted restriction on private practice which was unfair on those men who were away with the forces and had no chance to consider it Dr F A ROPER (Exeter) wanted the motion referred back to Council and Mr A. S GOUGH (Watford) said severely that the specialist services must sink or swim with the rest of the profession Mr BISHOP HARMAN pointed out that the Government had already forced a change in the insurance limit on general practitioners could the meeting refuse a similar increase to ophthalmic surgeons? It seemed they could for the motion was carried

MEDICAL ORGANISATION

Dr HUTCHISON (Halifax) proposed that the divisions should organise themselves into discussion groups for the consideration of the future of medicine and that the results of their deliberations should be forwarded to the central body for assessment and publication The service Among 100 cases examined at one of the clinics Boss found 6 neurological cases, 11 cases of epilepsy and other organic diseases, 6 alcoholics, 13 mental defectives, 31 schizophrenics, 15 psychopaths, 12 neurotics, 5 manic depressives and 1 malingerer Pure neurosis, he found, was rare, most neurotic symptoms appearing in cases of psychopathic personality The large number of schizophrenics is related to the fact that the men in this army group had been recruited from a region where insidious schizophrenia is known to be frequent This is an interesting observation in itself Lack of communication and the curious pride and seclusion of the Alpine dwellers makes intermarriage in some Swiss valleys common, and a high incidence of schizophrenia in a given region is thus probably associated with hereditary rather than environmental factors Malingering is very rare Brun found only two cases among many hundreds of psychopathic cases Disposal of psychopaths and neurotics is as difficult in Switzerland as here The three writers agree that no general rule is possible, every case must be treated on its merits To discharge all neurotic cases would prove too great a drain of man power from the small Swiss Army, and the same may well be true of larger forces Brun found it worth while to treat selected cases by psychotherapy Others are sent into auxiliary service which may be of two kinds, one belonging to the armed forces, and the other being a kind of labour service comparable with our Pioneer Corps The armed auxiliaries are mostly employed in guard duty which is apt to be tedious everywhere, and especially in peaceful Switzerland, and is unsuitable for most neurotics The labour service gives better results, but the accumulation of psychologically unstable people has its dangers Common-sense measures in the treatment of neurotic reactions include removal to other units of soldiers who cannot get on with their existing superiors, transfer of others from units where service is monotonous to units where they can have interesting technical training, transfer of those who are homesick to units nearer their own people All such measures are easily applied, but often neglected, not only in the Swiss army, they are only possible, of course, if the psychiatrist knows the special circumstances in each case

In addition to treating or disposing of the misfits, the "front-line" psychiatrist attached to the group clinic is expected to supervise the psychological atmosphere in the units of his group He should collaborate with the officers in command to create and maintain a healthy mental environment among the troops, he trains officers and those of non commissioned rank in the principles of mental hygiene, and helps to discover and remedy difficulties or grievances The cases quoted are comparable with those seen among soldiers by psychiatrists elsewhere, and the experience of these Swiss doctors can be applied to cases in our own Army serving at home Refusal to serve in the forces is a punishable offence in Switzerland, however, so that psychiatrists there have also to deal with the psychopathic patients among the conscientious objectors tried by martial law

EXAMINATIONS FOR TUBERCULOSIS

REPORTS from the Surgeon General's office indicate that the army of the United States is now committed to a routine X-ray examination of all recruits Full-size paper films were used in a preliminary investigation, reported by Edwards and Ehrlich,[1] of 16,150 recruits in the Southern New York District It was found that a team of three, consisting of a technician and two dark-room assistants, could operate at a rate exceeding one exposure a minute, the wet films were read by a physician and the results passed on to the medical board within an hour All recruits with abnormal films were referred to the municipal chest centre for complete clinical and radiological overhaul, as a result of which a number were passed as fit for service, those rejected incl (0 43%) with active pulmonary tuberculosis, (0 63%) with arrested lesions Rejection of the group was based on the chance that such lesions break down under conditions of military service the preliminary survey 35,210 more recruits were mined by the same method between Jan 15 and 31, 1941 Of these 389 (1 1%) were rejected on of pulmonary tuberculosis

The costs came to $23,614 for 16,150 men or $ per head The full-size paper films accounted $12,961 of this total (the materials costing several as much as those required for miniature screen p graphs) The national scheme for the radiol examination of recruits in the U S A is therefore c and Edwards and Ehrlich do well to emphasise what lack of it cost the country after the last war They to Spillman's estimate[2] based on an analysis of stati data from the U S Veterans Association, that the co the government of a case of tuberculosis in a veter the last war has been about $10,000 per man to da Using this figure, they compute that their cases of tuberculosis detected at the cost of $23,614 represent saving to the government of about $1,720,000 It mus be borne in mind, however, that though pensions for the patient or his family would be saved by the rejection of recruits with tuberculosis, the rejected men would still, in many cases, require treatment at the cost of the state But early diagnosis means a better chance of cure, and this in itself would mean considerable saving of sick-pay and of the cost of sanatorium treatment—as the experience of the firm of Philips Metalix in Holland has shown

AMMONIA AND THE GAS MASK

DURING an air-raid in London a year ago the con necting pipe of an ammonia condenser was punctured by a fragment of flying metal and 75 people in a crowded shelter suffered (7 of them died) from inhaling ammonia gas Dr Caplin who saw the results[3] says that no harm was taken by anyone wearing a civilian respirator, whether a member of a first aid party called in to help or a shelterer with the sagacity to don his mask at the first suspicion of an acrid smell He quoted a Ministry of Home Security pamphlet to the effect that any of the A R P respirators, although not designed for the purpose, does in fact afford some protection against ammonia gas Since that was written the Ministry has thought well to issue a special warning (H S C 161/1941) against this comfortable fallacy These respirators give a certain degree of protection against immediate dan from ammonia, but when they are worn subsequently the ammonia is liberated from the container in con centrations which may give rise to serious discomfort or even danger This effect is produced even when ga free air is drawn through the container, but if it shou occur in the presence of a war gas the wearer is com pletely deprived of protection He will be unable t wear the respirator because of the ammonia given o as he breathes through the container, and so will b exposed to the full effects of the war gas War respira tors should not therefore be relied on for protectio against ammonia, and if in emergency they have to be worn while escaping from an area seriously affected b ammonia fresh containers should be substituted as soo as possible for the old ones

THE division for the social and international relatio- of science of the British Association will hold a meeti on Sept 26, 27 and 28, at the Royal Institution Albemarle Street, London, W 1, when they will discu science and world order At the end of the meetin Sir Richard Gregory, F R S, the president, will announ a charter of scientific fellowship enefits of national insurance to persons earning up 420 per annum should not have been made without alting the practitioners themselves Dr Peter DONALD remarked that the actions of the I A C in fact been approved by the panel conference.

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[1] Edwards, H R, Ehrlich D *J Amer med Ass* July 5, 1941 p 40

[2] Spillman, R *Ibid*, 1940, 115, 1371

[3] *Lancet* 1941, 2, 9

Dr Gregg became rhetorical in asking what insurance practitioners were dissatisfied about Was ecause the committee had protested with all their ht to the minister? Was it because they had told minister they would not accept his terms but would a panel conference? Or because they had asked a thorough investigation after the war? Or because y had insisted that any change in the cost of living uld be taken into account? Well said Dr Ernest ED, they were dissatisfied They felt the panel con- ence had not represented the feelings of the pro- on as a whole. Dr Frank Gray explained that the nmittee had been met by a flat refusal of any other ms by the minister The only answer would have en to refuse practice Did anyone suggest the pro- sion should have been advised to strike in the middle a war? Nobody did Mr P. W L Camps men- oned that in his division most of them had felt that it ould be a good thing to extend benefit to the £420 oup, but Dr Ward said that was not the feeling in s area In replying Dr Schiff said that it would ve been a good opportunity to hold a plebiscite of the hole profession. And why would it have been necessary go on strike? The profession could have asked for bitration In any case it should have been possible handle it in such a way that one's patients, instead of ying slyly 'Well doctor I see you ve got a rise,' ould have said "Well doctor I think you got a raw eal' The meeting shared his opinion and carried the otion

Motions from Leeds and Southport were combined and ccepted in the following form That the meeting dis- grees with the statement of the Government that the ependants of men serving with the forces are able to ay for their own medical attention and requests the overnment to provide as an urgent necessity adequate edical attention for such dependants This required o discussion

FOREIGN DOCTORS

Dr George Laurence (Swindon) told of two foreign octors in his area one of whom was a private in the ioneer Corps and the other serving in a shop He roposed that increased facilities should be given to efugee doctors to practise in this country for the dura- ion of the war and for such further time as was con- idered necessary Dr Anderson reviewed the position f refugee doctors the present regulations only per- utted them to practise in hospitals or in civil defence ervices A new order was now on the stocks which ould allow such doctors to practise as assistants but he association thought it would be unfair to absentee octors if the refugees were allowed to practise on their wn The motion as it stood was rather wide and Dr aurence agreed to its withdrawal

THE DOCTOR S MAID AND OTHER MATTERS

In appealing to the Council to request the Minister of abour to reserve at least one maid in a doctor s house r Arthur Beauchamp (Birmingham Central) asked hich man of them dared go home if he voted against ? There was no such hero present

Dr H S Pasmore (Kensington) moved that in the pinion of the meeting a general practitioner should be ttached to the staff of every teaching hospital to instruct e students in the art of general practice and to act as a nk between the hospital and the general practitioner rvices in the area This sensible and timely suggestion as referred to the Medical Planning Commission

Dr Taylor (Camberwell) moved that in the pinion of the meeting all institutions used as hospitals y local authorities should be administered under the ublic Health Acts (and not under the Poor Law) as a atter of compulsion instead of option as at present eople were often admitted to such hospitals against their ill he said and were then submitted to a means test rofessor Picken supported him—it was a reform long over- e This motion was also referred to the commission

Dr J A Pridham (Dorset) proposed that the Minister Health should be requested to confer on local authorities adequate power to prevent the spread of scabies Prof Picken agreed that this was an extremely important public health measure Scabies he said had been on the increase since two years before the war and had now reached epidemic proportions The meeting agreed to the proposal

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SCOTLAND

DEATH OF A PAST M.O H FOR EDINBURGH

Dr William Robertson who died on Sept 8 in Edinburgh after an operation was medical officer for Edinburgh and Leith from 1923 to 1930 Graduating in Glasgow in 1887. he took his M D in 1891 and the D P H two years later and in 1923 he became F R C P E After holding house appointments in the Western Infirmary. Glasgow and the Perth Royal Infirmary he started general practice in Renfrew later moving to Perth where he was first dispensary and then health officer Returning to the west as M O H. for Paisley he reorganised the water department there putting an end to the recurrent outbreaks of typhoid In 1904 he was transferred to Leith where he had to deal with periodic outbreaks of smallpox originating in ships' crews. When plague appeared in the port he was publicly thanked by the Scottish Board of Health for his successful handling of the danger He was a pioneer in the examination of school-children starting also a child welfare service in Leith After the amalgamation of Leith with Edinburgh he became deputy M O H before taking full charge in 1923 Then he initiated a series of health exhibitions to serve both as a means of educating the public and of raising funds for the Royal Infirmary He had a firm belief in the value of posters and during his tenure of office many health slogans adorned the lamp-posts of the city He was lecturer in the school of medicine of the Royal Edinburgh Colleges and his precepts received wide currency in the pages of four books: Sanitary Law and Practice Meat and Food Inspection Public Health Law and Practical First-Aid He also wrote fiction including "The Stone of Dunottar a tale of the 45 and a volume of detective tales During the last world war he collaborated with Dr M J Oliver M O H for Roxburghshire in the invention of a steam disinfector which was used in the British Russian and Greek armies and afterwards in transatlantic liners Dr Robertson s cheerful disposition and vigorous personality are still green in Edinburgh s memory where he leaves a widow and daughter

A STUDY OF HYPERTENSION

In his Honyman Gillespie lecture Dr A R Gilchrist pointed out that directly or indirectly. more than 20% of people over fifty come to cardiac cerebral or uræmic deaths the outcome of long-sustained hypertension. In a general medical ward 15–20% of all admissions were attributable to high blood-pressure Systolic pressures of 150 mm Hg or over were abnormal, and so were diastolic pressures of 100 mm or more a diastolic pressure of 95 mm should be regarded as highly suspicious The average normal pressure at the age of twenty was 120/80 and at sixty 135/86 with a range of ±10% The well-known 1 2 3 relationship was found in most normal people, the pulse pressure being about half the diastolic and a third of the systolic pressure When the diastolic pressure was raised, owing to increased peripheral resistance this normal ratio was at first maintained when it failed and the systolic pressure began to fall the stage of cardiac failure had been reached The term hypertension should be restricted to diastolic hypertension since the important factor was the state of resistance of the arterioles Conditions such as complete heart-block and arteriosclerosis often produced a rise of the systolic pressure with a normal or low diastolic pressure These were not true examples of hypertension He paid tribute to the fundamental work of Goldblatt on the production of hypertension by renal ischæmia · the ischæmic kidney releases a pressor substance renin which causes vasoconstriction when activated the activated substance angiotonin has been separated and crystallised In the Goldblatt experiment a substance hypotensin was obtained from the normal kidney this acted as an antipressor substance Difficult and costly as it was to obtain, it had produced some impressive therapeutic individual medical practitioner, he said, was by virtue of his work too much detached from medical politics In an issue, 95% of the profession were unable to register an effective vote Small discussion groups of 6–10 members in every division in the country would allow every doctor to express his views There should be a coordinating body to present subjects for discussion The Medical Planning Commission might draw up a good scheme but it would have a much greater interest for the profession if the electorate had studied the questions for themselves Each group should have a leader who would send the group views to the division, the divisional committee would collate and subedit all the material reaching it, and send it to a central committee which would present the findings to the profession for consideration, after which a conference might be called This sensible and educative measure clearly had the support of the whole meeting, as Dr E A **Gregg** pointed out, it was important that the profession should not be presented with a mass of material which had been studied in detail by somebody else they should have had an opportunity to study the issues for themselves in advance After a few verbal amendments the motion was accepted unanimously

Dr A V **Campbell** (North Staffordshire) moved that the time was opportune to consider not only reconstruction in medical practice but also in the organisation of the B M A , and forthwith set out seven ways, no less, in which the association might be reconstructed These included the redistribution of divisions, regrouping of branches, the formation of area councils to appoint members of the central council, limitation of the number of years during which a council member might serve, and the adoption of trade-union methods by the whole profession when a division was engaged in a fight Faced with such a plethora of sweeping reforms the meeting was bewildered The chairman said he intended to let them vote on each section separately, but allowed the discussion to remain general There seemed to be a common feeling that in rural districts the divisions were apt to be unwieldy but, as Dr **Roper** pointed out, to save secretarial difficulties the divisions must be coterminous with local government boundaries Sir **Kaye Le Fleming** reminded them that there was already a retiring age for the council They had, in the association, a good machine, he said and added, from a heart apparently embittered by pool petrol, that if they paid less attention to the machine and more to the spirit they put into it, it would go better After some further discussion the meeting disagreed with North Staffs that the moment was opportune for the reforms recommended

CERTIFICATES

Here was a topic close to the heart of every general practitioner present Certificates have been multiplying at a rate to shame rabbits in the past two years, and the speakers were justly incensed Dr W A **Kirkpatrick** (Cleveland) proposed that the council should be asked to review the question of industrial certification under war conditions At present, he said, it was hard to know what to do when asked for certificates by an industrial concern, some doctors refused to give them, others gave them without charge, others charged for them Who ought to pay for such certificates? If the patient, the fee must be small The national service officer might be able to give a more appropriate fee, but had he power to pay at all? Dr G C **Anderson** said he was in communication with the Ministry of Labour about the certificates required under the Transfer of Labour order He had suggested on behalf of the association that in each area an official—preferably a medical man—should be appointed to whom cases of doubtful certification could be referred He had understood that the certifying factory surgeon would be appointed and would receive a fee but the Treasury had refused the expenditure Complaints had also reached him from the divisions about Attendance Bonus certificates for one-day absences He had been in touch with the secretaries of the Mining Association and the Mineworkers Federation and had told them that he would advise the profession against giving such certificates because with a one-day illness there were not as a rule sufficient clinical data to make a diagnosis This decision had borne fruit since it had been decided that absence for one day should not disqualify for an attendance bonus Moreover, the Essential Work order, absence from work for a no longer disqualified for wages With regard to multiplication of certificates, he had suggested that should be some coordination between Government d ments demanding certificates, and that before any certificate was required the departments should co with the Ministry of Health and with the association thought doctors should not be required to give certifi for milk for children under 5 years of age, or for milk invalids, or to witness signatures on certificates C W **Somerville** was worried by four varieties certificate those demanded under the Wor Compensation Act, which could be better given by factory surgeon for a fee of 5*s* and those dema by employers, by friendly societies, and by sch The attendance officer could deal with the sc children For the others some uniform action charge were needed Dr A W **Weston** said the doct first duty was to treat the patient and his second certify him fit for work There were patients wanted to change their work and to use the doctor as lever He always refused to oblige them, a doctor could certify a man as fit for his job, but had no call to cl jobs Dr H S **Howie Wood** warned the meeting about unscrupulous secretaries of friendly societies who would make a N H I certificate do where the patient ought to buy a private certificate The motion was carried

Dr **George McFeat** (Lanarkshire) invited the meeting to view with concern the apparent apathy with which representatives of the association permitted ever increasing certification to mount unhindered, to the detriment of general practitioners This seemed a little hard in view of Dr Anderson's account of his battles, but it enabled the mover to describe the fate of the doctor with twenty or thirty people in his surgery when asked in turn by the same expectant mother for a certificate for milk, a certificate for glucose, and a certificate for wool to knit into the traditional tiny garment Dr J W **Bone** agreed about the burden and asked the divisions to send in detailed information of their difficulties Dr W N **Leak** struck a new note by pointing out the difficulty that employers had, in the absence of a doctor's certificate, in deciding whether absence for one day was due to slacking or to some other cause This was important, he said, from the point of view of utilisation of man-power, for it had been shown that one-, two or three-day absences accounted for half the absenteeism in industry After this airing of the subject the motion was withdrawn

EXTENSION OF MEDICAL BENEFIT

A motion by Camberwell, proposed by Dr P H **Taylor**, that the meeting approved in principle the extension of N H I services to cover the dependant of insured persons with incomes up to £400 was oppo by Dr **Gregg** as being an issue too large to be decided in a hurry, and on the advice of Dr **Bone** the meeting passed to the next business Dr F W **Cheese** (Ea Kent) moved that the conference deprecated acti being taken by the Government on matters concerning the medical profession without first consulting repr sentatives of the profession, and this was accepted Watford, however, was less inclined to blame the Govern ment than the Insurance Acts Committee for not keepin the local committees adequately informed during th negotiations, being of the opinion that by skilful lead ship and publicity the present unhappy position could have been avoided, and moved, through the lips of Mr **Gough**, that the executive committee should sho proof that it was taking all possible measures to prevent a further unfair exploitation of the terms of service of its insurance practitioner members It was true, he said, that the Government had undertaken to review the whole question of the capitation fee, after th war, as from the ground floor, but if the profession wasn't careful it would find itself going from the ground floor to the basement, and taking in the dependant of insured persons at bargain-basement prices. The meeting shared his apprehension and supported Watford

Dr. C I **Schitt** (City) introduced a long and reproachful motion on the same topic, pointing out to the I A C that the increase accepted on behalf of the gen practitioners was no increase at all and that extension o

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Dr William Robertson, who died on Sept 8 in Edinburgh after an operation, was medical officer for Edinburgh and Leith from 1923 to 1930 Graduating in Glasgow in 1887, he took his M D in 1891 and the D P H two years later and in 1923 he became F R C P E After holding house appointments in the Western Infirmary, Glasgow, and the Perth Royal Infirmary he started general practice in Renfrew later moving to Perth where he was first dispensary and then health officer Returning to the west as M O H for Paisley he reorganised the water department there, putting an end to the recurrent outbreaks of typhoid In 1904 he was transferred to Leith where he had to deal with periodic outbreaks of smallpox originating in ships' crews When plague appeared in the port he was publicly thanked by the Scottish Board of Health for his successful handling of the danger He was a pioneer in the examination of school-children, starting also a child welfare service in Leith After the amalgamation of Leith with Edinburgh he became deputy M O H before taking full charge in 1923 Then he initiated a series of health exhibitions to serve both as a means of educating the public and of raising funds for the Royal Infirmary He had a firm belief in the value of posters and during his tenure of office many health slogans adorned the lamp-posts of the city He was lecturer in the school of medicine of the Royal Edinburgh Colleges, and his precepts received wide currency in the pages of four books Sanitary Law and Practice, Meat and Food Inspection, Public Health Law, and Practical First-Aid He also wrote fiction including "The Stone of Dunottar" a tale of the 45, and a volume of detective tales During the last world war he collaborated with Dr M J Oliver, M O H for Roxburghshire, in the invention of a steam disinfector which was used in the British, Russian and Greek armies and afterwards in transatlantic liners Dr Robertson's cheerful disposition and vigorous personality are still green in Edinburgh's memory where he leaves a widow and daughter

A STUDY OF HYPERTENSION

In his Honyman Gillespie lecture Dr A R Gilchrist pointed out that, directly or indirectly, more than 20% of people over fifty come to cardiac, cerebral or uræmic deaths, the outcome of long-sustained hypertension In a general medical ward 15–20% of all admissions were attributable to high blood-pressure Systolic pressures of 150 mm Hg or over were abnormal, and so were diastolic pressures of 100 mm or more , a diastolic pressure of 95 mm should be regarded as highly suspicious The average normal pressure at the age of twenty was 120/80 and at sixty 135/86 with a range of ±10% The well-known 1 2 3 relationship was found in most normal people, the pulse pressure being about half the diastolic and a third of the systolic pressure When the diastolic pressure was raised, owing to increased peripheral resistance, this normal ratio was at first maintained , when it failed, and the systolic pressure began to fall, the stage of cardiac failure had been reached The term hypertension should be restricted to diastolic hypertension since the important factor was the state of resistance of the arterioles Conditions such as complete heart-block and arteriosclerosis often produced a rise of the systolic pressure with a normal or low diastolic pressure These were not true examples of hypertension He paid tribute to the fundamental work of Goldblatt on the production of hypertension by renal ischæmia the ischæmic kidney releases a pressor substance, renin, which causes vasoconstriction when activated , the activated substance, angiotonin, has been separated and crystallised In the Goldblatt experiment a substance, hypotensin, was obtained from the normal kidney , this acted as an antipressor substance Difficult and costly as it was to obtain, it had produced some impressive therapeutic results. Dr. Gilchrist mentioned emotion as one of the most important extra-renal factors causing hypertension; it was on this account, he said, that little reliance could be placed on a single determination of blood-pressure. Blood-pressure readings taken during sleep provided a control for assessing the importance of emotion; the emotion itself might be due to direct excitement, or to repressed resentment and an undercurrent of fear and anxiety. Organic lesions of the central nervous system, particularly of the midbrain and brain stem, had sometimes been recognised as being associated with hypertension. Hormonal influences were known to be operative in other cases, particularly in association with medullary and cortical lesions of the suprarenal glands; the pituitary and the ovaries might also be responsible for hypertension. The value of œstrogenic hormone, or its synthetic substitute stilbœstrol, in controlling vasomotor phenomena at the climacteric was well known, but opinions differed on the influence of these hormones on menopausal hypertension. The symptoms, he found, might be relieved, but the blood-pressure remained high.

RÔLE OF RENAL ISCHÆMIA

The hypertension of renal ischæmia might, Dr. Gilchrist went on, be induced in a variety of ways. Possibly obliterative vascular disease in the kidneys might produce the same effect on blood-pressure as the Goldblatt clamp: if the renal arteries or arterioles were sufficiently obstructed, ischæmia was produced and hypertension resulted, but if the renal arteries escaped the patient might live to a ripe old age in spite of widespread arteriosclerosis. When severe narrowing of the renal artery was found in patients with hypertension widespread arterial change was sometimes found within the kidneys; but it was not always possible to say which came first. Coarctation of the aorta was a clear-cut example of the influence of renal ischæmia on blood-pressure: hypertension only occurred when the aortic constriction was proximal to the origins of the renal arteries. The hypertension occasionally observed during the course of congestive heart failure could also be attributed to impaired renal circulation. He mentioned obstruction to urinary outflow as a cause of hypertension; this was most frequently due to enlargement of the prostate, when daily readings of blood-pressure might provide a sensitive guide to the patient's welfare. Hydronephrosis even when unilateral, renal calculi, and urethral strictures had also been found in association with hypertension. In unilateral hydronephrosis secondary changes in the opposite kidney were permanent, so that removal of the hydronephrotic kidney was usually harmful because it threw a still greater burden on the remaining kidney. The commonest inflammatory disease of the kidney was acute pyelonephritis; the inflammation led to obliterative vascular disease in the kidney and this in turn to hypertension which was often severe. Acute Bright's disease he believed to be an uncommon cause of persistent hypertension in later life; among 820 consecutive admissions to his wards he had had 4 cases of acute nephritis and 125 of chronic hypertension.

In England Now

A Running Commentary by Peripatetic Correspondents

AMID the luxury of modern hospital life the young resident often knows little about the ordinary routine which will be the background of his work. When I was posted to an isolated R.A.F. station as surgeon I found that there was an enormous and unsuspected hiatus in my knowledge which had not been filled by the course for the fellowship.

One of my tasks was to help to transform an Irish castle into a small hospital. One of the first difficulties was equipment. After a few months we were handsomely provided for, but our original surgical stock-in-trade was a saw, many scalpels, a few pairs of dissecting and artery forceps, and no fewer than twelve towel-clips (but no towels). A typed inventory of equipment to come contained the item: Tables, operation, 18. "Eighteen?" We said "they must have big ideas for us here." We wondered where on earth we could put them. Would there be eighteen surgeons operating all at once? Or would a smaller number, a mere dozen or so go to table after table in rotation as at an clinic? But further investigation showed that we merely to receive towels, operation, 18. From baseless fabric of this vision created by an misprint, we descended to reality and realised t could at least now properly employ the clips, t possibly not all at once. The second great difficulty in the orderlies, who, though willing were ignor hospital routine and methods. One gradually got their heads the meaning of asepsis, but it was disco ing, when operating under a local, to find that my assistant had left the theatre to get a glass of water the patient. Later on, equipment began to roll in we no longer had to heat the steriliser over the kit range. One morning our prize piece of apparatus arri —a high-pressure steam drum-steriliser. We st up this awe-inspiring affair with considerable trepidat watching the pressure-gauge with anxiety, and I for noted carefully the quickest way to the door. But method was mastered, and as the orderly in charge of sterilisation was enveloped in clouds of steam whe work, I felt that he should be remustered to "Engine driver, steam." I was comforted by the thought t there was a large supply of gentian-violet and tannic aci jellies in the next room. There was one incident which might have been alarming. When the steriliser was being used to disinfect some bedding a blanket became wedged in the opening connecting the outer with the inner steam chamber. When the pressure gauge failed to register the orderly applied more heat with great enthusiasm and not until the inner jacket had crumpled like paper did he realise that there was something amiss. Fortunately the technicians were able to make it serviceable again.

A fatherly government gave us much equipment, gloves and gowns, but failed to supply us with caps or masks. I needed these, and as there seemed no other way of getting them I undertook their manufacture myself. Recollection of theatre nurses at work enabled me to remember how to make swabs, how to fold gowns, to fold pieces of gauze, to pack gloves, and even, after much experiment, to make little swabs containing talcum powder to go with the gloves. But I quailed at the thought of sewing caps and masks. When I tried to enlist the aid of my wife and her sewing machine, she politely but firmly declined to act except as a consultant. I found a new respect for womankind when I tried to fathom the intricacies of Mr. Singer's great invention (or was it M. Thimmonier?). Making masks from gauze and tape was the first step, and was fairly easy. Cap making was another matter altogether, but it was simplified by unearthing some old pillow-cases, worn out in the centre only. By dint of cunning manœuvres suture lines were neatly buried and a number of caps turned out. It was a triumph of new-found technique; an anastomosis was done on a cap which was too small, and a succe ful resection performed on one which included my ears as well as my head when tried on.

All this made me wonder whether surgeons haven't more to learn from their wives than their traditional sha in the compilation of the index. Could not the sewin machine be adapted for surgical use? Chromic catg could perhaps be supplied in sterilised reels; think of th time that might be saved in sewing up the rectus shea after a laparotomy. A modified French seam would b almost ideal for resection and anastomosis of the intestine; by comparison with the Singer suturing machi the Petz sewing-clamp would indeed seem clumsy an out of date. Cannot our surgical inventors do somethin in this line for us?

P.S.—I have no financial interest in any sewing-machine company.

* * *

For the last few weeks I have been doing a locum a a municipal sanatorium, the first time I have been in a sanatorium for years, and I must say I am disappointed. I feel as one who had been privileged to watch the apo in action might when he goes into a rather opulent we end church. The buildings, the food, the nursing w excellent, the site glorious, the gardens a paradise informality, but I missed the spirit of the early fath that intense drive to make fit, that fiery crusading that whistled as the winds did through the sanato in the earlier part of the century. The patients did n work except a little desultory potato peeling. Do till believe that lungs heal better when working n occupied and contented brain, that sanatorium the first step in rehabilitation of potential chronics, he aim of treatment is not mere health but useful that even a sanatorium can produce something l on the asset side ? Here the last word in deadess, they even burnt their food refuse Then the of a sanatorium as a university to train the more sical of us in a way of life seems to have been comly abandoned There were no lectures, the nts didn't even take their own temperatures, al going out after three or four months didn't know their morning or evening temperature should be the thermometer is the one dial on their dashboard can warn them of coming trouble Then again I that no frantic effort was made to seize those drifting the few months when they could be saved by an ack pneumothorax Many of the patients here were -strain casualties—that lad of nineteen who worked is lathe for over twelve hours a day from last May till ruary is as much a war casualty as if he had licked sandy hand of death at Dunkirk

* * *

t would be worth the mass psychologists' while to ermine why among the manifold urges of man the act of a new combination of ideas or an outstanding sonality or both should cause men and women to act nascent molecules, to strive and strain with fiery husiasm which inevitably tails off into the commonce commercialism of the last crusade or codfish nstianity I saw this pristine fire in the early days the Scout movement when men like Roland Phillips l Anthony Slingsby lived and died in a blaze of zeal, th compels me to admit I saw it in Nazi youth, in a er key I see it recur about every five years in the lage cricket club Women don't seem to get it in the ne intensity and are much more long-winded It may just a part of the cogwheel evolution of man, but of things I am sure, that active hourly participation ither a sign or a cause of health in these urges and that re is a deadly sequence of general approval, funds, bilisation, decay Cables of gold can only anchor ships the spirit

* * *

My dear John and Jane —So you've been reading the *ncet* students' number Well, I never ! It certainly esn't seem like seventeen years ago that I was pulling ur father's leg because of his twins and he was persuading e to stand as godfather And now you both write to me ying you're going to start medicine and please will I ll you what the boys and girls are like at the different ondon hospitals as you've read the prospectuses and ey all seem very much the same, and the staffs have all t just about as many Sirs as each other I'm sorry say I don't know all the London hospitals, and even e ones I do know I'm not quite certain about But ll have a try, and if you show this letter to any doctors u happen to meet, they'll certainly tell you where I'm rong and where (if anywhere) I'm right

Ladies first *King's* girls are tall and strong and ean-looking, and have a higher proportion of blondes an the general population They are nice and sensible d good at games And I don't see how many of them n avoid getting married *U C H* girls are very ever, and I think a lot of them are socialists, because ey think about other things besides work They don't ix very much with the boys so I suspect both the boys d the girls are a little bit shy The *Royal Free* girls e the smallest ones of all Some are very clever, and few are good at games But lots of them are awfully od at knitting and cooking and seeing if your socks are ended I expect you'll think I'm prejudiced because ur Auntie Mabel was there—and perhaps you're right

Now for the boys *Bart's*, remember, is very, very, d And if you've been old—and famous—for very, ry long, well, you'd expect to be a little proud of it it as one of the Royal Free ladies said to me the other y, when you get underneath their shells you find ey're just as nice—even nicer—than the others *y's* I like the Guy's boys They're tough and good games and full of beer And they don't pretend to very clever But the funny thing about it is that spite of it all I'm not sure that they aren't really the verest of the lot *Thomas's* boys are very big In fact, your Auntie Mabel says they're all giants In other ways I think they're about half way between Bart's and Guy's *King's* boys look the same as Thomas's one's to me *George's* men (I dare not call them boys) prove that you can wear a fancy waistcoat and be a good doctor at the same time *U C H* boys are clever at physiology and biochemistry and blood-proteins, but for all that I wouldn't mind going there if I was ill I can't tell you about *Mary's* or *The London* or any of the others, not because they aren't very good hospitals, but simply because I don't know about them I suggest you drop a line to your Uncle Tom Cobley and see what he's got to say on the subject

Well my dears, I've done my best, and if you can't make head or tail of this letter you're a sillier pair of billies than I thought

Your loving Uncle Jim

* * *

"It'll clear up," said the manager confidently, joining us at the hotel door I was pessimistic, but Popplethwaite said he was sure the manager was right, he felt it in his bones We left the hotel in a drizzle of rain, but as we struck along the country road we could see the banks of mist rolling slowly up the hill sides, and every minute the increasing light revealed more of the detail in our surroundings Popplethwaite gave a whoop of joy as a break appeared in the pall of cloud and released a shaft of brilliant sunlight which picked out a forest on a mountain ridge As we walked along the lakeside road the sky was transformed from leaden grey to dazzling blue, and every stage in the birth-pangs of a belated but glorious day was reflected in the face of the water Steam arose in thin clouds and struggling wisps from the drenched road and flies began to drone in the moist heat As we climbed out of the valley through the foothills only small pools here and there hinted at the metamorphosis which we had witnessed little more than an hour before We toiled up the hill carrying our coats on our arms The afternoon was well advanced but the sun beat down on us as though he had been at his zenith No bird sang Only the flies flouted the conspiracy of silence, driven to a frenzy by the vibrant heat An astonishing variety of butterflies failed to excite any comment A gorgeous Red Admiral fluttered clumsily across our path unheeded From time to time we stopped, ostensibly to admire the magnificent panorama which was opening out behind us as we climbed, but actually to allow us to recover our breath and to wipe from our faces the sweat which dripped from our eyebrows and trickled over the lenses of our spectacles "Could I persuade you to take a cup of tea with me ?" I inquired, looking at Popplethwaite as I moistened my lips "And how," he replied, scanning the quivering horizon like Robinson Crusoe We laboured on in silence broken only by occasional sighs and smothered groans Suddenly we accelerated our pace both of us having seen in the distance a farmhouse, and in the garden a crooked notice-board from which a piece of paper fluttered When we were within twenty yards of it Popplethwaite darted forward with an alacrity that astonished me He was still standing in front of the notice when I reached him panting and sweating Printed in Gothic letters of various colours (seemingly in an attempt to achieve originality) were the words.

NO TEAS NO EGGS NO CIGARETTES

* * *

In these changing and uncomfortable times there is something strangely comforting about the Moor, she is so solid and permanent, seeming to smile tolerantly upon the puerile activities of man If bombs fall on her she hastens to cover the holes with heather expeditiously and unfussily rather as a sensible mother might wipe away the milk spilt by a sick child My latest visit was all too short Staying at a place where I have often stayed I dined off duck and green peas and breakfasted off sea-trout There was a canter on a stocky little mare who rapped on well, as we say, and a swim stark naked in a moorland stream Afterwards the spotted dogs put up a vixen who smiled at them over her shoulder and led them a dance of several hundred yards before giving them the slip by the simple expedient apparently, of dematerialising herself and becoming absorbed into a rock I have a feeling, Mr Schickelgruber, that the Moor is laughing at you

Letters to the Editor

MEDICAL COOPERATION WITH RUSSIA

SIR,—An Anglo-Soviet Medical Committee has been formed to arrange the interchange between the medical profession of this country and the Soviet Union of the latest material on the clinical and scientific aspects of medicine Such an interchange can be of considerable value at the present time to members of the profession in both countries and we believe that a large number of doctors in this country would be willing to cooperate in the work Those interested and those prepared to assist by summarising and abstracting English articles and translations of Russian work should write to the hon secretary, Anglo-Soviet Medical Committee, c/o Royal Society of Medicine, 1, Wimpole Street, W 1

Lord DAWSON OF PENN, F R C P
Dr W E GYE, F R S
Sir GOWLAND HOPKINS, O M , F R S
Sir PHILIP MANSON-BAHR, F R C P
Prof JOHN A RYLE, F R C P
Prof WM FLETCHER SHAW, P R C O G
Sir ALFRED WEBB-JOHNSON, P R C S
Sir CHARLES WILSON, P R C P

THE GROUP O DONOR CARD

SIR,—We wish to draw attention to the risks that may be run when the recorded blood-group of a volunteer blood donor is accepted without confirmation There are now so many members of emergency donor services available that when a volunteer is required for an urgent transfusion the chances of one with a donor group card coming forward are high If there is extreme urgency and the donor presents a group O card there may be a temptation to use his blood without further test Danger is, of course, entirely obviated if a direct compatibility test is employed, but in an emergency the doctor, who often finds the collection of a sample of a patient's serum for the test a tedious affair, may be tempted to dispense with it and rely entirely on the evidence of the card that the volunteer is a universal donor He may regard it as an additional safeguard that this donor has been used before, not realising that the destination of the previous donation might have been a plasma or serum pool where a knowledge of the group is immaterial and re-checking is often dispensed with

Errors in mass grouping have been estimated to be as high as 10% in some places, and these may be due either to technical or to clerical mistakes In our experience the commonest mistakes have been due to the presence of cold agglutinins—group O being reported as A, and A as AB—but we have recently had an instance of a group AB donor being issued with a group O card in error by the clerk There are also many other possibilities of clerical error even with the most careful checking Since one of the main purposes of mass grouping in war-time is to segregate into an emergency list selected individuals of group O who live or work near the bleeding centres and who can be called on at short notice, the question arises whether the issue of the group O card should be permitted to the emergency donor without an independent confirmation of the group

The possession of a group card gives the volunteer donor a real sense of responsibility and it is to him a source of satisfaction to know that he is registered in a national transfusion service Moreover, the card is of value when he wishes to transfer to another district, and for these reasons it would be undesirable to limit the issue of these cards in any way We feel, therefore that the cards of guaranteed universal donors should be clearly marked "Group O confirmed" with a rubber stamp or preferably a punch, and that this mark should have a definite significance throughout the country The fact that the group had been checked by an accepted standard would make the risk extremely remote This system of confirmation could, of course, be extended to all blood groups

In conclusion however, we wish to stress that a direct compatibility test *should* be made in all cases

W H CANT
Regional Transfusion Officer, Birmingham
W H MCMENEMEY,
Pathologist, Worcester Royal Infirmary
A G SANDERS,
Regional Transfusion Officer, Oxford

SULPHANILAMIDE IN FIRST-AID

SIR,—There has recently been discussion not sulphanilamide should be applied to woun first dressing—e g , by a first-aid party, before is transported to hospital An attempt has be in this laboratory to study the question experim

Rabbits were anæsthetised and a penetrating made through the muscles of the thigh, with one through the skin on the medial surface and the other lateral surface When completed there was a central about ¼–½ in square and about ¾ in deep su lacerated muscles over an area about 1¼ in square 0 2 g sulphanilamide as a dry powder was smeared over one side (medial) of this wound, and the skin on each side was closed by sutures The rabbits immobile by barbiturate anæsthesia After 5 hours, or 24 hours, the rabbit was killed and samples for estimation were taken from the wound cavity and from adjacent muscle on the side (lateral) opposite to the amide Suitable controls were also taken to det concentration of sulphanilamide in the animal as a In this way it was possible to determine how much of sulphanilamide had reached the depths of a wound of above dimensions Briefly, it was found that by *diffusion the sulphanilamide had penetrated well* in one of the wounds, had *penetrated slightly* in one fifth, and ha *not penetrated at all* in the remaining three fifths of the cas

In a recent paper (*Lancet*, 1941, 1, 786) it was shown that sulphanilamide does not penetrate by local diff into living tissue more than 2–3 mm , and that even in dead tissue its diffusion during the first 6 hours is limited If there are convection currents in the wo fluid, however, it might be carried much further down t wound cavity

The application of these results to first aid p is properly a matter for surgical experts to decide , b it seems that unless the sulphanilamide were worked down into the wound cavity with a spatula or insufflator, which is not advisable under first aid conditions, its action would usually be restricted to checking bacterial growth on the surface of the wound If the casualties are to receive operation within a few hours it does not seem justified to go to much trouble and expense to secure such a limited result If treatment will be long delayed as under battle conditions, the procedure may be m valuable

FRANK HAWKING

National Institute for Medical Research

SOLDIERS AT CIVILIAN V D CLINICS

SIR,—Dr Erskine says that a soldier diagnosed bacteriologically as gonorrhœa was diagnosed "urethritis" when he arrived at the military hospital exactly the same occurred when a man was sent from my clinic My pro forma stated the diagnosis, and that I ha begun treatment with sulphapyridine so that the m might be rendered uninfective as soon as possible, as th might be delay in reaching the military V D hospital

I agree with Colonel Osmond that every soldier shou bring a pro forma duly completed, but in many ins these forms are either not brought or improperly filled in I have on several occasions made out a pro forma, a when the man attends again he does not bring it, a another has to be filled in and completed from my car

The V 44 can be folded once and kept in the pay bo and takes up no more room than a photo I know th the men would not consider it a burden , in fact th would welcome the idea, especially those who have be having "surveillance tests" in different parts of t country for nine months or more without ever hav their final test , thus, I believe, losing proficiency in certain cases

I am glad it is now forbidden to give sulphapyrid in suspected cases of gonorrhœa in the Army, and w it could also be stopped in civilian cases I am sure t if Army patients cease to attend civilian clinics specialists at the clinics assume the man or unit , moved , this is obvious I imagine that the dermatologist, R A M C , will have much the difficulty as the civil V D specialists when a man g for his "final test" Having been a specialist d tologist, R A M C , in the 1914–18 war I can appre both points of view I am satisfied that the ex on (those actually treating cases) as distinct from administrative section of R A M C dermatologists welcome a simplification of the present difficulty the lines suggested

atients such as commercial travellers and actors are e properly comparable to the present Army in regard mobility than are merchant seamen Deductions ed on a practical experience of smooth working with civilian transfer card V 44 for 20 years cannot fairly dismissed as theorising

Bradford　　H H WHITE

SIR —In his reply (Sept 6) Colonel Osmond has shown at he recognises certain shortcomings of the pro ma which should be sent with a soldier when he attends ilian clinics but he does not appear to favour the e of form I 1247 (or V 44) which contains the essential formation required To quote from his letter " [Most] my M O 's of today are the G P 's of yesterday " who e ' notoriously bad at filling up forms " Since there are " multiplicity of forms which he has to complete," it ould save paper and time in unnecessary summarising a man attended a civilian clinic with his I 1247 form s the necessary information would then be available t would lead to more efficient treatment and would save much time for the M O of the civilian clinic who is now unable to complete his work in the official hours on account of increased attendances due to Service cases The ggestion that a soldier has so much kit that he cannot rry an I 1247 is irrelevant, for he can collect and return is form just as simply as he can collect and return a o forma I have sometimes had the cooperation of my M O s who support my point of view, and I believe is unofficial method has been helpful to all parties regard to Colonel Osmond s third point I have efinite evidence that many men who cease to attend gularly are not receiving treatment elsewhere, and I el that some solution to the problem on the lines I have ggested should and could be found On this point I ould ask whether a soldier suffering from V D has rect approach to his M O or has he first to explain s condition to an N C O ?

In defence of the merchant seaman I would say that aving regard to the conditions of his employment I ave found him a most satisfactory attender And he es bring a V 44 with him '

I would assure Colonel Osmond that as he knows, I ave already given more than ' a second thought " to ese problems, and I would suggest from my experience dealing with these men that it is the present official egulations which " though admirable in theory, are nworkable in practice '

Queen Anne S reet W 1　　DAVID ERSKINE

CALCIUM AND PHOSPHORUS STUDIES IN NORMAL PEOPLE

SIR —Dr Robertson throws a great deal of literature t my head almost all of which is irrelevant to the oints I raised in my last letter

Calcium content of the tissues —Is the tissue calcium at the ame level under an intake which just meets normal require ents as under a high intake ? This is the only issue The terature he quotes is quite irrelevant to this question Moreover, a man suffering from pronounced arteriosclerosis (it oes not matter whether his calcium deposits are primary or econdary) has a great deal more calcium in his system than normal person How did this calcium reach the system, if s Robertson maintains an overdose is impossible because the nwanted calcium is rejected via the fæces ? I have also eferred in my last letter to positive feeding experiments low was this possible ?

Advantages of a high calcium intake —Again the literature e quotes is irrelevant to the point I raised Obviously, if the alcium intake is so low as to lead to disastrous results, it is n intake which falls below minimal requirements But this not the issue I stated that no data are available to judge hether an excessive intake of calcium which he calls optimum ' is more desirable than one which meets minimal equirements None of the authors he quotes are dealing ith this point, and my question still stands

Renal excretion of calcium —In his paper he states that " the ealthy body rejects in the fæces whatever calcium it does not equire He admits now that under an excessive intake ome of the superfluous calcium leaves the body via the kidney This is an important fact, because the superfluous calcium circulating in the blood and coming in contact with tissues already saturated with the substance predisposes to deposits We found that in certain circumstances the kidney may perform eighteen times more work than necessary in removing superfluous calcium Bollah found that in some cases of arteriosclerosis, a condition which we know is very prevalent, the kidney may excrete more than 1 5 g of calcium daily Let Robertson calculate, say, for a period of ten years the amount of kidney work under a renal output of 1 5 g per day and 0 4 g per day He will find that the amount of extra work is enormous

Detection of calcium insufficiency —Robertson says " If large sections of our population are ingesting less calcium than is necessary for equilibrium between intake and output, then they are getting insufficient calcium " But such data do not exist On the contrary, there is definite evidence that in the bulk of the population there is a balance between intake and output, for a permanent negative balance must give rise to abnormal clinical manifestations In our cases, under a calcium intake between 0 39 and 0 579 g there was a balance between intake and output These figures agree well with those of Sherman and others Under this intake there was no retention of calcium, but under a higher intake there was retention of this substance This is the crux of the *whole problem Is it more desirable to have a calcium intake* which just maintains a balance between intake and output, or one which stores calcium in the body to the greatest possible extent ? We followed the matter up (Harris, Ireland and James, *J Physiol* 1941, 99, 370) and found that under a high base intake the calcium is stored in the body, but it replaces some of the nitrogen (protein), a good many other things might have happened which we have not ascertained

There was a time when a similar stunt to that of calcium was organised in regard to protein It was then maintained that a large section of the population was suffering from malnutrition because the protein intake did not come up to a certain high standard which we know now is quite unnecessary In our paper just mentioned we found that potassium is retained in exactly the same way as calcium Is the bulk of the population suffering from potassium deficiency ? We found also that there is retention of protein to a very great extent (High Blood Pressure, London) There is little doubt that what applies to calcium, potassium and protein applies to a great many other substances, but if all these substances were pushed, each to the fullest extent of its storage capacity, each competing with the other for the limited space in the tissues and blood stream, each ousting the other, conditions would be created which would hardly be favourable to optimum health I am much concerned with this problem We found that in cases of high blood pressure a low protein intake which was just sufficient to balance the output lowered the blood-pressure and in other ways improved the condition of the patients But we found that the level of protein in the tissues is lower under a low than under a high protein intake And I have asked myself whether in the long run a low protein level in the tissues might not be undesirable Years of clinical observation have led me to believe that an intake which just meets minimum requirements, at least so far as middle age is concerned, is also the optimum intake We all know too that frugal livers, who are moderate with food in general (I presume such a person is also moderate with calcium), live longer than hearty feeders,

Of course these are mere clinical impressions But so abyssmal is the ignorance of the people who are concerned with calcium requirements that they are not even aware that there is a problem as to what really constitutes optimum requirement Robertson is only able to quote authorities, but some of the seniors have given exact figures—so many milligrammes of calcium per kilo weight as constituting optimum requirements Would they come forward and give us the evidence on which these calculations are based ? Have they proved that life is prolonged by their " optimum ' intakes ? The whole calcium extravaganza shows that laboratory work unchecked by clinical observation is dangerous

Calcium retention in the middle-aged —Let us visualise two reservoirs, one holding a pint and the other a gallon, both of them full to capacity An added inflow of the same amount of fluid in one as the other will give the same outflow in both Obviously in the fully saturated cases the middle aged cannot differ from the young and Robertson s table IV is therefore irrelevant to the whole question

Osteoporosis —I agree that glandular disturbance has something to do with this condition In one case reported by Meulengracht the calcium intake was actually satisfactory Osteoporosis is a rare condition All this proved that osteoporosis due to calcium deficiency alone is even more rare (if there is such a condition)

An unduly high standard of calcium requirement has been arbitrarily set up, entirely unsupported by evidence, and 15–20 million people have been declared to be suffering from calcium deficiency because their intake is supposed not to have come up to this standard I challenged them to produce a dozen adults who show manifestations of calcium deficiency they have not done so In these circumstances it is an insult to the intelligence of your readers to ask them to believe that a large section of the population is suffering from calcium insufficiency

Liverpool I HARRIS

SULPHATHIAZOLE IN STAPHYLOCOCCAL PNEUMONIA

SIR,—The excellent result of very heavy dosage with sulphathiazole in the case reported by Major McCollum in your last issue is of extreme interest as it is, as far as I know, the first reported case of recovery from severe staphylococcal lung infection due to a drug of the sulphonamide group, although successful treatment of staphylococcal tracheobronchitis has been reported (Shulman 1941) McCollum states that primary bronchogenic staphylococcal pneumonia is a non-septic form of pneumonia This is not quite clear to me, it is certainly a suppurative lung lesion with microscopic if not gross abscess formation in the lung, and is not infrequently accompanied by a positive blood-culture This was so in 50% of the series of Chickering and Park (1919), and a number of other cases with positive blood-culture have been reported—e g, case 1 of Burgess and Gormly (1930), Apert and Porak (1911), Clark and Barysh (1936) The onset of staphylococcal pneumonia is sudden but there is nearly always a preceding upper respiratory infection, the commonest being virus influenza The prognosis is not always as gloomy as McCollum suggests Bullowa and Gleich (1938) give the mortality as 41% under two years, 12 5% between two and twelve years and 54% in adults In this connexion it is important to note that staphylococcal lung infections fall into two distinct groups There is the fulminating type with mortality 50–80% (Reimann 1938, Chickering 1937), and a benign type of low fatality in which radiographically, if not clinically, there is cavity formation in the lung The larger series of cases reported do not differentiate between these groups in giving figures, but a study of reported cases shows these two groups very clearly

St James Hospital, S W 12 RONALD MACKEITH

Shulman M H *New Engl J Med* 1941 224 978 Chickering, H T and Park, J H *J Amer med Ass* 1919 72 617 Burgess, A M and Gormly, C F *New Engl J Med* 1930 202 261 Apert, E and Porak R *Bull Soc méd Hôp Paris* 1911, 32, 149 Clark F H and Barysh, N *Arch Pediat* 1936 53 417 Bullowa, J G and Gleich, M *Amer J med Sci* 1938, 196, 709 Reimann H A The Pneumonias Philadelphia, 1938, p 196 Chickering in Cecil s Practice of Medicine, Philadelphia 1937, p 183

TELL YOUR AGE AND JOB

SIR,—To ensure a balanced representation of medical opinion it would be helpful if the ages and types of work of all the members of every medical council and committee in this country were published and, in future, these data might be added as a routine

Great Bookham, Surrey RICHARD A. MANCLARK

IN QUEST OF A CURRICULUM

SIR,—The two leaders in your Students' Guide enshrine many ideas which I have harboured, both as a student and since qualification If translated into action, preferably after the war, your suggestions would raise the whole standard of our profession The articles on medical education in the Dominions and the various countries on the temporarily Nazified continent of Europe give scope for much thought I do feel a return even be it a modified return, to the old apprenticeship system is very desirable There is an unwholesome gulf between the clinical experience of the general practitioner and the specialist or teacher, whereas their work should be complementary It would be advantageous if the newly qualified did jobs in both voluntary and municipal hospitals to get a good bird s-eye view of clinical in its acute and chronic aspects As you suggest, time in the curriculum should be given to o anæsthetics, public health and pædiatrics, and vague discussion of the more abstract details of pat medicine and surgery which are of value only to specialist I should like to advocate a course of fi for all first-year clinical students, at present newly qualified men pass out of hospital with but mentary knowledge of the treatment of common emergencies such as accidents and sudden faints, or of arrest of hæmorrhage by pressure on the classical bl points A course in dietetics is also urgently n I know of no medical school which provides such a co and yet one of the commonest questions from patien "What can I eat, doctor?" Thanks to articles in popular press many laymen are more conversant dietetics than some doctors Yet knowledge of f values and balanced diets is of the utmost value practice There should, too be more instruction psychiatry Mental medicine is playing an increa important part in medicine A course of ten lect with six demonstrations of cases does scant justice to a vital subject A good psychiatric background is esse tial to the proper understanding of organic disea There should also be a few lectures on the history of medicine, for doctors should know something of their ri heritage from the centuries

Norwich J B GURNEY SMITH

CARE FOR HOME GUARD CASUALTIES

SIR,—May I add another cause for complaint to those given by your correspondents? It is not permissible to enrol men for medical services only but we are expected to train in first-aid and stretcher drill such as are willing to take on this as an extra duty, and even so, if and when required such trainees would be in the fighting line and unavailable as bearer squads In districts such as this, with areas of moorland, attention to casualties in reasonable time would be impossible For the pres I have arranged that 50% of each platoon shall have some instruction in the handling and transport of wounded but this is not good enough and every battalion ought to have a medical unit exempt from other duties The whole question of medical personnel and equipment urgently requires revision Is it too much to ask that you would approach leading members of the profession whose opinion would carry weight and get them to impress on the War Office the necessity of giving the matter attention, and that without further delay?

P L W WILLIAM,
Battalion M O H G

Cornwall

Public Health

From the Annual Reports

SOME METROPOLITAN BOROUGHS

Hampstead is one of the smallest but wealthiest of the metropolitan boroughs with a population of 71,250 and a rateable value of £1,570,000 In 1940 its birth rate was 11 1 and infantile mortality 49 Of the 796 birth in the borough 92 were illegitimate Maternal mortality was high (4 8) but the stillbirth-rate very low (11 6 Owing to the nature of its population, the percentage of illegitimate births is always high in Hampstead and from this we should expect high stillbirth infanti mortality and maternal mortality-rates, but the development of child welfare and the altered attitu of the public towards illegitimacy are gradually reducing its mortality though it still remains well above what it should be Of the 1159 deaths registered in the borou 136 were accredited to "other violence"

In 1939 the metropolitan boroughs of *Fulham* (popula tion 135,800) and of *Wandsworth* (population 330,00 agreed in their infantile mortalities of 47 and in ab ence of fatality from measles, but the birth-rate of the former was 13 5 against 11 99 of the latter and the adju death-rate 12 6 against 10 92 Notifiable diseases we very low in both boroughs The cancer mortality Fulham was 2 05 and in Wandsworth 1 79 and tu culosis mortality 0 84 in Fulham and 0 69 in Wandswo

Dr John Macmillan in his 1939 report for Woolw gives a detailed list of samples, taken under Food

Acts both formal and informal which were found on analysis There were only three prosecutions regard to abstraction of fat from milk, in which fines ew shillings were imposed to encourage this highly tive form of swindling which is particularly prevalent e London area In one case a vendor was fined £1 £1 1s cost for selling milk from which 21% of the ad been abstracted In London especially in the fruit season there was a heavy demand for cream as abstraction of cream from new milk cannot be cted—in which it differs from the more common ustration of adding water—it is not an offence for ch the vendor can be brought to book unless the traction reduces the fat-content below the legal ndard We therefore have to allow the trade to n milk to some extent but when it is overdone and ected the penalties for doing so should be severe art from milk faults found in food samples are mainly to carelessness dirtiness illegal use of preservatives orrect labelling and ' new business ' An example this which occurs five times in Dr Macmillan's list coloured fruit-flavoured jellies coated with sugar sold glace fruits

Dr A G G Thompson s report for 1940 of the borough Lambeth is a short typewritten document revealing e influence of severe and continuous aerial bombard- ent on the public health The statistics deal with e whole year the first half was a time of great stress, ie second of violent commotion in which the ordinary usiness of public-health administration had to be hanged to cope with conditions of active military rather han civilian hygiene The Registrar-General s estimate of the population in the middle of the year—that is before the Battle of Britain started—was 210 650 against the 1939 estimate of 270 800 At the end of the year the number of persons holding ration cards was 160 000 so he statistics based on a population of 210 650 really elate to a population which in the course of the year had windled by more than a third and are therefore of no alue for comparison The year was an extraordinarily uiet one for infectious diseases Amongst the 1286 eaths registered in the borough there was only 1 from phoid 8 from cerebrospinal fever 1 from whooping- ugh 4 from measles and 7 from diphtheria Epidemics typhoid and other water-borne diseases were to be spected from the serious damage done to the water- upply system by the bombardment but they did not aterialise There were 38 deaths from suicide 32 om traffic accidents and 734 from other violence, which st we may presume were in the main due to enemy tion. The general death-rate was 19 72 compared ith 13 37 in 1939, but as over a sixth of all deaths were ie to other violence " and the reduction of popula- on would be mainly due to the exodus of persons in tle risk of dying except by violence the high rate in no nse reflects the health of the borough The corrected rth-rate was 15 52 against 13 17 in 1939, though the umber of births notified sank from 4814 to 3674 Taking l factors into consideration this rise in the birth-rate still puzzling As the stillbirths numbered but 114 id deaths in the first year only 144 (giving the very low fantile mortality-rate of 47) of which 42 were accredited premature birth and 37 to malformation it is clear at the war had little influence in causing premature bour

CHELMSFORD

The most interesting feature in Dr J Mervyn Thomas's port is that of the 367 deaths which occurred during 40 in the borough 116 were of persons over 75 years of e The general death-rate was 11 1, though a high antile mortality of 57 accounted for 28 deaths or arly 8% of all deaths There was no maternal mortality, ly 1 death from measles in the old zymotic group and deaths from violence The estimated population of e borough was 33 040 its density 6 9 persons per acre d 3 3 per inhabited house No special reason is given the detailed analysis of seven samples of water taken Nov 11, 1940 All the samples were satisfactory

BURY

According to Dr G M Lobban this county borough oved a record year for health in 1940 The official imate for the mid-year population was 55 310 which the lowest since 1919 and is possibly below reality, though low birth-rates and migration south, both mainly due to the depression in the cotton industry, have been decreasing the populations of the Lancashire towns for some years There was an increase in the birth-rate to 13 1 and of the death-rate to 17 5 but infantile mortality fell to 65, tuberculosis mortality to 0 42, and maternal mortality to 1 32 Of the 970 deaths registered 520 were in persons aged over 65 years 321 in those aged 45–65 82 in those aged 1–45, and 47 in those below one Cancer caused 131 deaths, giving the high rate of 2 37, but only 8 of the deaths were in persons below 45 years of age Of the 377 deaths attributed to cardiac and vascular disease only 10 were in persons below 45 years of age whilst 270 were in persons over 65 years of age Of the 47 infant deaths 25 were due to prenatal causes The incidence of infectious diseases was low the only one above average being cerebrospinal fever with 11 notifications and 1 death

Infectious Disease in England and Wales

WEEK ENDED SEPT 6

Notifications—The following cases of infectious disease were notified during the week smallpox 0 scarlet fever 958 whooping-cough, 3029 diphtheria 820 paratyphoid 182, typhoid 46 measles (excluding rubella), 911, pneumonia (primary or influenzal) 107 puerperal pyrexia 117 cerebrospinal fever 128 poliomyelitis 29 polio-encephalitis 3, encephalitis lethargica 3, dysentery 66, ophthalmia neonatorum 71 No case of cholera plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Sept , was 1287 including scarlet fever 120 diphtheria 239 measles 41 whooping-cough 578 enteritis 23 chicken pox 39 erysipelas, 24 mumps 6 poliomyelitis 2, dysentery 17 cerebrospinal fever 20 puerperal sepsis 14 enteric fever 29 german measles 1 polio encephalitis, 2 other diseases (non infectious), 44 not yet diagnosed, 88

Deaths—In 126 great towns there were 4 (2) deaths from enteric fever 3 (0) from measles 1 (0) from scarlet fever 18 (2) from whooping-cough 17 (0) from diphtheria 41 (4) from diarrhoea and enteritis under 2 years and 3 (0) from influenza The figures in parentheses are those for London itself

Bristol and Exeter each reported 1 death from enteric fever Ilford had 3 deaths from whooping-cough There were 6 fatal cases of diarrhoea at Birmingham and 5 at Manchester

The number of stillbirths notified during the week was 150 (corresponding to a rate of 30 per thousand total births), including 6 in London

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Parliament

The Stamp Peerage

At the next sitting of the upper house Lord Moyne will move that the writ for the present Lord Stamp (Trevor Charles Stamp, M B Camb) should be issued to him as third holder of the peerage The first Lord Stamp's eldest son Mr Wilfrid Stamp was with his father in the fatal air-raid and was killed at practically the same moment The Law of Property Act 1925 laid down that, where two persons have died in circumstances rendering it uncertain which of them survived the other. the younger shall be deemed the survivor in matters affecting the title to property The House of Lords on Sept 10 decided to accept this principle for another purpose Mr Wilfrid Stamp will be regarded as having momentarily succeeded to his father s peerage his widow and three daughters will therefore be recognised as holding the status and title proper to this rank. As he had no son the succession passes to the first Lord Stamp s second son

Road Traffic

In a debate on the national war effort on Sept 11 Mr ELLIS SMITH asked for more efficient transport facilities for the sake of the health and well-being of factory workers and deplored the effect on production of the increasing rate of road accidents Colonel J J LLEWELLIN joint parliamentary secretary to the Ministry of Road Transport, said the Government regarded the staggering of hours in factories as the main remedy for crush at the peak period This it was hoped to achieve by agreement between employers and workpeople More transport vehicles were being made the Army had undertaken to return 700 buses, and single-decker buses were being adapted to take 32 seated and 30 standing Short-distance travel was being discouraged by raising the minimum fare The increasing rate of road accidents was deplorable, the fewer the number of vehicles on the road the higher the accident rate seemed to rise It was difficult to know what to do about it, if, as he believed, the increase was due largely to the unfortunate fact that in war-time people—perhaps necessarily—were a little more reckless of life and limb Further it was impossible to have the same police supervision All road users must share the blame for the lack of road sense Lectures thereon had been reinstated in the school curriculum this autumn

QUESTION TIME

Increased Capitation Fee

SIR ROBERT GOWER asked the Minister of Health whether the doctors on the panel of the National Health Insurance scheme were to receive an increased panel payment rate, and whether he could make a statement on the subject —Mr ERNEST BROWN replied Yes, Sir From January next the doctors under the National Health Insurance Act will receive a capitation fee of 9*s* 9*d* instead of 9*s* per insured person

Transfusion Supplies

SIR ROBERT GOWER asked what use had been made hitherto of the accumulated supplies of transfusion blood, and whether the existing quantities were regarded as adequate — Mr E BROWN replied Considerable numbers of blood transfusions, for which both blood and plasma are required, have been given in dealing with air raid casualties and Service patients, and increasing use is being made of transfusion therapy in hospital practice generally I am advised that the existing donor panels and their associated blood stores, together with the plasma produced at the processing centres, should provide adequate resources for casualties on a considerably larger scale than was experienced last autumn and winter

Sanatorium Beds in Wales

Mr JAMES GRIFFITHS asked the Minister of Health if he had now considered the report of the Welsh National Memorial Association, and what steps he had taken to meet the deficiency of 400 beds at sanatoria and hospitals in the Principality —Mr E BROWN replied The shortage of institutional accommodation for tuberculosis in Wales, which is less than is suggested, has been receiving close attention and proposals are before me which it is estimated will provide 114 additional beds, by the erection of huts at two existing sanatoria and by structural extension at a third

Allocation of Medical Man-power

Sir E GRAHAM-LITTLE asked the Minister what was the present position of the Central Medical War Committee with regard to the allocation of medical practitioners to various civilian and military services, whether the new committee under the chairmanship of Mr G H Shakespeare superseded in this respect the C M W C, and whether a practitioner, dissatisfied with the decision of the C M W C might appeal to this superior committee —Mr E BROWN replied The C M W C continues to act as a supply committee in providing the doctors required by the various civilian and military services, and is not in any way superseded by the Medical Personnel (Priority) Committee, although in selecting the individual doctors it will naturally conform with any decisions taken by the Government on the recommendation of the Shakespeare Committee as to the order of priority in which the demands of the various services are to be met It is not intended that an appeal from a practitioner should be entertained

Stay-put Order for Hospital Staffs

Mr CULVERWELL asked whether, in view of the difficulty in retaining nursing, attendant and domestic staff in hospitals and municipal institutions, the Minister would include them in the schedule of undertakings under the Essential Work (General Provisions) Order, 1941, as being services essential to the life of the community —Mr E BROWN replied I have recently made an order under which persons employed whole time for more than twelve months as nurses in mental hospitals (where certain conditions as to rates of pay and conditions of service are complied with) are required to continue in such employment unless their services are dispensed with in accordance with the provisions of the order For the purpose of conserving the staff of hospitals this is preferable to scheduling hospitals as undertakings the Essential Work (General Provisions) Order, 1941. question of making a similar order applicable to generally is under consideration

British Social Hygiene Council

Mr RHYS DAVIES asked whether the Minister wa that this council was likely to curtail its activities o lack of funds, and would he take steps to prevent this ing —Mr E BROWN replied The council has acq me with their financial position, and I have suggested they should cooperate with the Central Council of Health Education which is the agency recognised by the Government for education on matters of health generally The council has welcomed the suggestion

New Orthopædic Units in Scotland

Dr H B MORGAN asked the Secretary of State for S land whether he could state the situation of the six new orthopædic units in Scotland, how many orthopædic surgeons were engaged, and the number of junior surgeons or medical staff appointed in each case, and whether these units were run on the lines recommended and approved by the Delevingne Committee —Mr T JOHNSTON replied The orthopædic units in question are at Stracathro Hospital, Angus, Princess Margaret Rose Hospital, Edinburgh, Peel Hospital, Selkirkshire, Larbert and Killearn Hospital, Stirlingshire, and Hairmyres Hospital, *Lanarkshire* There are 10 orthopædic surgeons, of whom 4 are employed whole time The junior staff consists of 1 junior surgeon who acts as registrar in each of the units, except Peel Other junior medical staff is attached to each unit by the medical superintendent according to the number of orthopædic cases under treatment, up to a maximum of 3 per 200 beds The answer to the last part of the question is yes

The Fortified Loaf

The proposal to add calcium to white flour has not been abandoned The fortification of white flour with vitamin B has already begun in certain mills supplying the South Wales area and will shortly be extended to other districts (Major LLOYD GEORGE replying to Sir ERNEST GRAHAM LITTLE)

Disablement Pensions

MISS WARD asked the Minister of Pensions (1) if he would make public the rates of pensions to be paid for permanent specific injuries arising from the present war, (2) whether, in assessing the compensation to be paid to women who suffered amputations as a result of the present war, he would take into account the added obviousness of the disability by comparison with men, discomfort in wearing artificial limb attachments, damaged wear and tear of clothing, loss of amenities of life, and the severe handicap in the prospects of matrimony, and the severe handicap in the domestic sphere, and if he would state the proportion of the award of 9*s* 8*d* per week paid as compensation for the loss of a leg and the foregoing items, and (3) who was responsible for the award of 9*s* 8*d* per week pension to women who suffer amputation of leg below knee with stump exceeding inches, seeing that an award of £1 per week was paid to 1914-18 war pensioners with exactly the same disability —Sir WALTER WOMERSLEY replied Assessments for specific injuries are given not as an absolute direction but for the guidance of medical officers in reporting on claims Assessment of disablement is by comparison with a normal healthy person of the same age and sex and takes into account all effects of the disabling condition It would be inappropriate to a the disabling condition an exactly similar amputation differently in the case of a woman and a man In the main the assessments now are the same as those in the 1919 warrant In certain cases they are higher and in others lower Assessments for amputation through the leg below the knee, with a stump exceeding inches, are normally 40% as against 50% in 1919 The rea is that the advance in surgery and in the design and fit of artificial limbs has been such that an assessment of 5 is no longer justified There is no case of an amputation which an award of £1 a week would attach in Great War where the New War award would be 9*s* 8*d* a week warrant of 1919 from which the rate of £1 a week is made no provision for women

Clothing Coupons

A supplementary issue of coupons will shortly be made children who are unable to benefit from the lower values assigned to the smaller sizes of clothing, while discussions are taking place with the representatives of indu s to ensure that they have sufficient coupons to meet essential needs In the meantime, industrial clothing ssary for the health or safety of workers may be obtained on free on certification by a factory inspector (Sir rew DUNCAN replying to Sir LEONARD LYLE.)

vacuees and inmates of institutions have the normal ration clothing coupons Charitable organisations wishing to ect coupons for knitted garments supplied to such persons uld apply to the Board of Trade for the necessary authority, ich will entitle them to use the loose coupons for making the purchases of wool (Replying to Mr CULVERWELL)

Medical News

yal Society of Medicine

On Friday, Sept 26, at 2 30 P M , Miss Ida Mann and Dr B D llinger will read a paper to the section of ophthalmology mustard gas injuries to the eyes in rabbits and men

ourse in Tropical Medicine

The London School of Hygiene and Tropical Medicine has ranged a five months course, beginning on Sept 22, to pre are postgraduate students for the diploma in tropical medi ne and hygiene granted by the English Conjoint Board

British Postgraduate Medical School, London

During the week Oct 13–17 Mr R Watson-Jones will give at the school a course of lectures and practical demonstrations on the treatment of fractures with special reference to war conditions Further information may be had from the dean of the school, Ducane Road, W 12

Royal Free Hospital

An A. M Bird postgraduate scholarship in pathology has been awarded to Dr C Thomas

Biochemical Society

A meeting of this society will be held in the School of Biochemistry, Cambridge, on Saturday, Sept 27, at 11 45 A.M., when short papers will be read

arpenden Auxiliary Hospital

On Saturday, Sept. 27, at 3 P M , Lady Malcolm Stewart will pen the new hospital in Carlton Road

risoners of War

The following R A M C officers have been posted as risoners of war —

T/Major D L Charters M B Glasg W S Captain T I V erguson L R.C P I W S Captain W G France M B Leeds, tain J B Fulton M B Manc Captain J E Gray M B Durh, Captain J G Jamieson M R C S W S Captain F L G one L R.C P I , and T/Major W S Sykes M B Camb

dical Honours

he George medal has been awarded to Acting Squadron-der Joseph MacCarthy, M B N U I

he R.N V R officers' decoration has been awarded to geon Commander T W Drummond, L R C P E, geon Commander H O Martin, L R C P E , and Surgeon nmander H E Hall, M.D Belf

nburgh Panel Committee

t a meeting of this committee held on Sept 9 a resolution passed, "That this meeting appreciates the action already en by the British Medical Association in endeavouring to e introduced into National Health Insurance the depend s of insured persons and, while keeping in mind this end, uld in the present emergency urge immediate action for the usion of the dependants of men serving in H M Forces "

ncer Act, 1939

ast year the Minister of Health extended the period wed to local authorities for the preparation of schemes viding expert diagnosis and skilled treatment for their cer patients He has now further extended this respite il March 31, 1942, but he urges authorities who have not ady done so to submit interim schemes in the meantime the present he feels efforts should be mainly directed making full use of existing facilities, by the payment of onable travelling expenses and by making widely known facilities which are available. To help patients in specially erable towns he is trying to establish cancer treatment res at E.M S hospitals outside the danger area But e centres will be a temporary emergency provision and will relieve the local authorities of their duty to make their arrangements for the diagnosis and treatment of cancer

Notes, Comments and Abstracts

SICK-BAYS FOR CHILD EVACUEES

A LESLIE BANKS,
M D LOND , M R C P , D P H
REGIONAL MEDICAL OFFICER
IN CHARGE OF REGION

L G NORMAN,
M D , B SC LOND., M R C P.
REGIONAL MEDICAL OFFICER

ELSA ALDEN, S R N , S C M , H V
WOMAN INSPECTOR

MINISTRY OF HEALTH, REGIONAL OFFICE, CAMBRIDGE

THE first evacuation of school-children from London took place in September, 1939 Most of them were evacuated in school parties unaccompanied by their parents A civil-defence region consisting of nine administrative counties and four county boroughs formed to the greater part of its extent a reception area for this evacuation, and a total of 129,800 children were received During the quiet months that followed there was a drift back to London, but some 30% of the children remained In September, 1940, a second large-scale evacuation began, and by the end of January, 1941, the added population of the region numbered some 200,000 of which a large proportion were children either "unaccompanied" or accompanied by their parents

Investigation suggested that the number of children's beds in hospitals would be adequate for cases of serious illness but that additional accommodation would be required for minor sickness which would normally be nursed at home but could not always be nursed in billets Sick-bays were accordingly set up to meet this need From their earliest inception these sick-bays were reserved for cases of minor illness, and separate hostels were set up for healthy children, including difficult and unbilletable children, and cases of enuresis

The decision to set up a sick-bay was dependent on local needs and whether other sick-bays were available within a reasonable distance In general the provision was based on a standard of 5 beds per 1000 child-evacuee population Each sick-bay usually served a number of county districts under the general coordination of the county medical officer This permitted the pooling of all sick-bay accommodation within the county, and adjoining counties were linked up through the regional office of the Ministry of Health The day-to-day administration of the sick-bays rested with the local district council, but in one or two instances a county council set up and administered its own sick bays

By the end of the winter of 1939–40, 22 sick-bays with a total of 419 beds had been set up in the region During the summer months of 1940 a number were placed on a care-and-maintenance basis owing to the seasonal decline in minor illness, and others near the coast were permanently closed With the approach of winter those on a care-and-maintenance basis were reopened and further accommodation was also provided to meet the needs of the fresh evacuation from London By the end of February, 1941, 21 sick-bays with a total of 474 beds were available in the region, and 3279 children had been treated A summary of the principal ailments treated is in the table

As a general rule, each sick-bay admitted all types of case, but as a temporary measure it was necessary once or twice to set aside sick-bays for a particular purpose—e g , the reception of scabies, chickenpox, measles or whooping-cough The sick-bays had 10–50 beds, larger units were avoided because they increased the risk of infection, and seemed to be more often in quarantine than the smaller Most of the sick-bays were set up in unoccupied private houses because they needed few adaptations Other types of accommodation used included a disused cottage hospital, convalescent homes, a smallpox hospital and a hotel

In planning the layout, accommodation for both patients and staff had to be considered In choosing suitable rooms for wards a floor-space of 60–70 sq ft per bed was allowed No standard as to size of wards could be laid down but in general many small wards increased the difficulties of nursing, whereas too large wards tended to spread infection Where possible wards of 4–6 beds were chosen Separate bathroom and sanitation were necessary for the patients, and in sick-bays taking scabies cases a separate bathroom for these was desirable The surgery serving also as examination-room and dispensary was usually on the ground floor, and in some a minor-ailments clinic for evacuees was held An isolation-room for the segregation of suspected cases of infectious disease was also provided As the children were usually only confined to bed for a small part of their stay, where there was no separate playroom it was necessary to have a dining-room which could also serve as one Facilities for outdoor recreation were provided wherever possible

PERSONNEL

The number of beds in each sick-bay determined the number of nursing staff to be employed At least one, and usually two or more, state-registered nurses were employed, the rest of the staff being assistant or auxiliary nurses Many nurses working in these units were recruited from the Civil Nursing Reserve and were paid at the appropriate rates Members of the British Red Cross Society and St John Ambulance Brigade also served, and both nursing and domestic staffs were supplemented by voluntary workers The cases treated did not need elaborate equipment The usual sources of equipment were central and regional Government stores, supplemented by local purchase where necessary

The clinical care of the children was undertaken by local general practitioners, and one practitioner was usually nominated by the local medical war committee for this purpose, for it was generally preferable for one doctor to take charge of the treatment of all cases, more particularly where patients were sent in from a distance This doctor also controlled admissions and discharges. Payment for this clinical care for unaccompanied children was made through the pool administered by the local medical war committee, and a fee of 7*s* 6*d* per quarter was paid for each accompanied child, the parent contributing as much as could be afforded In one or two instances, the doctor was paid a retaining fee for general administration on behalf of the medical officer of health, but as a rule the local M O H took charge of the administrative arrangements himself

The county medical officer acted as coordinator for the sick-bay accommodation within his county, and by means of a system of weekly returns it was possible to correlate all the sick-bays in the region This regional correlation proved in practice to be extremely useful, for when sick-bay accommodation in one county was seriously depleted by an outbreak of infectious disease children were transferred without difficulty to sick-bays in adjoining counties Similarly, a sick-bay set aside in one county for cases of scabies could serve adjoining counties Consultants were rarely required for the minor ailments admitted Patients who became seriously ill were transferred to hospital, but it was occasionally necessary to call on the services of a general physician or an ear, nose and throat surgeon

ANALYSIS OF WEEKLY RETURNS OF 3279 CASES ADMITTED BETWEEN NOV 25, 1939, AND FEB 25, 1941

Skin conditions—		Observation for appendicitis	17
Scabies	886	Rheumatism	12
Impetigo and septic sores	806	Threadworms	12
Ringworm	85	Rickets	7
Eczema	8	Fractures (following treatment)	17
Boils	26	Scalds	15
Septic chilblains	11	Minor infectious disease and contacts—	
Others	71	Whooping cough	15
Enuresis (temporarily accommodated)	107	Influenza	20
Chest conditions—		Chickenpox	24
Bronchitis	57	Measles	17
Pleurisy	3	Scarlet fever	1
Asthma	21	Pyrexia	8
Pneumonia	9	Epilepsy	3
Malnutrition and debility	84	Other nervous disorders	9
Ear, nose and throat conditions—		Gastric conditions	10
Tonsillitis	62	Adenitis	3
Otitis media	55	Jaundice	6
Following tonsillectomy	46	Chorea	23
Coryza	50	Nephritis	11
Croup	5	Miscellaneous (including 105 admitted for uncleanliness)	116
Mastoiditis	3		
Injuries to ear	5		
Others	17		
Eye conditions	30		

It can be said, therefore, that these sick-bays have, in addition to assisting the general billeting arrangements, provided facilities for the early treatment of disease, and thus resulted in a saving of hospital beds

TREATMENT OF BURNS IN SPAIN

L G. Oliveros uses a cod-liver-oil ointment infrequent-dressings technique in the treatm burns, and he is well satisfied with the results in 7 first degree and 20 of the second and third (*Rev espan* 1941, 2, 170) The ointment contains 25 of cod-liver oil and 100 international units of vitami to 73 g of lanolin The burn is washed with and dried by light dabbing with cotton wool, b being left unpricked The surrounding skin is with 90% alcohol The burnt area is then covered a thick layer of the ointment and a sterile dressing applied With first-degree burns the dressing is with a flannel bandage, but with those of second or degree the dressing is enclosed in plaster of-paris, wi padding In either case the dressing is left untouched 8 days By then most first-degree burns are h Second and third degree ones need a second appli of ointment, which is put on without removing the remains of the first, only the surrounding skin being cleaned with spirit The dressing is reapplied e 8 days for as long as necessary The advantages cl for this method are absence of pain, avoidance of second ary infection, rapid separation of dead tissue, and suppl scars Its drawbacks are that it does not prevent shock, that folliculitis may develop in the surrounding skin, though swabbing with spirit largely prevents this, that there is a danger of secondary hæmorrhage, and that the smell is very disagreeable

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Births, Marriages and Deaths

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SLOAN —On Sept. 10, at Ifield Sussex, John Macfarlane S major general late R A M C.B , C.M G , D S O , M B Gla

ORIGINAL ARTICLES

ME GUARD MEDICAL ARRANGEMENTS

A LAWRENCE ABEL, M S Lond, F R C S

GROUP MEDICAL OFFICER, HOME GUARD

WE are reminded almost every day and always by e Prime Minister when he speaks to us, that invasion this island is a virtual certainty That this will be rried out mainly by air-borne troops is almost equally rtain That these troops may land in considerable mbers and at several different points is shown by the perience of other countries The landing of a large umber of paratroops (120,000 fully equipped and armed en in six or eight widely separated districts is considered asible) would be more likely to occur in isolated ountry districts than in the centre of a town In town istricts the already established, well-equipped and well-taffed A R P and other medical services are capable of dealing with casualties among both civilians and Home Guard men but both civilians and combatants in country districts might be quite cut off from such aid, both in the immediate vicinity of hostilities and perhaps for several miles around My remarks therefore apply mainly to rural districts, though it must be borne in mind that even in towns severe damage may render even street to street communication impossible In any case, in a town the hospitals and first-aid posts are usually conspicuous buildings and likely to be easy and early targets and might soon be out of commission Therefore peripheral casualty collecting posts with adequate cellars should not be neglected in urban districts

It may be estimated that among any particular platoon of Home Guard men as many as 00% might be casualties within a few hours of the arrival of the air-borne force Wise as it may be therefore to have a number of trained stretcher-bearers every member of the Home Guard should be taught as much first-aid as is possible in the small time at our disposal, in order that each man may be able to help his pal It should be remembered that every member of the Home Guard, except a medical officer wearing a red cross brassard, is a combatant who has no Home Guard Medical Corps to come to his aid Each Home Guardman therefore stands an equal chance of being wounded, and by the same token an equal chance of being called on to carry out first-aid for his friend

The Home Guard Medical Service should be responsible for first-aid training and for treatment before hostilities The former will result in reasonable care of the wounded at the time of injury They should also be responsible for the establishment, staffing and equipping of casualty collecting posts in rural and sometimes urban districts where A.R P or other facilities cannot be relied on If both these functions are carried out it follows that arrangements will be organised for the transport of casualties from the battlefield to the collecting post, and for their care there for an indefinite period

FIRST-AID TRAINING AND IMMUNISATION

Each commanding officer should arrange that his medical officer should be given every facility to impart, and that every man in his battalion should attend to eceive, instruction in simple first-aid This should be with special reference to the treatment of wounds including fractures and hæmorrhage of burns and of pain Every man should be made to carry an 18 ft by 3 in roller bandage together with his first-field dressing and should be taught how to improvise a splint from any handy piece of wood or fence. The plaster-of-paris slab echnique should also be taught, though this will scarcely f ever be of value on the actual field Every man should carry a thick piece of cord attached to his mackintosh-ape ground-sheet, and should be shown how to use the ord as a tourniquet, or failing that his roller bandage or first-field dressing At present each man has only one ield dressing and therefore cannot open it, and he cannot ee what it is or learn how to apply it unless one man in the class sacrifices his dressing In most instances it is he medical officer who has already done this and he has now no sterile first-field dressing No dressings have been issued for carrying on to the field for the adequate covering of burns, for this description can hardly apply to one or two small tubes of tannic-acid jelly, or to a small supply of anti-gas ointment No morphia is included in the official issue

Only a very small proportion of members of the Home Guard will be trained as stretcher-bearers, so that each man will have to help his friend as best he can and after applying a dressing or tourniquet to the best of his ability with the meagre medical supplies at present available he must then hide him in a ditch or thicket and all comrades must be told where he is, or if several are wounded an unwounded man must be left behind to care for them until the heat of battle moves on If by good chance a few stretcher-bearers happen to be where the casualties occur they will transfer them with all possible speed to the nearest available casualty collecting post Otherwise two of the wounded man's friends will have to carry him when their combatant services can be spared In the absence of a stretcher a gate or hurdle, or even a stretcher improvised from two rifles and a greatcoat will have to suffice In the event of only one man in a post being left unwounded, he will have to go to the nearest casualty collecting post where a stretcher must be available, and will take it back with him together with a civilian to bring in the wounded If a farm cart or wheelbarrow can be obtained so much the better

In addition to the subjects indicated an elementary knowledge of which should be thoroughly instilled into each Home Guardman he should also be given at least the same immunity treatment as is granted to regular troops Main water-supply is likely to be damaged over a wide area, and well or pump water, already or rapidly contaminated, would have to be used Every Home Guardman should be given an injection of T A.B T C — an injection which gives immunity from typhoid fever, both varieties of paratyphoid fever, tetanus and cholera. Since it is on members of the Home Guard that the first brunt of air-borne invasion will fall, they would be well advised to have this preventive treatment forthwith

ESTABLISHMENT OF CASUALTY COLLECTING POSTS

The name " casualty collecting post," which was introduced by Dr Gordon Ward, is self-explanatory, and is not to be confused with a regimental aid-post from which it differs in several respects A Home Guard casualty collecting post may be either (*a*) a separate entity not associated with any other organisation, or (*b*) an already established A R P first-aid post or point, E M S hospital, R A M C unit, fever hospital, &c The majority of such already existing arrangements are situated in or close to large towns, small towns or larger villages, and in these districts few Home Guard casualty collecting posts need be established It is important, however, that members of the Home Guard operating in these areas should be fully aware of the position of such facilities and that their services are available for their use if wounded, equally with wounded non-combatants Primary Home Guard casualty collecting posts will therefore usually be established in the more isolated or country districts

Great Britain measures approximately 100 000 square miles, and to judge from my district about half the total area is already equipped via A R P, E M S and R A M C, leaving approximately half which has to be organised with collecting posts, so that some 50 000 posts are required My posts have cost somewhat less than £10 each to equip (almost all raised voluntarily and mainly through the generosity of the Canadian Red Cross), and will probably reach that figure when we have sufficient palliasses, pillows and so on Is half a million pounds spent once and once only, for the medical care of Home Guard and other casualties a large sum out of a war expenditure of fourteen million pounds daily ? Bear in mind that if invasion does not come to your district these goods will still be usable and of value, so that even the half million pounds will not be wasted

In the county with which I am associated the object has been to arrange for a Home Guard casualty collecting post to be established at intervals of not more than one mile To this scheme of ours the War Office has imitation were necessary for the patients, and in sick-ays taking scabies cases a separate bathroom for these as desirable The surgery serving also as examination-oom and dispensary was usually on the ground floor, nd in some a minor-ailments clinic for evacuees was held n isolation-room for the segregation of suspected cases f infectious disease was also provided As the children ere usually only confined to bed for a small part of eir stay, where there was no separate playroom it was ecessary to have a dining-room which could also serve s one Facilities for outdoor recreation were provided herever possible

PERSONNEL

The number of beds in each sick-bay determined the umber of nursing staff to be employed At least one, nd usually two or more, state-registered nurses were nployed, the rest of the staff being assistant or auxiliary urses Many nurses working in these units were ecruited from the Civil Nursing Reserve and were paid t the appropriate rates Members of the British Red ross Society and St John Ambulance Brigade also erved, and both nursing and domestic staffs were upplemented by voluntary workers The cases treated d not need elaborate equipment The usual sources f equipment were central and regional Government ores, supplemented by local purchase where necessary

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Great Britain measures approximately 100 000 square miles, and to judge from my district about half the total area is already equipped via A R P , E M S and R A M C , leaving approximately half which has to be organised with collecting posts , so that some 50,000 posts are required My posts have cost somewhat less than £10 each to equip (almost all raised voluntarily and mainly through the generosity of the Canadian Red Cross), and will probably reach that figure when we have sufficient palliasses, pillows and so on Is half a million pounds spent once, and once only, for the medical care of Home Guard and other casualties a large sum out of a war expenditure of fourteen million pounds daily ? Bear in mind that if invasion does not come to your district these goods will still be usable and of value, so that even the half million pounds will not be wasted

In the county with which I am associated the object has been to arrange for a Home Guard casualty collecting post to be established at intervals of not more than one mile To this scheme of ours the War Office has given its full approval From this it follows that no wounded man will have to walk, crawl or be carried more than half a mile and will always have four available posts within a mile of him * The suggestion has been made that every house in the neighbourhood of the battle could give shelter to a wounded man, but it follows that when it is possible for a medical man to reach the region he will have no idea where to go nor will he find equipment available nor will the best house or the one with the best cellar and most efficient local nurse be utilised Collection will have been made before the roads become available for ambulances, and the idea we had in mind in forming these posts—to avoid casualties being scattered or lost, to have them already collected and in readiness for further transport with the least possible delay, to provide the maximum care and treatment until that happens—would be nullified THE LANCET leader of Aug 16 points out the difficulty of transmitting messages or aid The idea which "H G M O" puts forward (*Lancet*, 1941, 2, 268), of a runner armed to the teeth with splints, dressings, bandages, tourniquets, morphia, anti-tetanus serum and tins of Vaseline gauze scuttling in the darkness along unfrequented by-paths and beside treacherous hedgerows through the enemy-infested countryside, smelling out the wounded (probably the best way of finding 'em *by that time), each in an isolated cottage, administering* first-aid by candle light and coping with the frightened and unprepared inhabitants, and then hurrying on again unscathed through the night, would be laughable if it were not pathetic

Selection of posts —The battalion medical officer should be a local practitioner who knows his battalion area well Not only does he know the suitability or otherwise of most of the houses in his district, but he also knows the inhabitants of those houses A consideration of these two factors will lead him to choose his posts to the greatest advantage From this it follows that municipal employees, who obviously lack this special knowledge, will be unlikely to choose the best posts A private house or farmhouse or schoolroom or inn will be chosen because of its facilities of space light, heat, water, if possible with adequate cellar accommodation The latter is important, for if no cellars are available hand grenades may be thrown in at the window by the enemy and cause havoc among the wounded—not only the wounded Home Guardmen, but also wounded civilians who will have gathered there, and unwounded personnel who may be attending to them If adequate cellar accommodation is available, care of the wounded may be carried on with much less interruption than will be likely in a groundfloor room In addition, the suitability of the housewife and her associates for caring for the sick will be taken into consideration The majority of our posts are fortunate in having the services of a nurse, ex-nurse or midwife, or someone who has had considerable if not large, nursing experience Great help in the selection of posts has been given by the company medical officers, many of whom are practitioners who know their own district intimately

Label —A large notice with the letters H G and a red cross should be exhibited in a conspicuous position outside each Home Guard casualty collecting post A list of posts should be in each company and battalion headquarters, and commanding officers and platoon officers should make certain that all ranks are aware of their nearest casualty collecting posts

EQUIPMENT OF POSTS

If each post is well chosen simple equipment will already be found there—bowls towels, soap and water, and a bottle of antiseptic (the latter is probably quite unnecessary, but tradition dies hard, and the lay first-aider seems lost without something that smells of carbolic or colours the water) More important equipment is not so easy to come by In addition to the meagre army supply to the Home Guard, we have aimed at having the following in each casualty collecting post, and have obtained voluntary help to provide nearly all of it 10–15 roller bandages (3 in or 4 in), 5–10 T-bandages , 15–20 triangular bandages Adequate supplies of these types of bandages are apparently in the country The great difficulty appears to be to get the local Red Cross for a county or district to realise that they are of no value in a central depot, which might be quite cut off from the wounded needing them in time of invasion, and that they had better be dispersed in small numbers to equip four posts to every square mile of the country If this cannot be done, local ladies' sewing parties, Church sewing parties and Women's Voluntary Services must be approached, and it has been found that the local medical man seldom has difficulty in obtaining an adequate supply from these generous and ardent sources at short notice

I agree with Mr V B Green-Armitage (*Lancet*, 1941, 2 230) that it is unfair that medical officers of battalions should go round cap in hand asking for donations, but since neither the state nor the British Red Cross, with all their voluntary supplies from the American Red Cross, will do much to help us other funds must be obtained I suggest that the medical officer in his lectures should appeal to all members of the Home Guard that the urgent medical necessities are for each and every man's use, and that donations should be blatantly asked for both from Home Guard themselves and those whom they are about to defend In my experience it is almost useless to approach any established organisation for supplies , the Red Cross has become so exsanguinated by red tape as to be almost invisible on its white back ground *Of course every platoon of every company of* every battalion should be provided with urgent medical necessities, but where is the Houdini who can rescue us from the red-tape entanglements ?

Fresh clothing —Many of the casualties reporting at a Home Guard collecting post will be wet or have their clothing ruined by mud, blood or rending We have therefore aimed at having two or three pairs of pyjamas, two or three pneumonia jackets, three or four bed gowns and five or six pairs of socks available at each post These will sometimes be voluntarily loaned by the owner of the house in which the post is situated, or the lady of the house herself may collect from her friends such articles which would usually go to the jumble sale Thus an adequate supply will always be available

Bedding —In the type of house we have indicated five or six blankets will almost always be available for the wounded, but in addition to those we have also provided five or six blankets for each post by voluntary effort from outside sources It is therefore worth while appealing to local voluntary effort for the loan or donation of blankets so that each post has a few for the sole use of casualties Each such loaned blanket can be labelled with the owner's name and address, and claimed and returned when no longer required Very few posts have the means of providing beds or mattresses for 10–20 wounded men, let alone wounded women and children who are also likely to forgather there, and although there is little doubt that the ordinary occupiers of a house will have no time to sleep in their own beds when casualties begin to arrive, yet some extra provision than their own mattresses should be made available for the wounded A house-to-house collection of old sheets must be made, and local voluntary sewing parties must sew them into sacks (7–8 ft long by 2 ft 6 in. wide), and they must be stuffed with dry straw, bracken, chaff or rags, and kept in a dry place From the odd pieces of cotton or linen which are left over pillows must be made and stuffed with dry grass

Food —The local controller should be approached immediately and a tinned supply of iron ration provided for each post and kept hidden

Drugs —Each of my posts has ten grains of morphine supplied as 30 tablets, each containing gr $\frac{1}{3}$, for placing under the tongue, a small bottle with gauze cover and screw-on cap containing an ounce of sulphanilamide powder, and a sterile tin with 9 ft by 6 in Vaseline gauze These are kept under lock and key Most of my equipment has been provided by the C R C , but local friends have paid for most of the drugs, which have been supplied at most reasonable prices by Messrs John Bell and Croyden

Light —A supply of candles should be kept near the dressings, but a hurricane lamp would be better

Instructions —Simple printed instructions should be given with each parcel or packing case of Home Guard dressings The following (slightly modified) were drawn up by Dr J W Cannon, and printed and distributed by him

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* I should like to record the valuable and energetic work carried out in this connexion by Dr H Stratford Collins Dr J W Cannon and Dr R G Birch

FIRST-AID TREATMENT OF THE WOUNDED

Relieve pain —Handle and transport the patient carefully Make the patient comfortable In the case of chest or abdominal wounds place in a half sitting position If pain is severe place one tablet (⅓rd grain) of morphine under the tongue (the tablet is absorbed there and is not swallowed) A second dose may be given if necessary in half an hour No further dose should be given for about 4 hours

The wound —1 Arrest hæmorrhage by firm pressure bandaging over a dry ("first aid") dressing This method is nearly always effective, though finger pressure over the artery or even a tourniquet may be necessary 2 Sprinkle sulphanilamide powder freely on the wound 3 Apply a dry ("first-aid") dressing and a bandage (Splint severe wounds of the limbs)

Burns (*not* applicable to effects of blister gas) —1 Sprinkle sulphanilamide powder freely on the burnt area 2 Cover the burnt area with Vaseline gauze 3 Cover with a layer of cotton wool 4 Apply a bandage

Fractures of the limbs should be splinted immediately ("splint 'em where they lie") to secure immobility of the fractured bone and limb Treat any wound as described above

Provide warmth —Replace wet and dirty clothes with dry ones Protect from cold by blankets under as well as over the patient

Keep the room warm and the bed heated by hot water bottles or hot bricks covered with flannel Raise the foot of the bed or stretcher on blocks about 12 in high

Give fluids (except in the case of abdominal wounds) — Water or any beverage Hot sweetened tea or coffee is best Add half a teaspoonful of common salt to each pint of fluid Insist on fluids being taken

Clearness of vision and adequate preparation *now* will lead to the saving of life and suffering amongst Home Guardmen Our posts thus prepared and equipped will not only serve to hearten the combatants but will help to stabilise the civilian population in any area attacked Let us therefore carry out the War Office instructions, let us do the job thoroughly, but let us do it now

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MIDDLE-CLASS DIETS IN PEACE AND WAR

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B K ALINGTON, B A

(*Department of Medicine, Cambridge*)

DURING the first four months of the war McCance and Widdowson carried out an experimental study of rationing Eight people were given a diet in which fat, meat, bacon, sugar, jam and milk were more severely restricted than they are at the present time, but in which bread, potatoes and other vegetables were freely available They showed that healthy active people did not allow these restrictions permanently to curtail their calorie intakes More and more bread and potatoes were eaten, until the calories were as high as they had been before the restrictions were imposed McCance and Widdowson predicted that if rationing became widespread and severe the demand for bread and potatoes would increase, and that, if most other foods were rationed, a forecast could be made of what those increases would be They also found that the appetising and tasty functions of the rationed foods tended to be replaced by the judicious use of other unrationed flavourings They emphasised the value of adjuvants such as onions, curry and chutneys to restricted diets They established a general principle which seems to underlie all systems of rationing—that as one food becomes scarce it tends to be replaced by another This applies both to foods which are of calorific value and to foods which are eaten especially for some piquant flavour

In March, 1941, foodstuffs could be divided into three categories There were those that were officially rationed These included butter, margarine and cooking fat, cheese, meat, bacon, jam and tea There were those which were officially unrationed, but were difficult to obtain, or very expensive, or both Fruit, fish, sausages and "cooked meat," cakes, biscuits, sweets and chocolate fell into this group Milk was officially restricted to ⅔ of its previous level, and eggs were readily available only for one or two weeks Lastly, there were some foods such as bread and potatoes which were plentiful and cheap Green vegetables and carrots were also fairly abundant By the spring of this year, therefore, it was evident that 18 months of war must have forced many people to alter their established dietary practices, and it seemed very desirable to have some information on these matters To what extent were the rations really restrictions? Was the apparent scarcity of an unrationed food due to increased demand or to decreased supply? If the consumption of some commodities was curtailed, were people eating less food, or were they turning to other, more plentiful foods?

TABLE I—COMPARISON OF GROUPS OF WOMEN INVESTIGATED IN 1935 AND 1941

	1935	1941
Number of women	63	57
Average age in years	32 5	39
Average weight in lb (indoor clothes and shoes)	135	130 3
Average height in ins (no shoes)	64 1	63 7
Occupations—		
Housewives	17	27
Students	15	10
Secretaries, clerks, &c	11	2
Teachers	7	6
Research workers	3	7
Miscellaneous	10	5
Living in large towns or cities	57	47
Living in small towns	4	4
Living in country	2	6

In 1935 Widdowson, and Widdowson and McCance carried out dietary surveys by the individual method on 63 men and 63 women of the English middle class Records were obtained of the diet of each of these persons over a period of one week By re-analysing this data it has been possible to compare the food eaten in 1935 with the rations in 1941 Further, by making another dietary survey in the spring of 1941 it has been possible to get some insight into all the dietary changes which had taken place The 1941 survey was carried out on 57 individual women, who were chosen to be as similar as possible to those in the original investigations Relevant details are given in table I The same method was used as before, and need not be described again This survey was made during March, April, and May, 1941 The original one was carried out during the period November, 1934–July, 1935 Seven of the subjects who took part in the first investigation also participated in the second

Both these surveys on women have been limited to a particular social class because naturally no comparison would have been valid unless the two groups were similar Further, some of the results may not be true of the country as a whole Many of the findings, however, are certainly of general application One other point the 1935 survey was carried out 4½ years before the outbreak of war An increase in the popularity of a foodstuff between 1935 and 1939 may have masked a decrease in consumption due to war-time restrictions

RATIONED FOODS

Table II shows the rations in force in spring 1941, and the quantities of the rationed foods eaten by the men and women in the 1935 survey It also shows the amounts eaten by the women in the 1941 survey Certain assumptions have had to be made in compiling this data from the dietary records, particularly as regards cooked dishes As a general ruling it has been assumed that all puddings, stewed fruit and savoury dishes were prepared at home out of raw ingredients, but that cakes, biscuits and tinned fruit were purchased as such Allowance has been made for the fact that recipes demanding less fat and sugar were being used in the 1941 survey

It will be seen that the rationing system must have cut right across the dietary habits of the men The women, at any rate of this particular social group, *have been* much less affected because they were not in the habit of eating so much of the rationed foods before the war Nevertheless, the ration of almost every commodity, for women as well as men, was less than their prewar intake

TABLE II—AVERAGE INTAKES OF RATIONED FOODS IN 1935 AND 1941 COMPARED WITH RATIONS IN SPRING 1941 (OZ PER WEEK)

—	1935		1941	
	Men	Women	Women	Ration
Butter	11 7	9 8	3 7	4
Cheese	4 9	2 9	1 3	1
Sugar	16 7	7 4	4 5	8
Jam	5 7	4	5 8	2
Rationed meat (raw weight)	34 5	19 7	11 4	about 12 (1*s* worth)
Bacon (raw weight)	10 2	4 4	3 9	4

Figs 1–3 show the frequency with which different amounts of the rationed foods were eaten The hatched portion represents intakes within the ration

Fat —In spring 1941 the total fat ration was 8 oz a week Of this, 4 oz could be purchased as butter, 2 oz as margarine, and 2 oz as lard or lard substitute If the customer preferred, she could replace part or all of the butter or lard with margarine Suet and dripping were not rationed It has been found impossible to arrive at any accurate figure for the amount of rationed cooking fat used by the women taking part in these surveys There was no way of telling what proportion of the cakes and biscuits had been home-made, and even if it was assumed that they had all been bought in shops there was still no clue as to whether puddings had been made with rationed or unrationed cooking fat Taking all types of cooking fat into account the women's consumption averaged about 5 oz per week in 1935 and the same amount in 1941 The amount of butter used with bread was stated on the records, so this can be given with some measure of confidence Both men and women in the 1935 survey were eating an average of 2–3 times as much butter as they were allowed in spring 1941 Only 6 of the men and 4 of the women ate 4 oz a week or less More than half the men were eating 8–16 oz and ⅔ of the women between 4 and 12 oz In the 1941 survey the average amount eaten was very close to the ration , 44 of the women were eating less and 13 more than their rightful allowance In the 1941 survey 25 of the women ate margarine on bread and the average amount eaten in this way was 1 oz a week , nobody ate margarine on bread in the prewar study

Cheese —All cheese used in cooked dishes is included under this heading In the 1935 survey the amounts of cheese eaten by the individuals varied widely , 5 men and 11 women ate none , 5 men and 1 woman ate more than 12 oz during the week The men's intakes averaged 5 oz and the women's 3 oz a week A weekly ration of 1 oz became operative in May, 1941, when the second survey was nearly over, so only a small proportion of the women taking part in this investigation were affected by it Cheese had, however, been difficult to obtain before official rationing began, and the average amount eaten in the 1941 survey was very little more than 1 oz a week , 33 of the women ate amounts that were within this ration , 12 ate none at all

Sugar and jam —The 1941 jam ration of 2 oz a week would have sufficed for about a third of the men and women in the 1935 survey, but the average consumption at that time was 2–3 times the official ration of 1941 Surprising though it may sound, 50 out of the 57 women in the 1941 survey were exceeding their ration of jam, and their average consumption was nearly 3 times their official allowance They could only have managed this if they had had stores of jam laid by The desire for jam might have been expected from McCance and Widdowson's experimental study of rationing The people in that investigation had an all-in allowance of *5 oz of sugar per week* They always chose to have the whole of it issued to them in the form of jam, which they spread out thinly over large quantities of bread In spring 1941 conditions were not nearly so stringent as the experimental ones, but butter was relatively scarce, as were many of the other relishes so easily obtained before the war Hence the women in the 1941 survey felt the need for jam, and they drew on their reserves to satisfy it What are they going to do when their stocks are exhausted? Some will adopt alternative flavouring agents, but the figures for sugar suggest that many will continue to eat jam

In spring 1941 the women were eating an average of little more than half their sugar ration taking into account sugar in stewed and home-bottled fruit and puddings as well as sugar recorded as such Only 4 women ate more than 8 oz a week from these sources A reserve of sugar was evidently being built up for jam-making in the 1941 fruit season Of course, the men in the household may have been eating some of the women's sugar ration In the 1935 survey, before any rationing was imposed, the men ate 2–3 times as much sugar as the women, and it seems likely that they may now be getting the lion's share of the family ration

It must be remembered, however, that there are several foods in everyday use, other than those already mentioned, which contain commercial cane sugar These are usually purchased ready made, and hence the sugar they contain is an extra to the official ration Cakes and biscuits contributed about 3 oz of sugar a week to the 1935 and 2 5 oz to the 1941 diets Tinned fruit contributed 0 2 oz on both occasions Jam provided 2 7 oz in 1935 and 3 9 oz in 1941 Sweets and chocolates contributed 2 6 and 1 3 oz in the 1935 and 1941 surveys respectively Hence, taking all sources into account, the women were eating about 15 9 oz of cane sugar a week in 1935 and 12 4 oz in 1941 This figure will fall to 10 9 oz when the stocks of jam are exhausted and the women are reduced to their jam and sugar rations

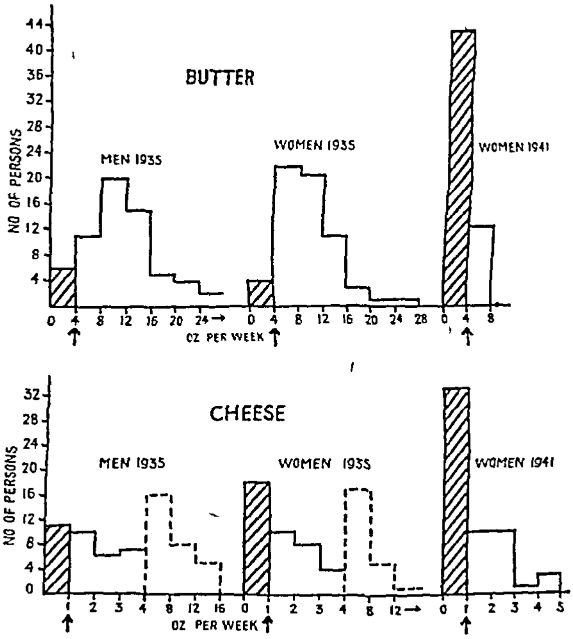

FIG 1—Frequency distribution of butter and cheese intakes Arrows indicate ration in spring 1941 and shaded areas intakes within that ration

Meat —The figures for meat include all meat that was rationed in March, 1941—i e , all butcher's meat and offal, but not poultry, rabbits, sausages, ham or “ cooked meat ” in pies, &c Only 2 out of the 63 men in the 1935 survey were within their 1941 meat ration Most of them were eating between 12 and 36 oz a week, and 22 of them recorded more than 36 oz Their average intake was about 3 times as much as their ration in 1941 The women in 1935 ate little more than half as much meat as the men , this, however, was considerably more than their 1941 allowance The average intake in 1941 was 11 4 oz and the maximum 23 oz In 1935, 17 of the women were eating more than the latter amount

Bacon —The rationing of bacon to 4 oz a week hardly seems to have affected women's consumption of this food, for in the 1935 survey they were eating little more than this amount, and not much less in 1941 For men, however, this ration was more of a privation , it must have reduced their intake to two-fifths of its prewar level

RESTRICTED FOODS

By comparing the data obtained from the surveys of 1935 and 1941 it has been possible to gain some idea as to how far the difficulty of procuring some foods has affected their consumption

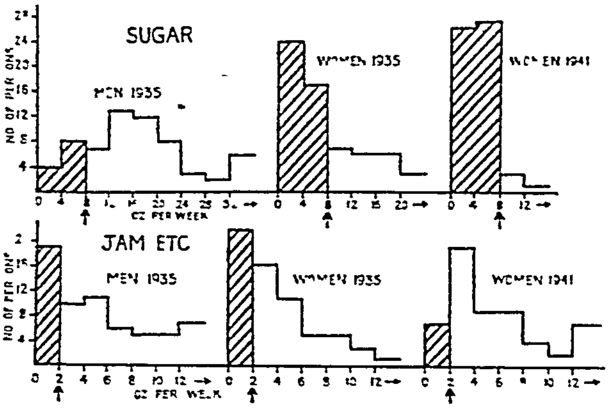

FIG 2—Frequency distribution of sugar and jam intakes

Fruit —Table III shows that in 1935 the women were eating an average of 29 1 oz of raw fruit a week, or over 4 oz a day Apples and pears made up half of this, oranges and bananas the remainder Of course small amounts of other fruits were also eaten Tomatoes are not included here as they have been given separately Of the 63 women 3 ate no raw fruit of any kind during the week of investigation In spring 1941 raw fruit had almost disappeared from the market Then, 6 women ate apple, one of them 15 oz , one woman had a little orange in a jelly , 50 had no raw fruit at all, and the per-caput consumption was a mere 0 6 oz

The rise in consumption of so-called cooked fruit, with which is included home-bottled fruit, may sound surprising It is due to several causes First, the 1941 survey was carried out at the height of the rhubarb season, and this garden product accounted for over half the "stewed fruit" Second it is probable that more fruit was bottled at home in 1940 than in the prewar years Third a consignment of dried apple rings from Canada during the winter 1940–41 provided fruit for cooking during the early months of 1941 Fourth, the provision of puddings is now a problem for the housewife She tends to turn more frequently to stewed fruit, which, with the aid of saccharin and sodium bicarbonate, she can prepare with a minimum of sugar

The consumption of tinned fruit was much the same in 1941 as it had been in 1935 One woman, who ate 36 oz in the week has been excluded from the 1941 average About a third of the women in the 1935 survey and a quarter of them in 1941 had some tinned fruit The restriction in supplies of dried fruit (raisins, sultanas, currants, dates) in 1941 is not very obvious from table III One woman in the 1935 group, who ate 18 oz dates during the week has been excluded from the average

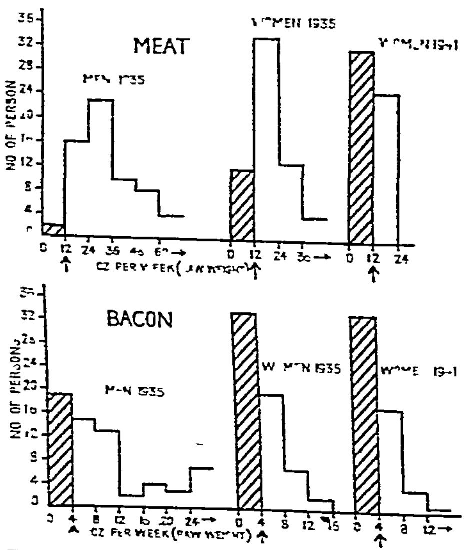

FIG 3—Frequency distribution of meat and bacon intakes

Only one woman ate any tomato in the 1941 survey, and she had a very small amount In 1935 the intakes averaged nearly 5 oz a week, and ranged from none to 38 oz Neither survey covered the season when raw salads were abundant, and the intakes were equally low in 1935 and 1941

Meat —The average consumption of unrationed meat fell as indeed would be expected On both occasions it consisted chiefly of sausages and meat bought ready cooked Allowance has been made for the smaller amount of meat in war-time sausages

Fish —In 1941 the average intake of fresh and dried fish was less than half what it had been in 1935 Increased price was probably the chief reason for this Supplies were undoubtedly less, but the greater cost led to a decreased demand Hence there was not much apparent shortage Of the women in 1941, 30 partook of some form of tinned fish, the supplies of which were still ample at that time In 1935, when other foods were cheap and easy to obtain, only 12 of the women seem to have been attracted by this kind of fish and the per-caput consumption was only ¼ as great

Eggs —Both the 1935 and 1941 surveys covered the season of the year when eggs were relatively plentiful Although the number of eggs eaten was less in the 1941 survey, there is no doubt that the difference would have been much greater had the survey been made at another season of the year Before the war there were plentiful supplies of imported eggs during the winter months

TABLE III—AVERAGE INTAKES OF RESTRICTED FOODS IN 1935 AND 1941 (OZ. PER WEEK)

		Women 1935	Women 1941
Fruit	raw	29 1	0 6
	cooked (excluding sugar)	7 5	11 4
	tinned	1 7	1 5
	dried	1 1	0 8
Tomato, raw and cooked		4 9	0
Raw salad (excluding tomato)		2 5	2 5
Unrationed meat (raw weight)		7 4	4 7
Fish	fresh and dried (raw weight)	9 3	4 0
	tinned	0 4	1 1
Eggs (number)		4 2	3 2
Cream		1 7	0
Cake		11 5	11 7
Biscuits		3 2	5 0
Sweets and chocolates		3 9	1 9
Milk (pints)		3 3	4 6

Cream —In the 1935 survey more than two-thirds of the women had some cream during the week of investigation, and the average consumption was 1 7 oz a week In 1941 the sale of fresh cream was prohibited ; 3 of the women entered small amounts of cream on their records, but in each case it came out of a tin

Confectionery —The figures for cakes and biscuits justify rather more comment In spite of the apparent scarcity of cake and biscuits in the shops, the average consumption of cake was the same in 1941 as it had been in 1935, and the intake of biscuits had increased. The proportion of the cake which was home-made was likely to have been higher in 1935, when there were no restrictions on fat, sugar and eggs Now the housewife cannot make cake as she formerly did and she tries to buy it ready made Hence, the apparent scarcity is probably partly due to an increased demand The same applies to biscuits People who never bought biscuits before are undoubtedly buying them now As shopping becomes more difficult the housewife is only too glad to be able to get biscuits to make up for the fruit and sweets that she cannot now obtain These results are consistent with the fact that there has been an appreciable increase in the manufacture of cakes and biscuits since the prewar period, in spite of reduced allocations of fat and sugar The only biscuits now being made are the plainer varieties

The amount of sweets and chocolates eaten was about half as much in the 1941 survey as it had been in 1935 ; 14 of the 1935 group and 20 of those taking part in the

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Sugar and jam —The 1941 jam ration of 2 oz a week would have sufficed for about a third of the men and women in the 1935 survey, but the average consumption at that time was 2–3 times the official ration of 1941 Surprising though it may sound, 50 out of the 57 women in the 1941 survey were exceeding their ration of jam, and their average consumption was nearly 3 times their official allowance They could only have managed this if they had had stores of jam laid by The desire for jam might have been expected from McCance and Widdowson's experimental study of rationing The people in that investigation had an all-in allowance of 5 oz of sugar per week They always chose to have the whole of it issued to them in the form of jam, which they spread out thinly over large quantities of bread In spring 1941 conditions were not nearly so stringent as the experimental ones, but butter was relatively scarce, as were many of the other relishes so easily obtained before the war Hence the women in the 1941 survey felt the need for jam, and they drew on their reserves to satisfy it What are they going to do when their stocks are exhausted ? Some will adopt alternative flavouring agents, but the figures for sugar suggest that many will continue to eat jam

In spring 1941 the women were eating an average of little more than half their sugar ration, taking into account sugar in stewed and home-bottled fruit and puddings as well as sugar recorded as such Only 4 women ate more than 8 oz a week from these sources A reserve of sugar was evidently being built up for jam-making in the 1941 fruit season Of course, the men in the household may have been eating some of the women's sugar ration In the 1935 survey, before any rationing was imposed, the men ate 2–3 times as much sugar as the women, and it seems likely that they may now be getting the lion's share of the family ration

It must be remembered, however, that there are several foods in everyday use, other than those already mentioned, which contain commercial cane sugar These are usually purchased ready made, and hence the sugar they contain is an extra to the official ration Cakes and biscuits contributed about 3 oz of sugar a week to the 1935 and 2 5 oz to the 1941 diets Tinned fruit contributed 0 2 oz on both occasions Jam provided 2 7 oz in 1935 and 3 9 oz in 1941 Sweets and chocolates contributed 2 6 and 1 3 oz in the 1935 and 1941 surveys respectively Hence, taking all sources into account, the women were eating about 15 9 oz of cane sugar a week in 1935 and 12 4 oz in 1941 This figure will fall to 10 9 oz when the stocks of jam are exhausted and the women are reduced to their jam and sugar rations

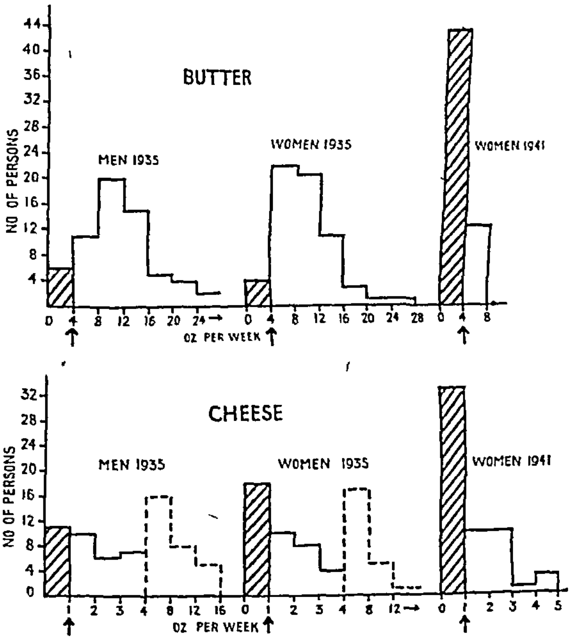

FIG 1—Frequency distribution of butter and cheese intakes Arrows indicate ration in spring 1941 and shaded areas intakes within that ration

Meat —The figures for meat include all meat that was rationed in March, 1941—i e , all butcher's meat and offal, but not poultry, rabbits, sausages, ham or " cooked meat " in pies, &c Only 2 out of the 63 men in the 1935 survey were within their 1941 meat ration Most of them were eating between 12 and 36 oz a week, and 22 of them recorded more than 36 oz Their average intake was about 3 times as much as their ration in 1941 The women in 1935 ate little more than half as much meat as the men , this, however, was considerably more than their 1941 allowance The average intake in 1941 was 11 4 oz and the maximum 23 oz In 1935, 17 of the women were eating more than the latter amount

Bacon —The rationing of bacon to 4 oz a week hardly seems to have affected women's consumption of this food, for in the 1935 survey they were eating little more than this amount, and not much less in 1941 For men, however, this ration was more of a privation, it must have reduced their intake to two-fifths of its prewar level

RESTRICTED FOODS

By comparing the data obtained from the surveys of 1935 and 1941 it has been possible to gain some idea as to how far the difficulty of procuring some foods has affected their consumption

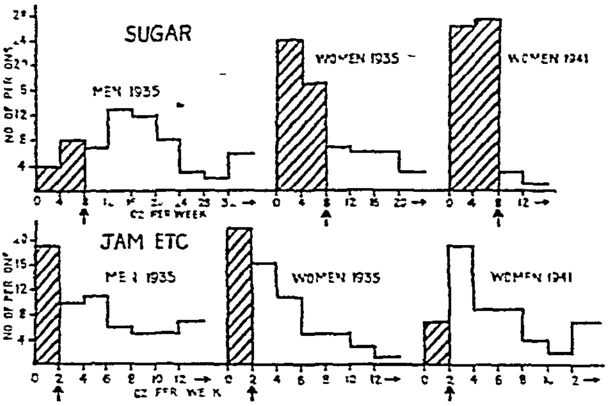

FIG 2—Frequency distribution of sugar and jam intakes

Fruit—Table III shows that in 1935 the women were eating an average of 29·1 oz of raw fruit a week, or over 4 oz a day Apples and pears made up half of this, oranges and bananas the remainder Of course small amounts of other fruits were also eaten Tomatoes are not included here as they have been given separately Of the 63 women 3 ate no raw fruit of any kind during the week of investigation In spring 1941 raw fruit had almost disappeared from the market Then, 6 women ate apple, one of them 15 oz , one woman had a little orange in a jelly , 50 had no raw fruit at all, and the per-caput consumption was a mere 0·6 oz

The rise in consumption of so-called cooked fruit, with which is included home-bottled fruit, may sound surprising It is due to several causes First, the 1941 survey was carried out at the height of the rhubarb season, and this garden product accounted for over half the "stewed fruit" Second it is probable that more fruit was bottled at home in 1940 than in the prewar years Third, a consignment of dried apple rings from Canada during the winter 1940–41 provided fruit for cooking during the early months of 1941 Fourth, the provision of puddings is now a problem for the housewife She tends to turn more frequently to stewed fruit, which, with the aid of saccharin and sodium bicarbonate, she can prepare with a minimum of sugar

The consumption of tinned fruit was much the same in 1941 as it had been in 1935 One woman who ate 36 oz in the week, has been excluded from the 1941 average About a third of the women in the 1935 survey and a quarter of them in 1941 had some tinned fruit The restriction in supplies of dried fruit (raisins, sultanas, currants, dates) in 1941 is not very obvious from table III. One woman in the 1935 group, who ate 18 oz dates during the week, has been excluded from the average

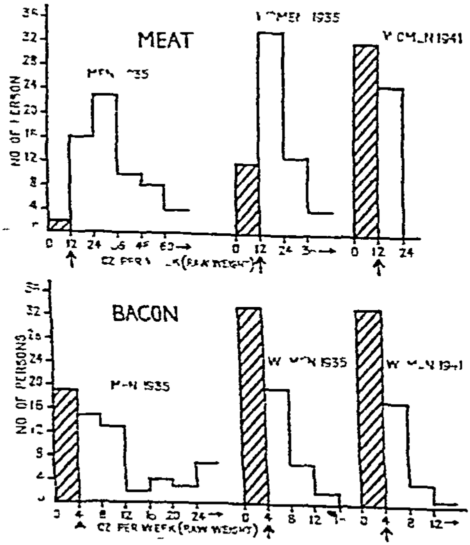

FIG 3—Frequency distribution of meat and bacon intakes.

Only one woman ate any tomato in the 1941 survey, and she had a very small amount In 1935 the intakes averaged nearly 5 oz a week, and ranged from none to 38 oz Neither survey covered the season when raw salads were abundant, and the intakes were equally low in 1935 and 1941

Meat—The average consumption of unrationed meat fell as indeed would be expected On both occasions it consisted chiefly of sausages and meat bought ready cooked Allowance has been made for the smaller amount of meat in war-time sausages

Fish—In 1941 the average intake of fresh and dried fish was less than half what it had been in 1935 Increased price was probably the chief reason for this Supplies were undoubtedly less, but the greater cost led to a decreased demand Hence there was not much apparent shortage Of the women in 1941, 30 partook of some form of tinned fish, the supplies of which were still ample at that time In 1935, when other foods were cheap and easy to obtain, only 12 of the women seem to have been attracted by this kind of fish and the per-caput consumption was only ¼ as great

Eggs—Both the 1935 and 1941 surveys covered the season of the year when eggs were relatively plentiful Although the number of eggs eaten was less in the 1941 survey, there is no doubt that the difference would have been much greater had the survey been made at another season of the year Before the war there were plentiful supplies of imported eggs during the winter months

TABLE III—AVERAGE INTAKES OF RESTRICTED FOODS IN 1935 AND 1941 (OZ. PER WEEK)

		Women 1935	Women 1941
Fruit	raw	29·1	0·6
	cooked (excluding sugar)	7·5	11·4
	tinned	1·7	1·5
	dried	1·1	0·8
Tomato, raw and cooked		4·9	0
Raw salad (excluding tomato)		2·5	2·5
Unrationed meat (raw weight)		7·4	4·7
Fish	fresh and dried (raw weight)	9·3	4·0
	tinned	0·4	1·1
Eggs (number)		4·2	3·2
Cream		1·7	0
Cake		11·5	11·7
Biscuits		3·2	5·0
Sweets and chocolates		3·9	1·9
Milk (pints)		3·3	4·6

Cream—In the 1935 survey more than two-thirds of the women had some cream during the week of investigation, and the average consumption was 1·7 oz a week In 1941 the sale of fresh cream was prohibited , 3 of the women entered small amounts of cream on their records, but in each case it came out of a tin

Confectionery—The figures for cakes and biscuits justify rather more comment In spite of the apparent scarcity of cake and biscuits in the shops, the average consumption of cake was the same in 1941 as it had been in 1935 and the intake of biscuits had increased. The proportion of the cake which was home-made was likely to have been higher in 1935, when there were no restrictions on fat sugar and eggs Now the housewife cannot make cake as she formerly did, and she tries to buy it ready made Hence, the apparent scarcity is probably partly due to an increased demand The same applies to biscuits People who never bought biscuits before are undoubtedly buying them now As shopping becomes more difficult the housewife is only too glad to be able to get biscuits to make up for the fruit and sweets that she cannot now obtain These results are consistent with the fact that there has been an appreciable increase in the manufacture of cakes and biscuits since the prewar period, in spite of reduced allocations of fat and sugar The only biscuits now being made are the plainer varieties

The amount of sweets and chocolates eaten was about half as much in the 1941 survey as it had been in 1935 ; 14 of the 1935 group and 20 of those taking part in the

1941 survey ate no sweets or chocolates during the experimental week

Milk has been included among the restricted foods, although the restrictions in supplies did not come into force until half way through the 1941 experiment The figures include the milk used for making puddings and other cooked dishes, as well as that taken in liquid form It will be seen that the average amount of milk consumed was nearly 50% higher in 1941 than in 1935 This higher consumption was not due to more milk puddings being eaten, but to larger quantities of milk being drunk as such, or taken in tea or other beverages The " drink more milk " campaign, which was carried out between the time of the first survey and the outbreak of war, evidently caused such an increase in the demand for milk that even after retail distribution had been cut by ¼ consumption was still 50% above what it had been six years previously

TABLE IV—AVERAGE INTAKES OF PLENTIFUL FOODS IN 1935 AND 1941 (OZ PER WEEK)

	Women 1935	Women 1941
Bread	35 2	45 6
Flour in puddings and savoury dishes	3 9	5 1
Oatmeal	0 5	1 6
Rice	0 5	1
Proprietary cereals	0 8	1 4
Other cereals (cornflour, &c)	0 4	0 7
Potatoes, cooked	21 1	33
Green vegetables, cooked	9 2	13 9
Root vegetables, cooked	4 7	7 4
Legumes, cooked	2 8	2 4

PLENTIFUL FOODS

It is clear from the results already discussed that people were eating smaller amounts of a great many foods in March, 1941, than they had been before the war The general principle of rationing already enumerated states that there should have been a corresponding increase in the consumption of others Table IV shows that this was indeed the case, for in the 1941 survey the women were eating more bread, more flour, more rice and much more oatmeal than their opposite numbers in 1935 These changes in rice and oatmeal were brought about in two ways More people ate them, and those who did eat them ate more of them Thus, in 1935, 14 women ate porridge, and had on average 2 2 oz oatmeal each In 1941, 27 women recorded porridge, and ate 3 5 oz per head Rice was chiefly eaten in rice pudding In 1935, 30 mentioned this cereal In 1941, the number had risen to 45

" Proprietary cereals " include bread substitutes such as Ryvita, as well as breakfast cereals In spite of an apparent shortage, the average intake of these foods increased Several reasons may be suggested for this During the years 1935–39 proprietary breakfast cereals may have become more popular Although more was being eaten in 1941 than in 1935, it may well have been less than the amount eaten in 1939 Further, the scarcity of materials for breakfast dishes such as eggs, tomatoes and fruit had led to an increased demand for porridge and other cereal foods , 26 of the women ate one or other of the proprietary cereals during their week of weighing in 1941 as against 15 in 1935

" Other cereals " consists chiefly of custard powder, and this figure also showed an increase

Turning now to the vegetables, potatoes were being eaten in somewhat larger amounts in the 1941 survey In 1935 the average consumption was 3 oz a day In spring 1941 it had risen to 4 7 oz It is evident, however, that women of this social class have not yet become potato-conscious Potatoes provide more calories to the acre than any other food, and they can readily be grown in this country When imports are restricted, as they are at the present time, this vegetable ought to provide us with more than 6% of our calories One person in the 1941 survey ate 300 oz during the week, or 43 oz a day ! She was excluded in calculating the average She ate them at three meals every day, and she obtained 49% of her calories in this form The consumption of cooked green and root vegetables had also increased All but 2 of the women on both occasions recorded some sort of green vegetable , 19 of the women in 1935 and 7 of those in 1941 ate no root vegetable of any kind Legumes consisted chiefly of dried haricot and butter beans, baked beans and tinned peas There was no significant change in consumption

CALORIES

The average daily calorie intake in 1935 was 2187, with a standard deviation of 388 In 1941 the mean was 2137, with a standard deviation of 420 These average figures are not significantly different from one another Thus, the principle held Deprived of the calories which they had been accustomed to getting from their rationed foods, appetite and instinct had driven these women to make good the loss by increasing their consumption of unrationed and plentiful foods

This 1941 dietary survey was limited to women The 1935 surveys demonstrated clearly that before any restrictions were imposed men were eating more of nearly every type of foodstuff In the present system of rationing men get the same allowances as women In order to maintain their calories, therefore, they require to increase their intakes of the unrationed foods more than women Thus, at the time of the 1941 survey the rationed foods provided about 600 calories a day The men taking part in the 1935 survey were obtaining about 1400 calories a day from the foods that are now rationed The women derived 850 calories a day from this source Hence, the men would have had to find 800 calories a day from unrationed sources, and the women 250 calories. In terms of food, the men would have to eat another 11 oz bread or 32 oz potato a day to make good this deficit The women required 3½ oz bread or 10 oz potato Actually, the women's potato and bread intakes had risen by less than these amounts, for they had also increased their consumption of oatmeal and other foods of this kind

CHEMICAL COMPOSITION OF THE DIETS

Table V shows the calorific values and chemical composition of the diets in 1935 and 1941 McCance and Widdowson's (1940) tables of the composition of foods were used for the calculations It will be seen that, although the total calories were much the same, their distribution between fat and carbohydrate had altered considerably Relatively more carbohydrate and less fat were being eaten in spring 1941 The differences in both cases are statistically significant The amount of total protein, as always, remained remarkably constant The figure for animal protein, however, showed a significant reduction because of the smaller amounts of meat, fish and cheese which were available in 1941 In the 1941 survey only 4 people recorded any alcoholic drink and the amounts were too small to affect the average calories of the group

TABLE V—CHEMICAL COMPOSITION OF THE DAILY DIETS

	1935		1941	
	Average	Standard deviation	Average	Standard deviation
Calories	2187	388	2137	420
Total protein (g)	67 3	12 4	64	12
Animal protein (g)	46	11 3	33 8	8 4
Fat (g)	100 5	20 6	78 4	16
Carbohydrate (g)	233	58 5	280	67
Calories from protein (per cent)	12 8		12 2	
Calories from fat (per cent)	42 7		34 1	
Calories from carbohydrate (per cent)	43 6		53 7	
Calcium (g)	0 63	0 16	0 77	0 25
Phosphorus (g)	1 13	0 25	1 14	0 29
Total iron (mg)	11 4	2 50	12 2	2 68
Inorganic iron (mg)	7 9	1 64	9 2	2 34

The calcium intake was significantly higher in 1941 than it was in 1935 The increased intake of milk almost exactly accounts for this, and the decrease in the consumption of cheese has been made good by an increased consumption of green vegetables The amounts of phosphorus in the diets were almost identical in the two surveys Both total and inorganic iron were higher in the war-time dietaries The iron acquired from the increased bread and vegetables more than made up for the iron sacrificed by the shortage of meat

VITAMIN C

The question has often arisen as to whether the war-time dietary is deficient in vitamin C To obtain some information on this point the vitamin C intakes of the individual women have been calculated as accurately as possible from the 1935 and 1941 records The most reliable figures which are available for the vitamin C in raw and cooked fruit and vegetables were kindly supplied by Miss M Olliver A sliding scale was adopted for potatoes, since it has been shown that the vitamin C in this vegetable varies greatly from one time of year to another Table VI shows the results The amount of the vitamin C derived from various sources on the two occasions is also shown It will be seen at once that the average intake in 1941 was only half what it had been in 1935

In 1935 fruit supplied ten times as much vitamin C as it did in 1941 and the women in the first survey got more from this source alone than those in the second obtained from the whole of their diet The amounts provided by vegetables and milk were a little higher in 1941, due to an increased consumption of these foods Jam provided the same amount on the two occasions in spite of the increased consumption of this food This was because the vitamin C in jam varies widely according to the fruit from which it is made In 1935 more black-currant jam, rich in C, was eaten

TABLE VI—AVERAGE VITAMIN C INTAKES (MG PER DAY)

Source	Women 1935	Women 1941
Fruit	37 5	2 8
Vegetables	15 6	19 4
Jam and marmalade	1 5	1 5
Milk	2 4	3 2
Total from all sources	57	26 9
Maximum	140	85 2
Minimum	10 2	7 7
Standard deviation	31	9 4

Fig 4 shows the frequency distribution of the vitamin C intakes It will be seen that in 1935 9 women were having less than 25 mg a day, 39 between 25 and 75 mg, and 15 more than 75 mg In 1941 26 out of 57 women had less than 25 mg, and only one had more than 75 mg, this was the woman who ate 300 oz of potato during the week, and she derived 43 mg of ascorbic acid a day from this source alone

The Technical Commission (1938) suggested that the vitamin C requirement of adults was covered by 30 mg of ascorbic acid daily The present results suggest that this is true, but that very much smaller amounts will suffice, for in the 1941 survey 41 women were having less than 30 mg a day, and had probably been having so for 3–6 months There were moreover, no manifest signs of scurvy among them nor indeed have there been any reports of scurvy even among sections of the community less privileged than the women here investigated Fox (1940) also came to the conclusion that the vitamin C requirement was much less than others (Harris 1939, Bacharach 1940) have supposed

The vitamin C intake in war-time must be expected to vary from one season to another as it has ceased to do in peace-time This survey was carried out in the lean season There was no fresh fruit, or raw vegetable salads, and even potatoes were at their lowest ebb No doubt the intakes would have been much higher in the summer and autumn

SUMMARY

The records of a dietary survey carried out in 1935 on 63 men and 63 women of the English middle class have been re-analysed At that time the men were eating an average of twice as much sugar and bacon, three times as much meat butter and jam, and five times as much cheese, as the rations allowed them in spring 1941 The women were eating less of these foods, but the quantities of all of them except sugar exceeded their rations in spring 1941

An individual dietary survey was carried out in spring 1941 on 57 women of a similar social class They were found to be eating much less raw fruit and less unrationed meat fish and sweets and chocolates than the women surveyed in 1935 Milk, bread and other cereal foods, potatoes and other vegetables were being consumed in larger amounts in the 1941 survey

The women in the 1941 survey had maintained their calories at their prewar level by substituting unrationed carbohydrate for rationed fat Their protein and phosphorus intakes were unchanged their calcium and iron intakes were higher than they had been in 1935 The amount of animal protein was less in the war-time dietary.

The average vitamin-C intake in 1935 was 57 mg a day and 27 mg in 1941 This decrease was due entirely to the disappearance of raw fruit from the market Three-quarters of the women in the 1941 survey were having less than 30 mg a day

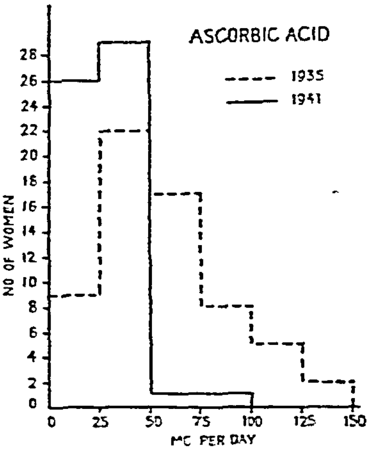

FIG 4—Frequency distribution of vitamin-C intakes

We are grateful to all those who have participated in this investigation by weighing their food We wish to thank Dr R A McCance for his advice and assistance in the preparation of the results for publication We are indebted to the Medical Research Council for grants and expenses

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SNEEZING AND THE SPREAD OF INFECTION

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(From the National Institute for Medical Research)

RECENT developments in flash photography[1] have increased our knowledge of the particles projected in human sneezing to a point which justifies some practical conclusions as to the best methods of preventing infection from sneezes American workers[2] have shown that in an ordinary sneeze many thousands of droplets are projected at an initial velocity which may occasionally be as high as 150 ft per sec and that most of these droplets come from the mouth Our own studies have given similar results in many instances, and have shown further points as follows

Sources of spray—While in most photographs the

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[1] Edgerton H E, Germeshausen, K J and Grier H E *J appl Physics* 1937 8, 2

[2] Jennison, M W *Sci Mon N Y* 1941, 52, 24

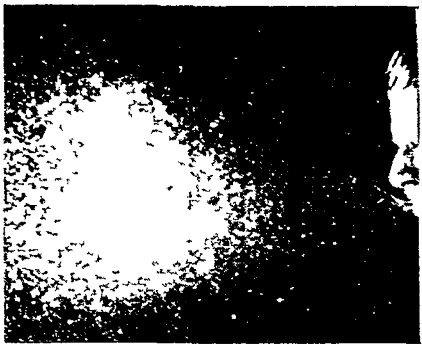

FIG 1—Discharge chiefly from mouth

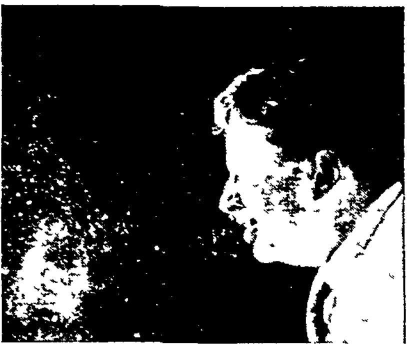

FIG 2—Discharge from both mouth and nose

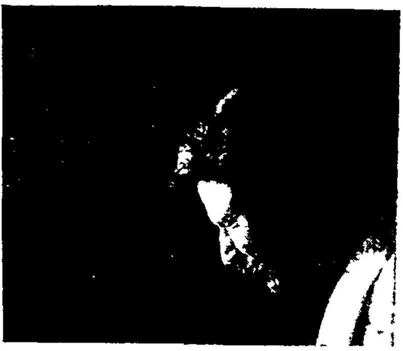

FIG 3—Discharge from nose only

majority of the droplets come from the mouth as in fig 1, in some cases a purely nasal discharge is seen as in fig 3, and in others a mixed oral and nasal discharge is seen as in fig 2 In this photograph it is evident that the nasal discharge is being blown forward by the air stream from the mouth, and so goes forwards rather than downwards *It is evidently not justifiable to conclude, as has been* suggested that nasal discharges are unimportant in ordinary sneezes

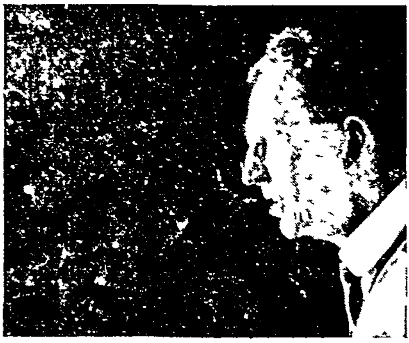

FIG 4—Teeth open, pressure low Large drops with few small ones

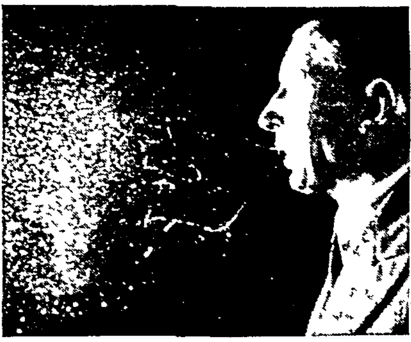

FIG 5—Strings of mucus are common

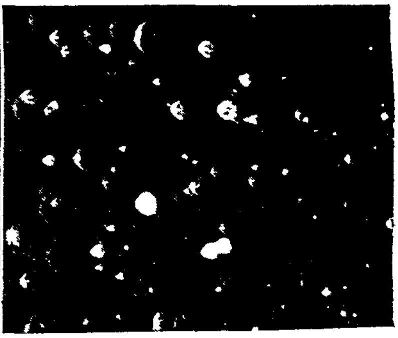

FIG 6—Part of fig 2 enlarged to two-thirds life size

Size of droplets varies greatly in different sneezes. Tightly closed teeth or lips and high expiratory pressure give a fine spray as in fig 1 Open jaws and lips and moderated expiration give relatively few large drops as in fig 4. Thus a sneeze with open mouth is probably less dangerous to other people, owing to the rapid fall to the ground of large drops, as well as being safer for the subject, owing to the reduced pressure in nose and throat Strings of mucus are common, as seen in fig 5 Fig 6* shows the remarkable appearance of the droplets when photographed while in motion The pointed outline of the faster moving droplets is possibly an artefact

Distance projected —In a vigorous sneeze very large numbers of droplets will hit a vertical plate 3 ft distant from, and a few inches lower than the subject's mouth A small number of large droplets reach a plate 5 ft distant and 1–1½ ft. below the subject's mouth The range of danger from direct projectile infection is not less than 4 ft but will rarely exceed 6 ft for a person at the same height as the sneeze.

Infectivity of spray —Fig 7 shows a culture plate of 9 in diameter which was placed vertically in the path of the sneeze shown in fig 1, at a distance of 3 ft from the subject's nose The subject was in good health and free from cold (in August), but the serum-agar plate after 14 hours incubation showed over 19,000 colonies These colonies came from at least 19,000 separate droplets, and no attempt was made to estimate the number of bacteria per droplet While in this case the bacteria are mostly harmless ones *from the front of the mouth*, it is clear that very many of the droplets in a sneeze do contain living bacteria It seems reasonable to infer that in acute infections of the upper respiratory tract droplets from sneezes are highly infective

Presence of droplet nuclei —Tests have been made with a subject sneezing in a small closed room of 800 cu ft. capacity, with floor and table oiled as a precaution against dust Culture plates of 9 in diameter were exposed on a table 5 ft. from a subject who sneezed twice On one plate uncovered only for the 20 min period from 10 to 30 min after the sneezes no less than 493 colonies grew A similar plate exposed for 15 min in a control test without the sneezes showed only 5 colonies A series of tests of this type have shown conclusively that a large number of the bacteria-carrying particles from a sneeze are small enough to remain suspended for

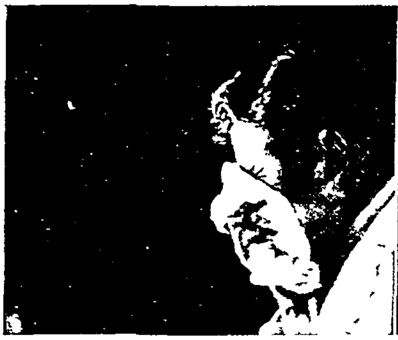

FIG 8—A sneeze well covered with an ordinary handkerchief

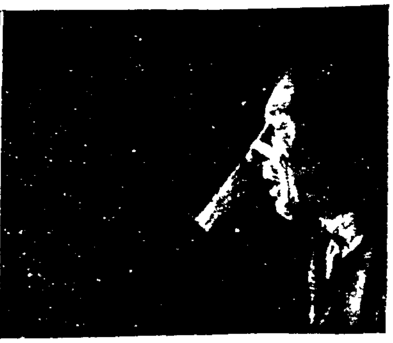

FIG 10—A sneeze into a cheap mask Note three droplets only escaping downwards

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* The enlargement is such that the subject's head if included would be two thirds life size, but the true size of the droplets may be less than their apparent size if they are appreciably out of the focal plane

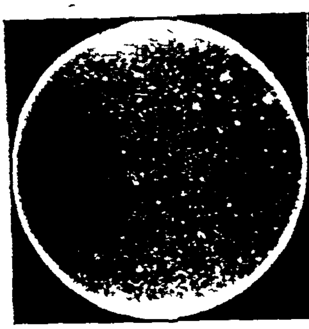

FIG 7—19 000 colonies of bacteria on a culture plate exposed to the sneeze shown in fig 1

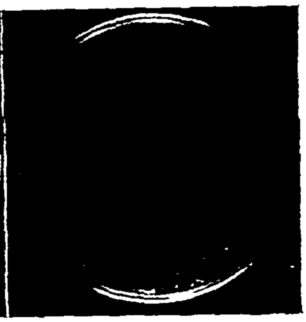

FIG 9—One colony only on a culture plate exposed to a sneeze as in fig 8

over 15 min before falling on the culture plates Such particles come within the category defined by Wells[3] as "droplet nuclei," and are certainly capable of conveying infection under suitable conditions

HYGIENIC MEASURES

To prevent the spread of infection when sneezing indoors one or more of the following measures is usually adopted We have placed them in order of estimated efficiency

Sneezing directly into a coal or gas fire (from a short distance) does in our opinion, ensure sterilisation of nearly all the droplets since owing to the chimney draught few droplets will escape being carried into the fire or up the chimney

The careful use of a large handkerchief—Figs 8 and 9 show that this method can be very efficient In fig 8 the subject is sneezing vigorously at the moment of exposure, but no droplets can be seen escaping Fig 9 shows a culture plate similar to that shown in fig 7 but exposed in front of a sneeze trapped by a handkerchief as shown in fig 8 This plate contained one colony only

A transparent mask—Fig 10 shows a vigorous sneeze covered by a cheap mask of cellulose acetate 5½ in × 5½ in, such as has been provided in reserve for London shelter populations The droplets from the sneeze can be seen collected inside the mask except for three which are seen below the mask in line with its surface The high apparent efficiency of this type of mask is rather surprising, and it is possible that some very fine droplets are escaping sideways without being visible in the photograph

A gauze mask of good quality can be fairly efficient for a single sneeze, but becomes messy and unpleasant after multiple sneezes, since unlike a transparent plastic, gauze cannot be wiped clean and dry

The hand—Figs. 11 and 12 show how very inefficient the hand is as a sneeze guard With the closed hand in fig 11 inefficiency would be expected but with the open hand placed in position well before the sneeze occurred, as in fig 12, more protection might be expected. Its failure is due to the upward deflection of the air stream which can be seen in this photograph and has been confirmed in another instance

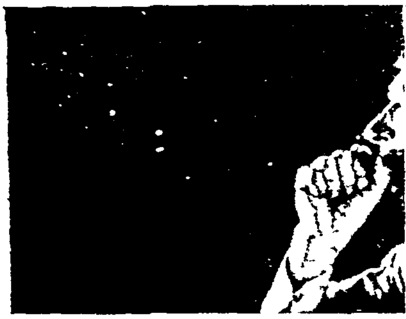

FIG 11—The closed hand is very inefficient

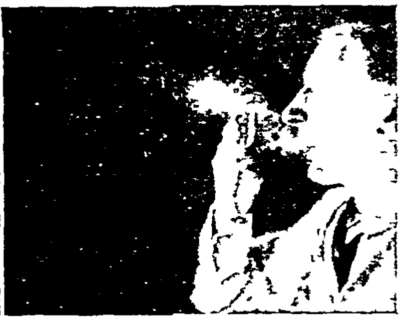

FIG 12—The open hand may only stop a fraction of the particles and deflect the rest upwards

TECHNIQUE

Few people can sneeze regularly in front of a camera, owing to the ease with which the sneezing reflex is inhibited We found a number of subjects who could do it occasionally after taking snuff, and two who could sneeze regularly, one after taking snuff, and one after inhaling minute quantities of ω-bromaceto 6 methoxy quinoline hydrobromide

A stroboscope lamp was used with mercury kathode and a special igniting electrode, supplied by British Thomson-Houston Ltd The flash was made by discharging through this a battery of 100 × 1 μf dry condensers charged to 2100 volts from a series of dry batteries and accumulators A cylindrical parabolic reflector of duralumin was placed behind the lamp with small electric heaters at the sides to keep the lamp gently warmed The flash was timed with a hand-controlled switch by an observer who watched the onset of each sneeze The camera C, lamp L, and subject S were placed at the corners of a triangle of dimensions approximately as follows LC 55 in, LS 36 in, CS 41 in The subject sneezed on a line passing close to the lamp, but between it and the camera The lamp reflector was just to the left of the portions of the photographs reproduced here This system gives maximum illumination as the droplets approach the lamp—i e, at the farthest distance included in the photograph It is in contrast to the system used by most American workers, who place the lamp very close to the subject's head Owing to the very brief duration of the flash the subject is not dazzled, even if his eyes are open

SUMMARY

The droplets from a sneeze contain many fine bacteria-laden particles which remain suspended in the air for more than ten minutes A large handkerchief carefully used prevents the scattering of these droplets, and a simple impermeable mask collects the vast majority of them The use of the hand for checking such scattering is very inefficient

We wish to thank the research staff of British Thomson-Houston Ltd for advice on the use of this lamp, and the various subjects who have patiently sneezed for this study We are also indebted to Mr S F Wilkinson for suggesting the taking of some of these photographs

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CORROSIVE STRICTURE OF THE STOMACH

WITHOUT INVOLVEMENT OF THE ŒSOPHAGUS

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LATELY SURGEON IN AN E M S HOSPITAL

CICATRICIAL stricture of the œsophagus following ingestion of corrosive acids or alkalis is well known, and lesions of the stomach in association with an œsophageal stricture have been reported (Sager and Jenkins 1935, Vinson and Hartmann 1928) but stricture of the stomach with an unharmed œsophagus seems to be very rare, at any rate in England though the condition is fully dealt with in a number of foreign papers

The only recorded case in the English language is described by Vinson and Harrington (1929) A man of 59 accidentally swallowed formaldehyde, subsequently developing signs of obstruction in the stomach, barium meal 4 weeks after the episode showed a double stricture of the stomach which was confirmed at operation, there had been no permanent damage to the œsophagus There is also a case in the autopsy records at Guy's Hospital (Bishop P M F, personal communication) of a woman of 61 who swallowed hydrochloric acid and developed signs of pyloric obstruction, she died 4 weeks after admission from bronchopneumonia At autopsy the œsophagus was found to be free from any lesion, while the stomach showed a tight, fibrous, annular stricture for 3 cm above the pylorus. Prof Grey Turner, who has had extensive experience of strictures of the œsophagus and other lesions following the ingestion of corrosives, tells me that he knows of only one case where pyloric stenosis

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[3] Wells, W F *Amer J Hyg* 1934 20 611

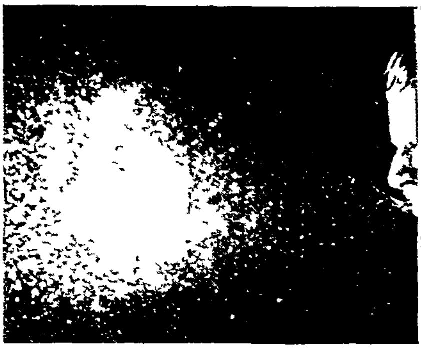
FIG 1—Discharge chiefly from mouth

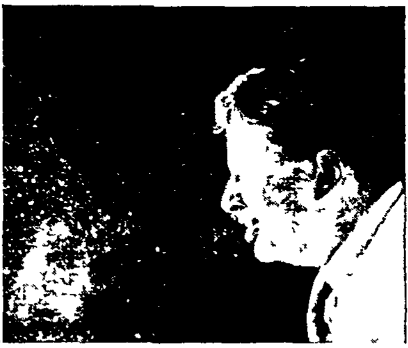
FIG 2—Discharge from both mouth and nose

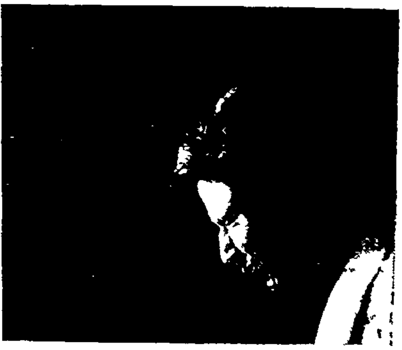
FIG 3—Discharge from nose only

majority of the droplets come from the mouth as in fig 1, in some cases a purely nasal discharge is seen as in fig 3, and in others a mixed oral and nasal discharge is seen as in fig 2 In this photograph it is evident that the nasal discharge is being blown forward by the air stream from the mouth, and so goes forwards rather than downwards It is evidently not justifiable to conclude, as has been suggested, that nasal discharges are unimportant in ordinary sneezes

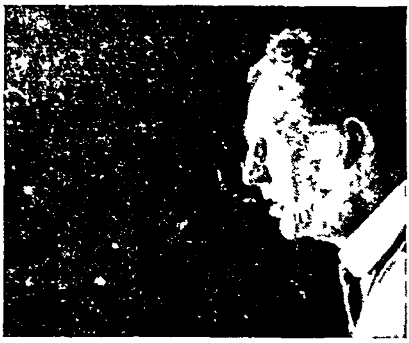
FIG 4—Teeth open, pressure low Large drops with few small ones

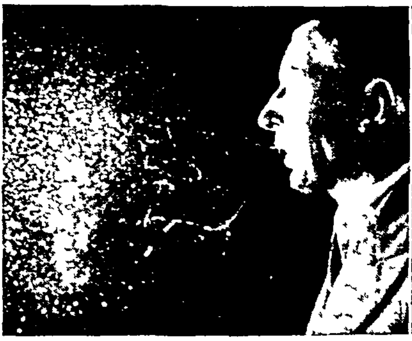
FIG. 5—Strings of mucus are common

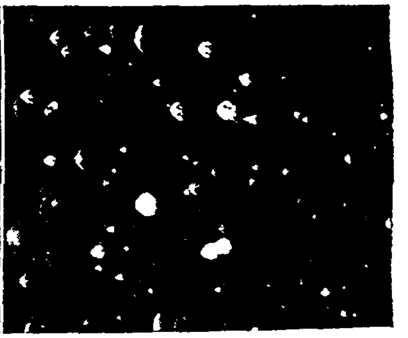
FIG 6—Part of fig 2 enlarged to two thirds life size.

Size of droplets varies greatly in different sneezes. Tightly closed teeth or lips and high expiratory pressure give a fine spray as in fig 1 Open jaws and lips and moderated expiration give relatively few large drops as in fig. 4. Thus a sneeze with open mouth is probably less dangerous to other people, owing to the rapid fall to the ground of large drops, as well as being safer for the subject, owing to the reduced pressure in nose and throat Strings of mucus are common, as seen in fig 5 Fig 6* shows the remarkable appearance of the droplets when photographed while in motion The pointed outline of the faster moving droplets is possibly an artefact

Distance projected—In a vigorous sneeze very large numbers of droplets will hit a vertical plate 3 ft distant from, and a few inches lower than, the subject's mouth A small number of large droplets reach a plate 5 ft distant and 1–1½ ft. below the subject's mouth The range of danger from direct-projectile infection is not less than 4 ft but will rarely exceed 6 ft for a person at the same height as the sneeze

Infectivity of spray—Fig 7 shows a culture plate of 9 in diameter which was placed vertically in the path of the sneeze shown in fig 1, at a distance of 3 ft from the subject's nose The subject was in good health and free from cold (in August), but the serum-agar plate after 14 hours incubation showed over 19,000 colonies These colonies came from at least 19,000 separate droplets, and no attempt was made to estimate the number of bacteria per droplet While in this case the bacteria are mostly harmless ones from the front of the mouth, it is clear that very many of the droplets in a sneeze do contain living bacteria It seems reasonable to infer that in acute infections of the upper respiratory tract droplets from sneezes are highly infective

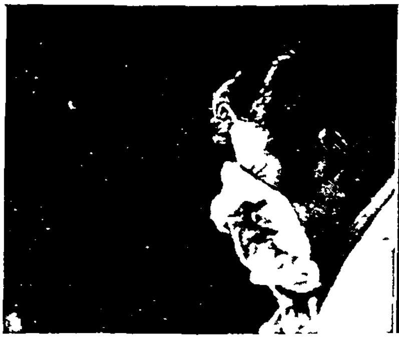
FIG 8—A sneeze well covered with an ordinary handkerchief

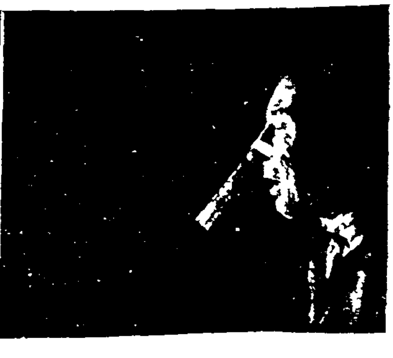
FIG 10—A sneeze into a cheap mask Note three droplets only escaping downwards

Presence of droplet nuclei.—Tests have been made with a subject sneezing in a small closed room of 800 cu ft. capacity, with floor and table oiled as a precaution against dust Culture plates of 9 in diameter were exposed on a table 5 ft. from a subject who sneezed twice On one plate uncovered only for the 20 min period from 10 to 30 min after the sneezes no less than 493 colonies grew A similar plate exposed for 15 min in a control test without the sneezes showed only 5 colonies. A series of tests of this type have shown conclusively that a large number of the bacteria-carrying particles from a sneeze are small enough to remain suspended for

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* The enlargement is such that the subject's head if included would be two thirds life size. but the true size of the droplets may be less than their apparent size if they are appreciably out of the focal plane

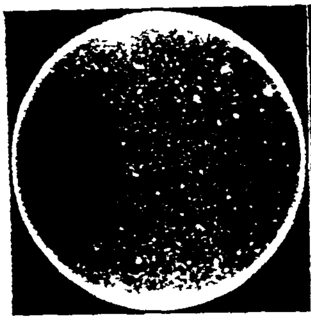

FIG 7—19 000 colonies of bacteria on a culture plate exposed to the sneeze shown in fig 1

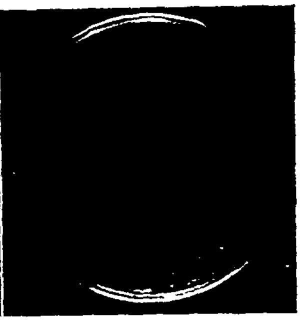

FIG 9—One colony only on a culture plate exposed to a sneeze as in fig 8

over 15 min before falling on the culture plates Such particles come within the category defined by Wells[3] as "droplet nuclei," and are certainly capable of conveying infection under suitable conditions

HYGIENIC MEASURES

To prevent the spread of infection when sneezing indoors one or more of the following measures is usually adopted We have placed them in order of estimated efficiency

Sneezing directly into a coal or gas fire (from a short distance) does in our opinion, ensure sterilisation of nearly all the droplets, since owing to the chimney draught few droplets will escape being carried into the fire or up the chimney

The careful use of a large handkerchief—Figs 8 and 9 show that this method can be very efficient In fig 8 the subject is sneezing vigorously at the moment of exposure, but no droplets can be seen escaping Fig 9 shows a culture plate similar to that shown in fig 7 but exposed in front of a sneeze trapped by a handkerchief as shown in fig 8 This plate contained one colony only

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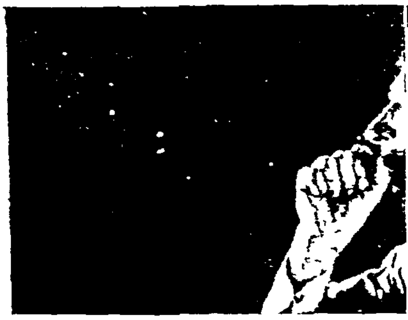

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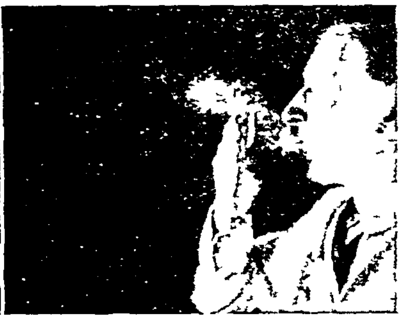

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3 Wells W F *Amer J Hyg* 1934, 20, 611

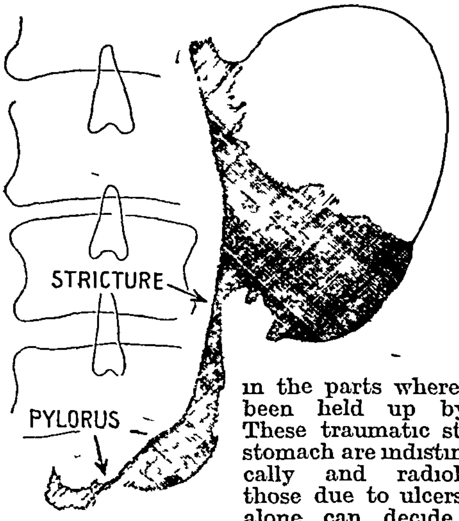
occurred after the swallowing of lysol Similar cases have been reported by Pop and Galdau (1928a and b), Bock and Hin (1931), Popp (1931) and Faynberg (1935) Orator (1929) reviews the clinical findings on the basis of 34 collected cases, and Petrov (1935) reports 41 operations for burns of the stomach by strong acids and alkalis Their conclusions are similar

1 Acid burns are much more liable to cause gastric stenosis than alkalis, which affect mainly the œsophagus

2 The site of stricture formation is almost invariably the pyloric and prepyloric regions

3 The surgical procedures for relief are determined by the stage at which the patient is seen In the earliest stages, with gross damage to the stomach, jejunostomy is the operation of choice At a later stage, when stenosis with obstruction is established, gastrojejunostomy is the only rational procedure

An interesting experimental study is provided by Testa (1938) A small amount of caustic soda, with added barium, was introduced into the œsophagus of dogs, and its passage observed by X rays In the stomach, the alkali flowed along the lesser curvature and a severe pre-antral spasm was produced which lasted for a variable time and was followed by peristalsis and relaxation of the spasm and of the pylorus Subsequent examination showed the severest trauma and changes to be in the parts where the fluid had been held up by the spasm These traumatic strictures of the stomach are indistinguishable clinically and radiologically from those due to ulcers The history alone can decide the question The prepyloric strictures often simulate carcinoma, but the defect in the radiogram has a smoother outline than in cancer



Tracing of radiogram after barium meal

CASE-HISTORY

A railway station attendant of 52 was admitted to St Alfege's Hospital on Nov 26, 1940, with a history of having swallowed 1 oz of concentrated hydrochloric acid about two hours before Until this time he had always been well He had vomited twice before admission, and had some epigastric pain His voice was thick and slurred, and his tongue, cheeks and fauces were badly burned Routine immediate treatment was applied Four days after admission he complained of difficulty in swallowing and epigastric discomfort A barium swallow was given 16 days after admission, but showed no œsophageal delay or stricture On Dec 19 (23 days after admission) a barium meal X ray examination was made by Dr K J Yeo, and a stricture of the stomach proximal to the pylorus was demonstrated, the distal pocket being collapsed and empty (see figure) On Dec 30 (34 days after admission) the patient began to vomit daily He was then transferred to the Southern Hospital, Dartford, where the vomiting was controlled for some time by small, frequent feeds Improvement was not sustained, however, and when I saw him first, on Jan 29, he presented a classical picture of pyloric obstruction, with dilated stomach, succussion splash and visible peristalsis The stomach was aspirated continuously through an indwelling Ryle's tube, and continuous intravenous saline with glucose was administered

Operation was performed on Jan 30 under local analgesia The stomach was exposed through a high midline incision, it showed a tight, fibrous stricture about 2 in proximal to the pylorus, the greater curvature being drawn up to the lesser curvature by the scarring The proximal pouch of the stomach was much hypertrophied and dilated, while the distal pocket was collapsed and empty There was no evidence of malignant disease, and there were no enlarged glands along the curvatures The gall-bladder was small and contained one stone An anterior, antecolic gastrojejunostomy was performed, and the abdominal wall was sutured with interrupted buried floss silk sutures Intravenous fluids and aspiration of the stomach were continued for a further 36 hours, and the patient made a good recovery A barium meal on March 13 showed the œsophagus normal and the stoma functioning well The distal part of the stomach was faintly outlined and showed the stricture, which allowed the passage of only a small amount of barium Œsophagoscopy on April 16 showed no signs of stricture or ulceration, and the cardia was normal By May the patient had gained a stone and a half in weight, was eating well, and had no abdominal discomfort

COMMENT

A constant feature of the recorded cases is the rapidity of onset of the stenosis One of the cases reported by Pop and Galdau had a complete stricture 19 days after swallowing caustic soda, while the cases mentioned in this paper had developed tight strictures within 4 weeks This can be explained by rapid healing with fibrosis, following intense localised destruction of mucous membrane and stomach coats by the corrosive while held up by the pyloric and pre-antral spasm This holding up of the corrosive by spasm was well demonstrated in Testa's experiments The intensity of this destruction is shown by the fact that acute perforation of the stomach wall can occur if the acid remains localised to one area The radiographic appearances may be indistinguishable from those produced by carcinoma or sclerosing ulcers This is important, because malignant disease must be excluded or appropriately treated at operation The preponderance of stomach lesions where acid has been swallowed and of œsophageal stenosis where alkali has been taken is noted by all observers, but no rational explanation has been given Complete absence of injury to the œsophagus was demonstrated in the case recorded here by X-ray examination and œsophagoscopy.

I wish to thank Dr W Allen Daley, medical officer of health to the London County Council, for permission to publish this case, and Dr P M F Bishop for a note of the case at Guy's Hospital

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Medical Societies

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM

THE annual congress of this society took place at Trinity College, Cambridge, on Sept 4 and 5 under the presidency of Mr R AFFLECK GREEVES (London) who read a paper on *œdema of the macula* He thought this condition was always accompanied by deterioration of central vision, varying in degree according to the severity of the œdema The distortion of straight lines was a common symptom and a valuable diagnostic point A sense of diminution in the size of objects was also common The clinical signs were loss of retinal transparency, though in the slightest degrees of œdema a minute ophthalmoscopic examination and a careful comparison with the appearance of the macula of the other eye might be necessary for its detection After œdema central vision might be restored, improve up to a point, remain permanently reduced (possibly with some visual distortion), or be permanently destroyed, as in most cases of central venous thrombosis The ophthalmoscopic appearance of the macula might return to normal, but some permanent pigmentary disturbance could often be seen A complete restoration of the normal appearance of the fundus did not always connote full recovery of vision and a fine granular disturbance might persist at the macula even when normal vision was restored Mr Greeves later described a case of *choroidal sarcoma at the macula* He had encountered 10 such cases, which varied greatly in malignancy

Mr HUMPHREY NEAME (London) described 17 cases of *dendritic ulcer of the cornea*, 8 of which were associated with herpes simplex He had treated the ulcers mainly by hot bathing, with atropine pad and bandage, and rest He thought that dendritic ulcers should be given a chance to heal without carbolisation

In his paper on *unusual symptoms of migraine* Mr T HARRISON BUTLER (Birmingham) said that in a few cases the headache was due to ocular defect But a headache of recent origin must be due to some recent cause, and an ocular defect which had been present for some years or from birth was unlikely suddenly and independently to give rise to headache Large errors of refraction and muscle balance did not generally cause headache, and if headache was present it was often not relieved by glasses In the discussion which followed the PRESIDENT was of opinion that headaches were often wrongly attributed to errors of refraction, fatigue was an outstanding cause of migraine Mr FRANK HECKFORD (Ryde) drew attention to the large numbers of young people between 15 and 25 among whom disturbances of this kind were common, due to some vasomotor irregularity They nearly always complained of cold hands and feet and of a feeling of weight on the top of the head, accentuated in girls during their periods

Sir JOHN PARSONS, F R S (London) embodied a memorandum sent to the Army Council by a subcommittee of the Military Personnel Research Committee in his paper on *eye protection in warfare* The committee did not favour a metal vizor of the Cruise type, but Sir RICHARD CRUISE (London) in the discussion said that it was the experience of ophthalmic surgeons that at least half of the war casualties with which they had to deal might be prevented by the provision of an eye protector The argument that the vizor under unusual conditions impeded visibility did not seem to him to hold good, for it need not be lowered when it was likely to handicap the wearer Mr HARRISON BUTLER pleaded that some such protection ought to be available for civilians who had to deal with incendiary bombs, and it was remitted to the council of the society to consider approaching the Ministry of Home Security with the suggestion that civilians to whom steel helmets had been issued should have the opportunity of buying for themselves some form of eye protection

The set discussion of the meeting on *ocular injuries resulting from the war* was opened by Dr O M DUTHIE (Manchester) He said that the number of eye casualties so far in the war was small He had seen only 50 severe injuries Ruptures were the most common of all war injuries Many especially those due to flying glass, were virtually untreatable, and even when they were not severe the end-results were deplorable Subconjunctival ruptures, with or without dislocation of the lens, were not infrequent Dr S ZUCKERMAN, who dealt with the problem of blast, held that although at high pressures, when casualties were close to the exploding bomb, there might be eye injuries due to blast, other injuries were likely in any case to prove fatal He pleaded for more statistics from those at work in eye hospitals and elsewhere, saying that until these were available they would be largely working in the dark on the question of protection

Of 100 patients Mr E B ALABASTER (Birmingham) had seen at a casualty hospital, 60 were cases of traumatic conjunctivitis, 21 were penetrating wounds, chiefly from metal or glass foreign bodies 6 were cases of corneal abrasion, 5 were cases of subconjunctival hæmorrhage, and 5 were injuries to the lids only There were single cases of central retinal block, detached retina and orbital cellulitis Of the 21 cases of penetrating wounds, 12 had required enucleation of one eye There was no case of complete bilateral loss of vision Mr HERBERT CAIGER (Sheffield) said that nothing had brought home to him the tragedy of this war so much as the case of a man aged 65 who was injured last November According to the man's story one eye was blown right out of the [illegible] other eye showed detachment of the retina More than twenty speakers took part in the discussion and several mentioned cases within their experience in which there had been no apparent injury to the eye by a blow or the penetration of a foreign body, and yet there was serious damage which could only be put down to blast Others claimed that no injury had been proved to have been produced solely by windage, that the term "blast" had become discredited, and that it would be better to call these lesions explosive injuries due to the impact of a foreign body on the eye One speaker told of a patient who had been thrown 40–50 ft, but had sustained only an injury to his knee, and complained that with one eye he could not see very well To this it was replied that one might with equal logic ascribe to blast the injuries received by falling from a high roof Mr A B NUTT (Sheffield) stressed the necessity for an ophthalmic surgeon to see eye cases as soon as possible after their admission to hospital, before they were lost in the surgical wards on account of other injuries Sometimes when there were extensive injuries to the face it was found that they had been stitched with thick silkworm gut without regard to alignment or the normal anatomy of the part Mr VICTOR PURVIS (London) said that on the night of Dec 29 last year, when there were widespread fires in London, 128 firemen were treated at Moorfields, of whom all but 4 had corneal or conjunctival foreign bodies None of them, however, needed inpatient treatment, and only 24 a second visit to hospital

Dr M D THAKORE (London) described a case of *pterygium* a rare condition in this country, though common in the Near East

Mr EUGENE WOLFF (London) gave an illustrated demonstration of *cholesterin spaces* in celloidin sections and of differential staining of the rods and cones Mr F A WILLIAMSON-NOBLE (London) read a paper on *unsealed retinal holes* It was open to question whether the presence of a hole with only a small peripheral loss of field and no interference with central vision required an operation, particularly in times like these when bombing raids might interfere with proper post-operative care

Squadron-Leader J H DOGGART described *refraction under war-time Service conditions* and suggested various expedients for speeding up refraction tests for Service men In the discussion which followed it was the general experience that malingering which was much in evidence during the last war, was almost unknown in this, but some men tried to prove that their eyesight was better than it was in order to obtain a particular job One speaker mentioned that it was not uncommon for the vision of recruits to be 6/9 on joining and shortly after entry into the army to be 6/6, but it was pointed out that the two examinations would probably be made by different people under different conditions

Mr FRANK LAW (London), who in the absence of the hon secretaries on service had arranged the meeting, read a paper on *squamous-celled carcinoma of the conjunctival surface of the lid* In this rare condition it was difficult to determine the site of origin of the neoplasm In the case he brought forward there was an ulcerated area, just nasal to the midline and some 6 mm across Removal was undertaken under general anæsthesia and repair effected by a simple plastic manœuvre Sutures were removed after six days and when last seen the patient complained of nothing either as regards comfort or appearance The specimen proved to be a squamous-celled carcinoma, but a point of even greater importance was the large amount of keratinisation and the many cell-nests found in a tumour arising in this situation

Mr G T W CASHELL (Reading) described a case of *orbital angioma* in a woman aged 43, and several members mentioned other cases occurring at a mature age although, according to the President such growths did not commonly increase in size save during the growing years Wing-Commander KEITH-LYLE had obtained remarkably successful results by operative treatment in cases of *diplopia due to head injury* arising from either paralysis or paresis of one or more of the extrinsic ocular muscles or a fracture of the orbit producing a displacement of the eyeball downwards Mr O GAYER MORGAN (London) described a case of *nystagmus synchronous with the pulse-rate* It was found to be labyrinthine in type, due to mastoid disease, operation for which stopped the nystagmus The last paper of this meeting was by Mr LINDSAY REA (London) on a remarkable case of keratitis, which he had successfully treated by the osmotic action of 10% warm magnesium sulphate applied for 5–10 min two or three times a day

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Reviews of Books

The Extra Pharmacopœia (Martindale)

(22nd ed) In two volumes vol I London the Pharmaceutical Press Pp 1289 27*s* 6*d*

PUBLISHERS sometimes announce that a book is eagerly awaited and the wish may be father to the thought The first edition of the Extra Pharmacopœia in 1883 was sold out within a fortnight the twenty-second edition which appeared last Saturday is likely to meet the same fate For the book is a compendium of information otherwise only obtainable, in many instances, by reference to numerous textbooks and by arduous searching through the scientific literature And it happens that in the five years since the last edition appeared medicine has been enriched with synthetic remedies which have robbed many common ailments of their terror The new section headed sulphanilamidum with its 37 pages is the longest in the book Advance in knowledge of the sex hormones has doubled the section on œstradiol, and names like stilbœstrol and testosterone propionate occur for the first time And these are but two of the more striking examples of the new therapeutic agents described The book is also a complete guide to the law of poisons, the regulation of dangerous drugs, and the safeguarding of vaccines, sera, insulin and other therapeutic substances The Pharmaceutical Society of Great Britain deserves high praise for its enterprise in producing such a work under the circumstances of the times The only misprint occurs on p 1078 and the seriousness of the index is relieved by calling medical pigments just Pig

History of Magic and Experimental Science

Vols V and VI, the Sixteenth Century LYNN THORNDIKE London Humphrey Milford, Oxford University Press Pp 695 and 766 66*s* 6*d* each volume

Prof Thorndike's learned and detailed account of the study of magic and experimental science at a time when they were of almost equal importance in public estimation is a book for the scholar rather than the general reader He tells us that he has mentioned three thousand people by name, and has 1700 additional subjects in his index Among such profusion of trees, it is sometimes a little difficult to keep one's eye on the wood The thing which stands out with extreme clearness is the extraordinary surge and boiling up of Renaissance thought If we leave out of consideration altogether the greater names, such as Leonardo, Galileo and Copernicus, it is yet a most inspiring sight to watch the host of smaller men who launch themselves with headlong enthusiasm on the seas of controversy, ready to tackle any problem, from the structure of the universe, to the cure of demoniac possession by means of the liver of a black cat

The difficulties which beset any real experiment were almost insurmountable It was impossible to test or even to observe many of the natural—or unnatural—phenomena which were the accepted stock-in-trade of argument The discovery of the New World and of the printing press had between them laid bare a wealth of unimagined marvels, known of necessity by hearsay evidence only to most investigators Therefore though the reasoning might be close, nothing was too wildly improbable to serve as a premiss and it is indeed a wonder that through the storm and tumult, beneath the reciprocal shouts of "charlatan" and "empiric" we are able to discern the faint foreshadowing of psycho-analysis, the early—and very strange—gropings of biotherapy At the beginning of the century it was necessary to steer a wary course between the theories of Aristotle and ecclesiastical dogma, backed menacingly by the Holy Office With lapse of time both these influences rather waned, and from a quite early date it was possible to circumvent the Church by surprisingly simple devices, such as a postscript appended to one's pet and fully developed theory, stating that since it is contrary to the teaching of Scripture the author does not, of course believe it, or that all mention of God has been omitted in the discussion of dreams, because at this time he does not wish to mix profane and sacred matters The book of Genesis however was to remain a formidable stumbling-block to the scientist for two or three centuries longer

It is perhaps noteworthy that while science has developed so as to be almost unrecognisable, magic, though curtailed in scope, still stands exactly where it did We no longer consult witches, but how many otherwise intelligent people buy and wear amulets against rheumatism, mumble some magic formula to the new moon, and read with avidity those astrological prophecies in the Sunday papers, which though shorn of all pomp and beauty remain in essence identical with their sixteenth century prototypes

Artificial Pneumothorax

Its practical application in the treatment of pulmonary tuberculosis Editors EDWARD N PACKARD, M.D, JOHN N HAYES, M D, SIDNEY F BLANCHET, M D London Henry Kimpton Pp 300 21*s*

MUCH has been written about therapeutic pneumothorax, but this book is a valuable contribution, coming as it does from the pens of seventeen Saranac Lake physicians Pooling their experience, they have produced a practical guide to treatment by artificial pneumothorax which embodies the practice of the Trudeau Foundation Much of what they say has necessarily been said before, and is familiar to specialists in this country, there is nothing new, for example, in the historical survey, admirable though it is, or in the chapters dealing with apparatus and technique The physiology of pneumothorax and the pathology of the collapsed lung are given their proper share of space, and the value of the X-ray picture in the control of treatment is clearly set out Dr H L Sampson makes the captivating statement that "the X-ray is not the handmaiden but the mistress of therapeutic pneumothorax" The best wine, however, is served towards the end The chapters by Dr J N Hayes on pleural complications of artificial pneumothorax and by Dr W W Woodruff on the results of treatment of tuberculous empyema, are very good indeed Their practice is neither too conservative nor too energetic, and their opinions are constantly backed by results Finally, in the last chapter, Dr Hayes and Dr Packard discuss the results of treatment by artificial pneumothorax In this assessment they use the findings of others as well as their own, and handle an almost impossible task adroitly The book does not set out to be a symposium, but leading references are given at the end of each chapter

Your Health in Wartime

CHARLES HILL, M D Camb, D P H London University of London Press Pp 48 1*s*

THIS little book is based on a series of broadcasts to schools arranged by the Central Council for Health Education and the Central Council for School Broadcasting, and given by Dr Hill, chairman of the emergency committee of the former body The talks are admirable, both in matter and manner, emphasis being laid on the public duty as well as the desirability of healthy life and practice Dr Hill's maxims will stick in the mind

> It is bad health as well as bad manners to cough or sneeze into the air
>
> If you feel a cold coming on get as far away from everybody as you can The person who carries on at school or work despite a cold is not a hero but a danger to the community

The first two chapters, dealing with germs and the body's defences (including immunisation and inoculation) contain much scientific information written in a simple, racy style which would interest any intelligent elder schoolboy or girl These are followed by talks on cleanliness, ventilation sleep and rest, and a supplementary chapter on food The virtue of moving as contrasted with stagnant air is made clear by explanatory examples, and advice is given on the importance of early sleep and regular habits The food section is perhaps more valuable to parents than to children, and the whole book may well be read and kept for reference by anybody interested in the care and welfare of young people

THE LANCET

LONDON SATURDAY, SEPTEMBER 27, 1941

THEN AND NOW

THEN was in 1935 in those easy ante-bellum days, when shops competed for the privilege of selling one a Polish egg and 'rationing' merely conjured up vague memories of 1917 or started mother off on a well-worn trail of reminiscence. In those days of plenty, six years ago, 63 men and 63 women of the English middle classes weighed all the food that they ate for a week of their busy lives and sent the results to Dr WIDDOWSON. It all seemed rather a bore no doubt, but Dr WIDDOWSON was enthusiastic and persuasive and the doubters were induced to participate by assurances that this was an altogether novel method of making a dietary survey, and that the results would be of far more value than any hitherto obtained by the hackneyed and inaccurate "family" technique. It seems like a dream to us now—the butter and jam these men were eating, and the meat! Two men had more than 24 oz of butter a week and four more than 60 oz of mutton and beef. The women were not quite so rapacious, but 59 of them were eating more butter than the paltry 4 oz a week allowed us by Lord WOOLTON in spring 1941.

These are some samples of the information which Dr WIDDOWSON and Miss ALLINGTON have set out on another page. They aimed at finding out how well (or ill) people were adapting themselves to the rationing and restrictions in operation during the spring of 1941. To this end they reanalysed the data which had been collected by one of them in 1935. This told them how much of the foods which were rationed in 1941 were being eaten by men and women in 1935. They then carried out another dietary survey on 57 individual women, 7 of them victims of the previous experiment. This made it possible to trace the effect of the war on consumption of both rationed foods and foods which were not officially rationed but were in short supply. Some of their conclusions are illuminating. They think, for instance, that the shortage of cakes and biscuits is due more to increased demand than decreased supply, and the Ministry of Food agrees that this is probable. They show that the women surveyed in 1941 were rapidly eating up stores of jam which they must have been accumulating before rationing started. From the study of sugar consumptions they suggest that these women were planning to replenish their stocks of jam to the best of their ability when the fruit season came along. They demonstrate how the fruit shortage had reduced the intakes of vitamin C, and point out that the majority of women in this country must have been having less vitamin C in 1941 than many of the experts have considered to be a woman's minimum requirement, and naïvely suggest that since there have been no outbreaks of scurvy there may be something wrong with the experts' computations. One of the most interesting findings was that rationing may and does restrict the intakes of the foods which fall under the official axe, but it stimulates the consumption of those which do not, so that the calories remain much where they were before the limitations were imposed. This principle it seems, was first established by McCANCE and WIDDOWSON in an experimental study of rationing, so far unpublished. Further studies of individual intakes might be of considerable benefit to the theory and practice of rationing and to nutrition in its wider aspects. Men, it appears, are likely to have been much harder hit by the rationing than women, and it is to be hoped that Miss WIDDOWSON and her colleague will now turn their attention to the sterner sex and see how they are getting on when it comes to the spring of 1942.

WHITHER PHARMACOLOGY?

THE frontiers of pharmacology are less clearly defined than those of any other subject in the medical curriculum, and therein lies its strength and its weakness. Pharmacologists as a class are imbued with an expansionist philosophy of a benign type. Their researchers—the mechanised columns of scientific thought—are often found in the adjoining territories of chemistry, physiology, bacteriology and toxicology, not to mention the lightly tilled terrain of therapeutics. It is scarcely surprising that they have had to contend with invasion by the same technique. Thus it comes about that researchers in kindred subjects find themselves operating behind one another's lines. Only those afflicted with the Teutonic plague of rationalisation will see in this organised disorder anything unwholesome, for it is one of the traditions of British medicine that the trained researcher should be allowed to flit where fancy beckons. Nevertheless, the integrity of pharmacology is seriously threatened; there are signs of impending dissolution, and already clamant voices are demanding a share of the spoil.

The science has passed through several phases since the middle of last century. Early pharmacology, as Prof J A GUNN pointed out in his Dixon memorial lecture[1] concerned itself with the investigation of the action of drugs, mainly plants and inorganic compounds, which had been empirically introduced into therapeutics. This naturally led to the investigation of other substances, and so to the synthesis of new compounds which pharmacological investigation might show to have therapeutic possibilities. The commercial significance of this development has become increasingly apparent, and it is not surprising to find manufacturing chemists paying more and more attention to their research laboratories.[2] A vast amount of work is done there, but inevitably only a tithe of it results in the production of new remedies; and an organisation must possess considerable financial resources to meet the heavy cost of research on these lines. For many reasons—monetary considerations not least among them—few universities could hope to adopt the same methods even on a small scale. The academic pharmacologist had therefore to reconcile himself to the loss of this province of his science. But no-one will deny that the work in many commercial laboratories is done with great skill; again, many firms expend large sums on fundamental research without hope of immediate reward, thus adding to the general corpus of our knowledge of pharmacology; and lastly, the universities can adapt themselves by training young pharmacological specialists to undertake research in commercial laboratories A peripatetic correspondent can see no reason for the great gulf fixed between the university and the commercial firm in Britain He would like to see something of the cooperation between the two which is customary in Germany and, he might have added, in Holland, Denmark and the United States Full-time members of the medical departments of our universities are forbidden to help a commercial firm with its research, for this is classed as private practice , yet drug firms of repute need to assure themselves that their products are non-toxic to human patients, and some products, like liver extract, must be tested on patients When a university department does such testing it may take no payment, though the firm may send free supplies of drugs in return or even pay the salary of an assistant engaged on *another* task, so potent is the fear that if the firm pays the laboratory piper it will soon call the tune of university policy If ever there was a case for open and full cooperation here is one

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[1] *Proc R Soc Med* 1941 34 469

[2] Astonishing evidence of this is provided in the 1289 pages of The Extra Pharmacopœia the 22nd edition of which is reviewed on p 370

How to train a man to be a competent pharmacologist is disputed, but it is certainly not enough merely to take a physiologist and encourage him to use drugs for his animal experiments " The primary aims and outlook of pharmacology," says GUNN, " are so different from those of physiology that they can best be regarded as separate disciplines requiring separate direction and accommodation " It is reasonable to add that this separate pharmacological outlook can best be acquired by insisting that after graduation the aspiring pharmacologist should spend two or three years in the wards of a hospital, for these surroundings will make him more acutely aware than any laboratory of the needs of the therapeutist That the basic technique of experimental physiology and of experimental pharmacology have much in common cannot be denied, but the pharmacologist must always remember that such methods are only a means to an end—improvement in medical treatment The fetish among young researchers of " getting something published," doubtless accounts for some of the uninspiring contributions which reveal an outlook limited by the kymograph Prof RALPH STOCKMAN used to impress on his assistants the importance in research of " starting with a disease," and the advice was never more sound than it is today Its importance lies partly in committing the pharmacologist to work in the clinical field, and this means that the experimental technique of the laboratory takes second place as the occasional aid to the clinical approach Few are competent to grapple with the cause and cure of a disease, but the pharmacologist whose foremost consideration is the study of a drug or a series of drugs at the bedside will get useful data as readily as the experimental worker in the seclusion of the laboratory , and he stands to get a great deal more information that has a practical application As Sir THOMAS LEWIS says, there is still a great deal of work to be done in assessing the value of remedies in common use, and in providing a clinical justification for the use of drugs whose inclusion in the pharmacopœia depends solely on empiricism Even this kind of research serves to illustrate the importance of making a disease the starting-point of investigations on the actions of drugs If the result is the negative one of discrediting a drug previously considered effective the work is none the less valuable, for such information is c the necessary preliminary to constructive contr butions aiming at the eradication of disease

The necessity for preserving the integrity of clinical pharmacology can best be sustained from the standpoint of teaching There is now an unmistakable tendency in the schools to dissociate " pure " pharmacology from its clinical application This is defended by urging that systematic instruction on medical treatment should be postponed until the student is in his final year, and it is made an excuse for handing the teaching of pharmacology to those who are nothing more nor less than experimental physiologists GUNN, remarking that the proposal to include pharmacology as part of physiology is no novel idea, goes on to say that it has been put into practice repeatedly " and with almost uniformly bad results for pharmacology and for the medical student " This fantastic experiment seems in fact to be designed to discourage the student from taking an intelligent and critical interest in the treatment of sick people during the first two years of his clinical career As for the teaching of pure pharmacology GUNN says, " I am convinced, from long experience as a teacher and examiner, that the attempt to teach pharmacology to the medical student as a pure science and without continual reference to the therapeutic application of drugs is doomed to failure " In short, the clinical application of pharmacology must be hammered into the student from the very beginning , and it is regrettable that clinical teachers do not combine more closely with their full-time academic colleagues by introducing more pharmacology and therapeutics into their bedside teaching In most teaching units it should not be difficult to find a member of the staff who would make it his business to quiz the students on pharmacological subjects which have a bearing on cases under discussion It would be profitable for the students and now and then might even stimulate a young physician with a bent towards clinical research to approach his task through the medium of pharmacology

THE SPRAY OF DROPLETS

IF William Shakespeare had been more health conscious he might have told us that some are born to sneeze, some achieve sneezing, and some have (other people's) sneezing thrust upon them And as he had read the essays of Michel de Montaigne he would have known that the third group have nothing to fear, for the breath discharged from the head is blameless—which explains the *sois béni* ! to the sternutator But that is not at all the burden of a study from the National Institute of Medical Research, printed on another page Flash photography has established that a single sneeze may project at least 19,000 droplets a horizontal distance of three feet, and that many of these droplets may remain suspended in the air for more than a quarter of an hour Most of them, no doubt, carry only harmless saprophytes from the saliva, but one of the photographs shows potentially dangerous nasal discharge being projected forward by the blast from the mouth The range of hazard rarely exceeded six feet from the muzzle of the sneezer but in the home and workplace that range may often include a number of victims if the droplets are infective The object of this particular inquiry was o determine the relative merit of the methods in ommon use for defence against the spray Sneezing nto a coal or gas fire may be bad mannered but is ughly efficient The skilful use of a large handkerhief is hardly less efficient and few droplets get past he cheap plastic mask provided for use in shelters A gauze mask is all right once, but soon gets messy The hand however is little more than a polite gesture and is miserably inefficient The experience thus gained is timely and may well afford the basis of a hygienic code for the coming sneezing season Some of the photographs are, in fact, likely to appear shortly in a Ministry of Health "Shield that Sneeze" campaign

But one may ask why not go one better and abolish sneezing? The culprit may reply in dictionary language that it is an involuntary reflex respiratory act or, briefly, that he can t help it The one may be true and the other a half truth if that For momentary firm pressure on the nose with finger and thumb just below the bridge will completely inhibit a developing sneeze That is the safeguard of the burglar and of the surgical patient with stitches in his belly wall But avoidance of capture and of acute pain are stronger motives than social decency and the common sneezer may be unwilling to forgo the organic pleasure of the completed act Nature too must set value on the maintenance of the respiratory fairway or she would not have devised so explosive a sweep But that does not justify doing one's toilet in public Those of us who witnessed the decline of spitting a generation ago need not despair of a similar revolutionary change of public habit Before that crusade started Canon Rawnsley described the pavement outside a Lancashire mill just after closing time as like an April shower. But the reforming spirit, aided by an occasional substantial fine, has abolished public spitting and children now go to the Zoo to see the llama do it Let us then cease to regard sneezing as a rather poor joke and make a careful study of its natural history and ethic in the hope of eliminating yet another of our avoidable ills The Hampstead Institute has made a good start

Annotations

WHEATMEAL BREAD OR MILK?

It is good of the cow to help man by spending so much of her leisure in turning grass into milk, for the human body does not possess a rumen equipped with a large population of micro-organisms willing to assist in the breakdown and assimilation by their host of cellulose and other fibrous materials, whereas any baby can digest cow's milk But Mr Norman Wright, D Sc, in an interesting paper[1] from the Hannah Dairy Research Institute at Ayr, would let the cow, rather than man, consume the branny and more nutritious portion of the wheat berry as well as the grass He believes, after making extensive calculations, that it would be false economy to make an 85% extraction loaf by diverting wheatfeed from the dairying industry Sharps, pollards, wheat germ and bran will, in fact, benefit man more if he gives them to the cow and demands milk in return than if he adds them to white flour and tries to digest them himself

Dr Wright's case rests on the assumption that if you give the cow an extra 700 000 tons of wheat offals (which is the total amount of wheatfeed that would be lost if there was a complete turnover to the 85% extraction loaf), you get back 350×10^6 gallons of milk, or (say) a 25% addition to the present national supply, this is clearly implicit from the caption "resulting loss of milk" in his table 2 But is this indeed the case? Is the cow a penny-in-the slot machine into which you insert a production ration of any given size and automatically get back the exact equivalent of your feeding stuff as milk? We ought to remind him that even in peace time when we had in effect all the concentrates we needed—the wheatfeed from 73% extraction, plus millions of tons of imported wheatfeed, plus quantities of imported maize and other cereals—we only managed to get a bare 12% more milk than we did in 1940–41 It seems to us that Dr Wright's thesis—viz, that 700,000 tons of extra wheatfeed would produce an equivalent quantity of extra milk—will only be true if all the dairy cows to which the feed is to be given are on a bare maintenance ration to begin with This is not the case To assume that it is so is to neglect all the evidence of the extent to which the dairy farmer has been making himself self-supporting for the coming winter Dr Wright states "Wheatfeed is practically the only cereal product available in large volume to supply the carbohydrate-rich portion of the rations of milking cows" He is either unaware of, or has not considered, the large quantities of oats, "dredge corn" and other cereal grains which have been harvested very recently, much of which, excepting of course the millable wheat, the farmer will undoubtedly use as *food for stock* The portion of the oat crop, for example, that is required for human food and for feeding essential horses is only a small fraction of the total oat harvest, the very large remaining bulk can, and on very many farms will, be used for feeding dairy cows But even if, for the sake of argument, we went without the bread and the extra milk were actually produced there is still an economic difficulty, on which Dr Wright has not touched To put it colloquially, can the baker say to the housewife, "I'm sorry, you will have to manage with a loaf of bread less this week and you will be able to save the 4½*d*, but you can, I believe, get the same amount of energy, if you need it, from Universal Dairies next door, by buying four quarts of milk—only this will, I am afraid, cost you 3*s*"? And the answer is, he cannot

The short reply to Dr Wright's ingenious thesis is this We *must* have the extra bread, and the loss of wheatfeed for dairy cattle this winter will be more than made up from home-grown grain

PROSPECTS IN NURSING

The shortage of nurses is partly due to doubt in the minds of possible candidates about the opportunities and financial security which her profession opens to the trained nurse Some of her prospects were outlined at the conference, arranged by the Birmingham and Three Counties branch of the Royal College of Nursing, which was held at Birmingham from Sept 18 to 21 The chair at the meeting was taken by Miss Mary Jones president of the Royal College of Nursing, and the speakers dealt in turn with the outlook for the trained woman in hospital nursing and administration, as a sister tutor, in public health nursing, Queen's nursing, district midwifery, industrial nursing and dietetics Mental nursing and private nursing were not mentioned The attachment of the speakers to their work appeared strikingly in what they had to tell, it was equally remarkable that when they spoke of remuneration some were almost shamefaced at having to quote such low figures, and one or two, almost apologetically, asked their hearers not to accept less than a given—extremely low—standard of reward, lest they should prejudice the chances of their colleagues Few could claim that the posts they were describing were pensionable It is characteristic of nursing at the present time that the satisfying quality of the work is only appreciated by those who are practising it, for many of whom it completely outweighs poor terms of service But to the onlooker and the possible candidate the attractions of the work are obscured by thoughts of financial stringency and of teasing personal restrictions When Miss Edith Cockeram spoke of the ward sister's post as being one of the happiest a nurse ever holds she was speaking of this professional happiness which cannot be appreciated from without When Miss M A Carr described the work of a sister tutor as "interesting, arresting and fascinating" she was not exaggerating, she was giving a piece of intensely vivid autobiography Miss I H Sinnett showed the wide variety of social work open to the public health nurse, who can become a health visitor, a school nurse, a district nurse, or can specialise in the care of tuberculous or mentally defective patients In some areas, on gaining her public health qualification such a nurse can hope for a salary of £255 a year rising to £390, but this figure is exceptional, the maximum may be only £280, with an extra £20 if she becomes head of a home These are not brilliant prospects for a woman who has taken at least three years of general and one year of special training, yet some nurses have accepted such posts at salaries of less than £250, because they found it convenient to their own plans to do so, disregarding the effect such undercutting must have on the prospects of others The posts are pensionable, however, and also give opportunity for an ordinary home life That this is as important to those within the profession as to those considering it was also indicated by Miss M E Melville who numbered among the advantages of life as a Queen's nurse the opportunity to live and work in what district she chose, more—she can either live at the nursing association, or make a home for her family, or even share quarters and work with a friend The same enthusiasm for freedom animated Mrs Dowson-Weisskopf who spoke of industrial nursing as an opporsunity for the nurse who was something of a rebel and teformer, provided that she also had the tact of the serpent and the dove combined. Yet she had to urge her hearers not to accept salaries of less than £200 a year The dietetic nurse, whose work was described by Miss E E Richards, also had a keenly interesting job and takes a difficult course of training Is it possible that a profession offering such exceptional opportunities for wide and enriching experience has become a last resort among callings for women? The leaders of the nursing profession can fairly claim that they have everything to offer to incoming candidates a job worth doing, to hospital authorities the help they need to carry on their work But the candidates will not come without better terms of service. Dame Ellen Musson, who spoke of the past achievements of the College of Nursing in mending the nurse's lot, would perhaps have roused even more enthusiasm if she had disclosed a College campaign for the future—a five-year plan, say, in which the prospects of the trained nurse were to be raised to a level worthy of her work The shortage of nurses is the measurement of the need for this reform, and gives the College an argument which cannot be ignored

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[1] *Chem and Ind* August 23 1941, p 623

TISSUE AUTOLYSIS AND SHOCK

THE custom of wearing black at funerals derives, they say, from an attempt to propitiate or escape the malevolence of the dead spirit Superstition dies hard, even in the scientific sphere The baleful influence of the dead we translate as "tissue toxins", these we held responsible for the curious state of "shock" until the work of Blalock in America and Slome and O'Shaughnessy in this country convinced us that a major part in the production of at least some kinds of shock was played by a loss of circulating fluid into the injured part Repeated attempts have been made to demonstrate such hypothetical tissue toxins, particularly often (and with strikingly contradictory results) have liver autolysates been injected into the peritoneal cavity It is almost impossible, as Professor Florey and his associates[1] point out, without the most rigid precautions, to avoid contamination of these autolysates with saprophytic anaerobes However, with very special attention to the details of their technique, in 4 rabbits out of a total series of 96 they achieved this end, since instead of the rabbits dying after the intraperitoneal injection of 10 c cm of fresh-ground liver they survived These animals developed a transitory hæmoconcentration of + 30%, indicating a local loss of plasma, which was confirmed in other animals by an intravenous dye method The significance of this is unknown, since in one of two control animals, subject to no more than preparation and ether, a similar figure (+ 26%) was obtained Eleven out of twelve previous reports on this subject have been concerned mainly with dogs Trusler and others[2] produced sterile exudates in survivors by autoclaved liver autolysed in the presence of bacteria Their very careful work suggested, first, that the organism, harmless if injected alone, produced fatally toxic products in the presence of dead liver, and secondly, that necrotic liver alone had no such fatal effects The Oxford workers' data appear to confirm this, and in addition they report some ingenious experiments completing the picture, where acriflavine in the digesting liver autolysate prevented bacterial growth This brew resulted in survival after injection, whereas the control rabbits without acriflavine died No control experiments, however, are reported in which acriflavine was added to the autolysate just before injection The bearing of this type of experiment on human lesions has been discussed by Boyce and McFetridge[3] Minor degrees of renal damage should be looked for in all cases of presumed liver trauma, since in several cases severe cortical necrosis has supervened But it is doubtful whether deductions about types of human shock other than those associated with liver damage are at present warranted

ENDOMETRIOSIS OF THE LUNGS

OF the several theories cited to account for ectopic endometrial tissue, such as that of Sampson who postulated tubal regurgitation as the cause, the congenital theory, and the serosal theory, there is only one that really accounts for distance endometriosis and that is the metastatic theory of endometrial embolism, venous or lymphatic The authenticated cases of endometriosis found in the thigh and the brachioradialis muscle can only be explained on the grounds of venous metastasis But experimental work is still needed to demonstrate that endometrial emboli are capable of being transported in the venous system and can survive in their new habitat The theory could become even more attractive if in their new situation they could be shown to obey the cyclical stimuli of the endocrines that influence their parent tissue This work has now been successfully performed by Hobbs and Bortnick[4] They prepared the endometrium of large rabbits by injecting œstrogens and then removed it by abdominal hysterotomy Small endometrial clippings were then injected into the ear vein with a large needle, and they comment on the large pieces that they were able to introduce without ill effects on the rabbits But of 12 rabbits so operated on endometrial implants were demonstrated subsequently in the lungs of 8 Excellent microphotographs show endometrial tissue in the lung vessels and in some of these the endometrium has disrupted the wall of the vessel and started to invade the adjacent parenchyma of the lung

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[1] Abraham, E P, Brown, G M, Chain, E Florey H W and Gardner A D *Quart J exp Physiol* 1941, 31 79

[2] Trusler, H M, Reeves, J R and Martin, H E *Arch Surg* 1935, 30, 371

[3] Boyce F F and McFetridge E M *Ibid*, 1937 34, 977

[4] Hobbs J E and Bortnick A R *Amer J Obstet Gynec* 1940 40, 832

Next, Hobbs and Bortnick impregnated some of the animals that had previously been given endometrial implants in order to ascertain if a decidual reaction occurred in the ectopic endometrium in the lung In several instances this could be demonstrated, and their microphotographs clearly show a decidual reaction In control pregnant rabbits no decidual reaction could be seen in serial section of the lungs In a final experiment they tried to stimulate the ectopic endometrial tissue in the lung with stilbœstrol, and in 4 out of 12 experiments a diffuse endometriosis was produced This work, if confirmed, proves that endometrium can be transported to distant metastatic foci by the veins, that it can live in its own environment, and that it is capable of undergoing the same changes as its parent tissue under the stimulus of the various internal secretions Hobbs and Bortnick carry their argument a step further and suggest that some obscure benign and malignant tumours of the lung in women may be derived from a metastatic endometrial implant, but so far a study of 33 primary lung tumours has failed to demonstrate endometrial tissue

THE ELECTRO-ENCEPHALOGRAM IN EPILEPSY

THE discovery that epilepsy is associated with paroxysmal outbreaks of high voltage in electro-encephalographic records opened up wide fields for investigation The sequence of these waves whether rhythmic or random, their constancy, their dominant frequency, their voltage, the percentage of time that they occupy on the record, the type of wave, the number of waves in each paroxysm, their localisation on the cortex, whether discrete, bilateral, multiple or diffuse must all be considered Further studies would determine the effect upon them of physiological events, of pathological states, of drugs, of special diets and of hyperventilation, and endeavour would be made to correlate the findings with various types of epileptic attack and mental states associated with epilepsy The field is an enormous one and a mass attack has recently been made into it by Jasper and Kershman[1] working at the department of neurology and neurosurgery at McGill University, Montreal These authors present interseizure records of 468 epileptic patients They divide the high voltage waves into random waves and paroxysmal rhythms, and suggest further subdivisions of these two great groups according to shape, pattern and frequency From the point of view of localisation they classify their records into three groups the localised unilateral cortical, where only a discrete area of the cortex is involved (50% of their series), the bilaterally synchronous from homologous areas of the cortex (35%), and the diffuse (15%) They find that the great majority of the localised unilateral cortical group have, in fact, fits with a focal onset, and this is especially the case with certain types and frequency of wave In these cases a family history of epilepsy is uncommon Operative procedure should be carefully considered and pneumoencephalography will often help in the decision Slow bilateral synchronous waves occur in patients who lose consciousness at the onset of their attacks, whether petit mal or grand mal, the fits usually begin before adolescence and are called idiopathic The origin of the waves is presumably deep-seated Rather more frequent (6 per sec) bilateral synchronous waves, usually bifrontal or bitemporal, are often associated with psychomotor attacks These are the waves which are sometimes discovered in non epileptic behaviour-problem children Diffuse waves are usually found in patients subject to major fits without focal onset As a generalisation, therefore, the pattern and localisation of the waves bear a close relation to the type of fits

The real trouble with mass interpretation of electro-encephalograms is that there are so many variables to be considered In classifying the epilepsies the clinical variables require painstaking observation and on the side of the electro-encephalogram the polyglot of frequencies encountered, their size, shape, number and combination call for an equally experienced and conservative analysis When the difference between the "between seizure" and the "seizure" record of the epileptic is considered it is not surprising that workers have mainly concentrated upon the distinct wave forms encountered during clinical and subclinical fits In this field the greater part of the work of Gibbs and Lennox[2, 3] stands unchallenged as the classical reference point in the modern study of the epilepsies Their correlation of the distinct patterns encountered in grand mal, petit mal, the petit mal variants, and in the jumble of the psychomotor epilepsies forms a basis for exact clinical diagnosis Grey Walter[4] approached the subject from the other side, and studied the position of foci of abnormal waves in the between seizure records of epileptic patients. He was able to show the relationship between the clinical pattern of attacks and the focus of abnormality, with McKissock he later showed that surgical removal of areas of focal abnormality did not benefit the patient, but that in fact epilepsy is a disease of the hemispheres as a whole The biochemical approach to the epilepsies which has been made through the medium of the electro-encephalogram by Lennox[5] and his co workers, Williams[6] and others points to an underlying metabolic abnormality which may explain the relative unimportance of focal abnormality in the treatment of individual cases Jasper and Kershman have done well to correlate so many data, and have added to our knowledge, but a final synthesis is not yet in sight

SEX GLANDS AND BLOOD-PRESSURE

TWO sets of facts are combining to direct attention to a possible influence of the gonads on blood-pressure On the one hand are the well-known observations on the effects of adrenaline and pituitary extract in both man and animals, the low blood-pressures in Simmonds s and Addison's diseases and the high ones in basophil tumour of the pituitary and cortical tumour of the adrenals, the high systolic with low diastolic pressure so often found in Graves's disease, and a host of other observations linking blood-pressure with the endocrine system in general On the other hand is the rapidly growing pile of observations linking the glands of the system so intimately with each other that diseases of single glands are hardly recognised and the term polyglandular syndrome has lost all meaning, since almost all glandular syndromes are "poly" Added to these general signposts are a few somewhat vague clinical observations, some of which have been misunderstood Thus the frequent appearance of high blood-pressure at the menopause has been attributed to a deficiency of œstrogens, whereas the increase of pituitary basophil cells and adrenal cortical hyperplasia which occur at this period in animals make it much more likely that one of these glands is responsible This supposition is supported by the observation that menopausal hyperpiesia in women is more common when symptoms suggestive of Cushing's syndrome, such as adiposity, hypertrichosis and carbohydrate intolerance, are also present This type of high blood-pressure so often returns spontaneously to normal that it is difficult to assess the value of œstrogen treatment Nevertheless, such treatment is rational, and until there is evidence of its uselessness it is clearly justifiable to exhibit œstrogens with a view to shortening the hyperpietic period and possibly of preventing the permanent changes which often occur There have been reports of small numbers of patients no of menopausal age whose blood pressure has fallen after the administration of œstrogens, for instance by Gurdham,[1] but faced with many contrary experiences, such reports are bound to be unconvincing in the absence of full investigations and adequate controls The situation of male hormone therapy is still less satisfactory Steinach has long held the view that its rejuvenating effects, the existence of which is disputed by most observers, are due to widespread hyperæmia With Peczenik and Kun [2] he claimed to have produced lowering of the blood-pressure in 39 out of 49 male hyperpietics Their results were immediately challenged by Greene [3] who published accounts of a series of carefully investigated patients whose hyperpiesia had been unaffected by doses of testosterone propionate far larger than those used by the earlier observers That the question cannot be left there is shown by the later claim of Edwards, Hamilton and Duntley,[4] who not only confirmed the increase in arterialisation claimed by Steinach but obtained amelioration of symptoms in three cases of Buerger's disease and four of arteriosclerosis It seems probable that the good results of treatment with male hormone, if ultimately confirmed, must depend on the degree of irreversible change which has previously taken place in the arteries, as well as on the initial cause of the high pressure In considering the latter, the work of Selye [5] and others on the nephrotrophic effects of testosterone and androsterone may well be significant

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[1] Jasper, H H and Kershman, J *Arch Neurol Psychiat*, 1941, 45, 903

[2] Gibbs F A Gibbs E L and Lennox, W G *Brain*, 1937, 60, 377

[3] Gibbs, F A *J Pediat* 1939 15, 749

[4] Golla, F, Graham S and Walter W G *J ment Sci*. 1937 83, 137

[5] Nims, L F et al *Arch Neurol Psychiat* 1940, 43, 262

[6] Williams, D *J Neurol Psychiat*. 1941, 4 32

FOR THE MERCHANT NAVY

THE controversy in the *Times* following Lord Marchwood's proposal in the House of Lords on Sept 10 for a royal commission to inquire into conditions of service in the Mercantile Marine is on the familiar lines of the controversy about state medical service But even if some of those who would like a commission are aiming at a national service they would probably leave the running and upkeep of the ships in the hands of private owners and would make a national responsibility only of the entry, training, supply and appointment of officers and men There would be Government training and instructional establishments to supply young officers for the Merchant Navy exactly as in the Royal Navy The personnel might stick to one shipping company for life, but they would be Government servants with a scheme of promotion, partly by service and partly by merit, with regular leave, retiring pensions and unemployment benefit The conditions would be not unlike those in the public health services where the personnel are employed, with variations from the national mean, by local authorities From the Speech from the Throne at the opening of Parliament in the autumn of 1936 we learned that the Government were considering measures "to secure the maintenance of a Mercantile Marine adequate for the needs of the country" Thoughtful observers of conditions in the Merchant Navy (non medical as well as medical) have long been convinced that uncleanliness and discomfort have prevented many lads from going to sea In 1902 Wm Collingridge, then medical officer for the Port of London, said that the sanitary state of ships was 50 years behind that on shore Herbert Williams, W F Dearden, W E Home and Howard Jones, in our columns and through the Association of Port Health Authorities, followed his lead in demanding what Greenwood Wilson, hon sec of that association, has aptly called "slum clearance at sea," but it was not until 1937 that the Board of Trade issued instructions to surveyors which went most of the way in fulfilling the recommendations of the association for improving crews' quarters, and even then any improvement of the old vessels was to wait for convenient opportunity Would it be cynical to note that at about this time there was a serious shortage of merchant seamen? Two years later the National Maritime Board achieved a welcome agreement about cleanliness and comfort of crews' quarters, and some may claim that for this reason, amongst others, the board is well able to look after the interests of the merchant seafarer without the lead of a commission Other bodies, such as the Ministry of War Transport, are working whole-heartedly to the same end It is probable there were various persons and bodies interested in the welfare of the factory child-worker and of the prisoner before Shaftesbury and Howard focused popular attention on all the available and ascertainable facts and initiated great reforms Surely no student of history can object to a scientific and Government-sponsored inquiry into the conditions of service of an industry so vital to the nation's welfare, at peace and at war, as the Mercantile Marine?

SCOTTISH HEALTH

WITHIN the past decade there have been obvious efforts to make Scottish health reports more readable and more timely in issue The circumstances of war have diverted energies normally available for report making, and the summary recently issued in review of the period Jan 1, 1939, to June 30, 1941 is, understandably enough, but an anæmic shadow. Much of its space is given over to an account of adaptation and preparation for war, of emergency measures such as casualty hospital provision, evacuation and related problems and health conditions in shelters Some of these measures benefit the population of considerable areas, but it would have been interesting to have official information about the actual extent to which emergency hospital provision, for instance, has been used for relief of the load on voluntary hospitals or for improving the general level of hospital services when not required for the treatment of casualties, since there is a suspicion that much of it has been allowed to lie needlessly fallow When judged by the ordinarily accepted indices, the health of Scotland in war-time is perhaps no worse than might have been expected Tuberculosis has increased, and still seems to be increasing, but other infections, with the almost expected exception of cerebrospinal fever, have remained at pre-war levels The increased incidence of tuberculosis calls for administrative action and it would have been comforting to have an official assurance that specialised institutional accommodation is immediately available for every sufferer from the disease who requires such treatment The number of cases of cerebrospinal fever, not yet alarming, is a danger signal that cannot be ignored Infant mortality has increased In this matter Scotland has for long been worse off than England, and the Scottish figure for 1940, 78 per 1000 live births, is too high The summary refers to recent legislation to widen the scope of National Health Insurance, but it is a matter for keen regret that it has been thought necessary to discontinue the illuminating reports on incapacitating sickness among the insured population that have come to be recognised as a peculiarly Scottish contribution to social medicine Information on this subject would be of more than scientific interest in time of war, and it should be collected if at all possible

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At the request of the Prime Minister, SIR CHARLES WILSON, P R C P, has joined the British Mission to Moscow On his return he will report on Russia's need for medical help According to a Reuter message the mission reached Moscow by air on Monday last

SIR EARLE PAGE, who left Sydney on the same day to represent the government of Australia in Great Britain, is a medical graduate and a foundation fellow of the Royal Australasian College of Surgeons He was Minister of Health 1937–38

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[1] Guirdham, A *Bristol med chir J* 1941, 58, 19
[2] Steinach, E Peczenik, O and Kun, H *Wien klin Wschr* 1938, 51, 102 134
[3] Greene, R *Lancet* 1938, 1, 79
[4] Edwards E A, Hamilton, J B and Duntley, S Q *New Engl J Med* 1939, 220, 865
[5] Selye, H *J Urol.* 1939, 42, 637

Special Articles

FIRST-AID TREATMENT OF BURNS

A H McINDOE,
M.B N Z, M S M SC MINNESOTA, F R C S, F A C S
CIVILIAN CONSULTANT PLASTIC SURGEON TO THE R.A F ,
SURGEON IN CHARGE MAXILLO FACIAL UNIT,
EAST GRINSTEAD

DURING the past year much thought has been given to the treatment of burns. This has culminated in recommendations made by the War Wounds Committee of the Medical Research Council after a prolonged survey of the results produced by various methods, under both civilian and Service conditions It is not surprising that, considering the special causes and unusual types of burns encountered these recommendations have modified established procedure, though not as extensively as many seem to believe Careful perusal of the E M S. pamphlet (343)[1] will show that coagulation therapy, far from being condemned, remains an important method of treatment particularly in the extensive burns of the 1st and 2nd degree on the trunk and extremities common in civilian life, where shock and toxæmia are liable to follow. Exception was, however, taken to its use in encircling burns of the hands and feet and in other areas of functional importance, such as the face, flexures, perineum and genitalia, where experience showed that undesirable complications might follow It was not suggested that burns of all degrees in these special areas showed equally bad results when coagulated for many have not done so, but certainly some of the more severe burns in which function has been endangered have been further compromised by coagulants

Most competent observers will agree that it is relatively easy to distinguish between a 1st and 3rd degree burn, but often extremely difficult even under the best conditions, to decide between those of the 2nd and 3rd degrees. If the surface is contaminated with dirt and oil it may be impossible to make an accurate diagnosis of any degree. This problem is much more acute at first-aid posts and advanced dressing stations, where cleansing facilities are often inadequate light is poor, and examination is perforce superficial. When the patient is admitted to hospital the degree of involvement must be determined and the appropriate treatment decided on. It is thus vitally important that first-aid treatment should not compromise hospital treatment

Experience shows that tannic acid is not a panacea for war burns, whatever its results in civil practice. It certainly takes its place, however, in the pattern of treatment which is being slowly evolved This pattern has not yet reached finality Alternative methods are still under investigation and it is not intended here to express dogmatic opinions as to their relative value The wholesale distribution of tannic-acid preparations and vital dye coagulants to homes, first-aid posts and dispensaries has, however, created considerable confusion in the minds of many as to whether coagulants should be applied as a first-aid measure or whether other dressings should be substituted. The desire to make some sort of immediate local application to the burned area is strong, and admittedly the patient may be greatly relieved thereby The ideal local application would be a quick-drying, flexible and elastic seal, incorporating bacteriostatic and anæsthetic agents It should be painless to apply, and should resist when dry ordinary handling for two to three days without renewal and during that period prevent loss of tissue fluids and the entrance of organisms into the burned area Especially, it should be water or oil soluble so that it can be easily removed at the hospital where adequate treatment of the burn is undertaken Whether coagulation should be an essential part of its action is open to question

None of the variety of suggested preparations exactly fulfils these requirements, and until the ideal substance is produced, obviously the simplest form of easily removable dressing is to be preferred One can therefore agree with almost any coagulative or non-coagulative treatment which personal preference might dictate in the case of minor burns not requiring admission to hospital. but the first-aid application of any local treatment other than easily removable dressings to those major burns requiring hospital treatment should be discouraged This is particularly true of those more positive coagulative agents applied hurriedly and inadequately over unclean surfaces in such a way as to be detrimental to the success of subsequent treatment in hospital. While there may be some disagreement between those who believe in universal coagulation and those who do not. they are united in the opinion that first-aid tanning of serious burns is a handicap to the definitive hospital treatment. because once they are applied the crust is difficult to remove.

The function of the first-aider is therefore first to distinguish between minor burns which do not require hospital treatment and to treat them efficiently, secondly to transfer major burns to the nearest hospital or burn unit as soon as possible, limiting treatment to measures of a general nature and to simple local applications, avoiding anything which may be difficult to remove

The problem is not altogether simple, for while the majority of badly burned patients can be transported to hospital within a short time, it may be days before others can reach suitable hospital facilities Thus first-aid may be required for burns at sea or in the desert under such difficult conditions that treatment considered inadvisable where quick transport is available might be desirable where there is great delay An attempt is being made to suggest a reasonable first-aid programme adequate for burns of various types occurring under varying circumstances

MINOR BURNS

A minor burn is defined as one of the 1st or 2nd degree, covering an area not greater than 1% of the total body surface—i e , an area corresponding in the adult to one side of the hand or about 28 square inches It should not involve any of the special areas already mentioned. the hands, face, feet, flexures perineum and genitalia. Shock is not in evidence and sepsis is uncommon Pain is usually severe Healing is rapid by regeneration from the undamaged portion of the skin whatever local application is used.

General treatment —If pain is not controlled by aspirin or Veganin, then morphine gr. $\frac{1}{6}$–$\frac{1}{4}$ should be given (for an adult)

Local treatment where cleansing facilities are available —Since these burns are not sent on to hospital first-aid treatment is as a rule definitive Whatever is applied should be regarded as the final dressing Some form of coagulant is therefore safe, simple and satisfactory Coagulation seals the surface abolishes pain prevents secondary infection, and enables the patient to carry on with his work within a short time.

If the burned area is likely to be contaminated, it should be carefully and gently washed together with the surrounding skin, with soap and water An application is then made of one of the coagulants in tube form, usually available at most first-aid posts, such as Tannafax, Amertan, gentian-violet jelly, or triple-dye jelly. It is either smeared directly on the burn or applied on a single layer of lint or gauze. Alternatively, the surface may be daubed with 10% tannic acid, 5% silver nitrate, or both, or painted with gentian violet 2% or triple dye (gentian violet 1/400. brilliant green 1/400- neutral acriflavine 1/1000). If tannic acid or silver nitrate is used no dressing should be applied over the burned area.

Non-coagulant dressings may also be used, such as Vaseline gauze tulle gras, Ambrine, or soft paraffin, but care must be taken to ensure the sterility of the dressings. If sulphanilamide powder is liberally sprinkled over the burn before their application the risk of sepsis will be negligible and possibly the rate of epithelialisation greater than with coagulant dressings. It is certainly true of the sulphanilamide. tulle gras, saline sequence now in wide use. Nevertheless, the coagulants have a decided advantage over non-coagulant dressings as a first-aid dressing for minor burns in that once applied they do not require renewal or much aftercare and are not so liable to contamination from outside sources

The newer preparations such as Euglamide, a paste incorporating Albucid and a local anæsthetic and the water-soluble jellies containing sulphanilamide alone or in combination with an antiseptic, have given good results but are not altogether suitable for first-aid purposes, because of their messiness and inability to remain in situ for long.

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[1] See Lancet 1941 1, 425

Local treatment where cleansing facilities are not available.—Not infrequently, burns of this type are badly contaminated with oil or dirt, under such difficult conditions that adequate cleansing facilities are not at hand—for instance, at a thoroughly disorganised first-aid post, where the water has failed, in the desert, or at sea in an open boat. If any form of cleansing is impossible, it is foolish to coagulate a heavily contaminated burn of any type, and thereby seal up organisms on the damaged surface. In any case, the presence of oil will prevent coagulation. It might be pointed out that in the desert where mechanical transport is usually near, benzene or petrol are excellent cleansing agents, and are also practically painless when applied to injured surfaces. Under such circumstances, one of the non-coagulant dressings should be used, and if flies constitute a menace the whole area can be sealed off with a piece of oiled silk, or, if it is available, enclosed in a Bunyan-Stannard envelope. At sea, failing all else, a compress of sea water would be excellent provided it was kept wet.

CLASSIFICATION OF MAJOR BURNS

Burns of any greater extent or depth than minor burns or any burns of the hands, face, flexures, genitalia or perineum should be regarded as of major importance and dispatched to the nearest hospital or burn unit as soon as possible. As opposed to minor burns, the first-aid problem centres round the patient's general condition and the question of how soon he can be transferred. Local treatment is of secondary consideration except under unusual circumstances, and should be concerned only with the protection of the burns from further trauma and secondary infection. Major burns may be classified as follows:—

(*a*) Major burns without serious shock where transport is available. These form the majority of war burns and are easily dealt with.

(*b*) Major burns with serious shock rendering transport dangerous. There are very few cases of this type. They become noticeably fewer the greater the experience of the observer and the more prompt the transport arrangements.

(*c*) Major burns with or without shock, occurring in situations where transport is delayed or is not available. With severe shock every moment which passes before the administration of plasma or serum increases the risk to life. Hence it is better to undertake a difficult journey than to allow blood-volume to fall and hæmoconcentration to rise. Naturally these are difficult problems and much depends on local facilities, mode of transport and distance to the nearest hospital.

SHOCK

Although shock has been divided into primary and secondary forms the former is not commonly seen; if it does occur it resembles a fainting attack due to neurogenic and traumatic factors. It usually passes off quickly under the influence of rest, heat and morphine.

True burn shock (called secondary shock) has all the characteristic signs of ordinary wound shock—rising pulse-rate and respiration-rate, pallor, thirst, anxious restlessness, falling blood-pressure, and so on. It must always be regarded as serious, for it is responsible for 60% of all deaths from burns. It may appear within an hour of injury but does not usually show itself for 6 hours or more. During this time the patient feels and looks well and may even have walked several miles to a dressing station with burns of the most extensive type. This is common in Service casualties. The detection of incipient shock in such cases is difficult without hæmoglobin estimations but the possibility of its clinical development, either slowly or suddenly, must always be borne in mind. Shock results from failure of the circulation in the face of hæmoconcentration and falling blood-volume. The "trigger" which usually induces it is rapid loss of body heat from exposure to cold or further trauma to the already injured skin surface. Undressing the patient to examine the burns in first-aid posts, or any rough handling of burnt areas, should therefore be sedulously avoided. As a rule there is a relatively safe period in the first 6 hours in which the patient, though severely burned, can stand a reasonably long journey (20–30 miles) by road ambulance. There are few cases to which this does not apply. The patient may suddenly become shocked during transfer, but this is not necessarily the result of the journey. It would probably have happened anyhow. The likelihood of shock supervening rapidly may be judged from the extent and situation of the burns, but as it is dangerous to undress a burned patient, only a very rough estimate of this can be made. In general, shock is liable to be serious if more than 25% of the body surface is involved. In estimating this percentage the following table may be useful:—

	Per cent		Per cent
Head	6	Entire front of trunk	19
Both hands	6	Entire back of trunk	19
Both arms	18	Thighs	19
Lower legs	18	Feet	6

Burns of the face, precordial area and abdomen are more dangerous than those of the arms, legs or back. The depth of the burn is not so important as its extent.

If for any reason there is delay at the first-aid post and shock is feared, the pulse and respiration should be noted every half hour, and the B.P. taken as often as possible. With burns of the hands and arms this may be impossible.

GENERAL TREATMENT OF MAJOR BURNS

Pain.—All patients with major burns should receive a full dose of morphine immediately (*¼–½ gr. for an adult*). Anything less is futile and the dose can be repeated. Many patients with severe burns are not conscious of pain until the shock phase is over but moderate burns without shock are usually extremely painful.

Shock.—If this is likely to occur while waiting for transport to arrive the patient should lie down on a stretcher or cot and be covered with blankets, with hot-water bottles to keep him warm. Unless the clothing is soaked in water or other fluids it should not be removed, and then only if something warmer can be substituted. Hot sweetened drinks such as tea or coffee should be given freely. Plasma or serum injection is rarely possible or advisable in first-aid posts, and if required should be obtained by means of a mobile unit from the nearest hospital. Rapid transfer of the patient to the hospital is certainly the better plan. In the Services, all station sick quarters, many advanced dressing stations and some ships are suitably equipped for intravenous therapy in the places where delay in transport is likely. Plasma should be used wherever it is indicated. The usual preliminary dose is two bottles of dried plasma or liquid human serum given according to M.R.C. Memorandum No. 1. This may in serious cases be increased to ten or twelve bottles.

LOCAL TREATMENT OF MAJOR BURNS

Major burns should not be coagulated as a first-aid measure. The local conditions are almost always totally unsuitable for this procedure and in the majority of cases more harm than good will be done. Burns on exposed parts dispatched forthwith to hospital should be powdered with sulphanilamide and covered with a sterile towel or wet compress of sodium bicarbonate or saline. Since contact with air is painful the burn surface may be more efficiently protected with simple vaseline gauze strips or tulle gras over the layer of powder. The Bunyan-Stannard oilsilk envelope is a useful added protection during transport, and indeed may be used alone for this purpose.

The problem of the burned patient when transfer to hospital will be delayed for days—e.g., at sea, in the desert or in isolated spots—is difficult, and will depend on the facilities at hand and the severity of the burn. For the patient's comfort it may be necessary to coagulate the whole area; in which case the vital dyes or silver nitrate 10%, which are themselves antiseptic, are most suitable. It will be best to avoid an anæsthetic if possible, for this will undoubtedly increase the risk of shock. Flies will usually constitute a major danger, hence the oilsilk envelope will have considerable value. First-aid treatment in these circumstances will constitute an unhappy compromise between what is possible and what should be done.

EUGENIC STERILISATION IN WAR-TIME GERMANY

THE Eugenic Law of July 14, 1933, still holds good in Germany. This law[1] sanctioned the sterilisation of anyone likely in medical opinion to transmit severe disease of body or mind. 8 such categories were named and severe alcoholism was added to the list, but on Aug. 31, 1939, an emergency decree was issued modifying the procedure of notification and laying down that during the war sterilisation was only to be applied where the danger of dysgenic progeny is especially grave. Should the patient be impotent or nearly so, should he be prevented from producing children by being in hospital, and so on, nothing need be done. The M.O.H. has to make up his mind on this question of urgency, but the final decision is with the regional health department through which all proposals for sterilisation must now pass.

This decree, it seems, has led to some slackening of eagerness in eugenic sterilisation, although a recent article in the medical press[2] emphasises that the decree makes no essential change in the law. Some test cases are set out to impress on the reader the strict views held by the special courts. Last year, for instance, the court refused an application for the sterilisation of a 27-year-old woman with schizophrenic symptoms on the ground that such women tend to shut themselves off more and more from the outside world and are unlikely to have sexual relations. But the appeal court reversed this decision, pointing out that in women with healthy genitalia mental aversion to intercourse cannot be taken as tantamount to sterility, for in medical experience the inhibition might at any time and without warning change to its opposite.

Three appeals against sterilisation orders give an insight into the working of the courts. The first deals with an acute attack of schizophrenia in a 31-year-old clerk, who in spring 1938 showed the first signs of mental instability. In August he consulted his doctor and was admitted to hospital with the symptoms of an acute schizophrenic psychosis: sleeplessness, excitement, dissociated speech, manic behaviour and delusional ideas. There were no physical signs. He made a quick recovery, returned home and after a short convalescence went back to work in the following December. Since then his behaviour had been normal and his work satisfactory. Two of his cousins were mentally defective and his father was a schizophrenic personality. Already in September, 1938, his sterilisation had been ordered on a certificate from the hospital officer. Appeal was made on the grounds that his nervous breakdown was without lasting effect and that his working capacity was undiminished. The court ordered a further investigation in a different hospital. This second report stated that in ordinary conversation he showed no trace of psychosis, no emotional or intellectual defect. His knowledge and intelligence were good, but tests proved that he did not grasp the significance of simple fables and proverbs and could not explain the moral of a simple didactic story. There were gaps and jumps in his thinking, typical remainders of a schizophrenia, often the only apparent symptom after recovery from an attack. As no psychological or physical cause of illness could be elicited, the court ruled out any doubt about the diagnosis of schizophrenia raised by the short and relapse-free course of the illness. It was not essential to prove any mental defect when statistical and text-book evidence before the court showed that 10–20% of admitted acute schizophrenic cases were left without symptoms or personality change. The typical picture at the time of the acute psychosis, and the disorder of thought demonstrated in the test afterwards, were sufficient to justify the diagnosis. The remission after the first attack (the article adds) is just the time when a recovered patient is thinking of marriage and the risk of progeny is gravest.

The second appeal was from a patient who had since 1932 complained of increasing hardness of hearing bordering on complete deafness. On the right side loud conversation is heard only at 40 cm., on the left at 20 cm. The cause is a pathological change in the bony envelope of the inner ear in the neighbourhood of the stapes. Air-conduction of sound is interrupted, bone-conduction at least as good as normal. The plea that she can hear well on the phone is typical of the disease. There have been no signs of inflammation in the middle ear during the last six years. Otosclerosis can therefore be diagnosed with certainty. Her mother also suffers from the disease, which must be regarded as hereditary. Not only complete blindness but any disabling loss of sight comes within the meaning of the act; similarly hardness of hearing which makes employment impossible counts as deafness. The patient's appeal against the sterilisation order was refused.

The third case was one of chronic alcoholism without evidence of physical or mental damage. The patient, a 44-year-old book-keeper, underwent a "cure" in 1929. Since then he had been convicted 11 times, all his offences being caused by drink. The chronic alcoholic does not necessarily drink continually, and he may as yet show no physical symptoms of his indulgence, nor need he lack intelligence. But he is the carrier of an undesirable gene—weakness of will. Under the influence of alcohol he forgets what he owes his family and society. In spite of what he has been through this patient had not had the strength to give up drinking and carry out his duties like a healthy man. In this case, certainly the feeblest of the series from the point of view of scientific genetics, the court ruled that evidence of a family history of alcoholism was not necessary.

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[1] See *Lancet* 1933, 2, 557.

[2] Paech and Trembur (Berlin) *Dtsch. med. Wschr.* July 18, 1941, p. 796.

In England Now

A Running Commentary by Peripatetic Correspondents

THE Home Guard Medical Officers' Course lately held at Cambridge was productive of many surprises both major and minor. Among the latter was the discovery that afternoon tea is not served in Cambridge on the Sabbath. One of the pleasant surprises was the enormous usefulness of the course, which the bald syllabus had rather concealed by its copious use of incomprehensible initials, and the high grade of oratorical ability. Another was that even those of us whose limbs had lost their primal elasticity came successfully through a course which made no small calls on our endurance. It was long: it took no count of Sunday as a day of rest; but its interest sustained us so effectually that even when official lectures were at an end (and one of these began at 9.30 P.M.) we indulged in long discussions of our own (held, I must confess, in a common-room happily provided with malt liquors).

The object of the course was not so much the instruction of Home Guard M.O.s in their duties, although this was not entirely omitted, as the provision of a background which would inspire us with the urgent need for the energetic fulfilment of those duties. This background was sketched in by various techniques. We were lucidly instructed in the nature of an infantry division, its component parts and their several functions. Then the size and usefulness of an armoured division were laid before us, with full attention to its own particular difficulties, including, for example, the method of removing casualties from tanks, as well as the ways in which it was possible to compensate for the striking contrast between the highly mobile armoured vehicle and the would-be static casualty. The functions of the field ambulance were perhaps too lightly passed over and this is a point which might be elaborated in any future courses. We shall often have to make contact with such units and it would be well if we knew more about them. We were then treated—it was a treat—to a series of lectures by specialists on methods of attack and defence, including the latest information on gas warfare, the offensive use of the tin helmet, and the psychology of the German war machine. Two points were regarded as axiomatic by all speakers. The first was that invasion, including gas attack, was the logical development of the German war plan and that it was certain to occur unless a miracle happened on the Continent. The second was that, in case of invasion, the complete isolation of territorial units of various sizes for not less than seven days was to be expected. In other words, there would be no ambulance service to such units for this period. It is an important feature of the invasion picture that these areas cannot be foretold beforehand, and will not necessarily be those in which preparation for isolation has already been begun. Which areas will finally be isolated depends more on the German general staff than on our own.

Then we got down to our own special affairs. Only one lecturer, or perhaps two, seemed to have any close acquaintance with the actual problems of Home Guard medical officers or even with the possibilities of the fighting Home Guard. We listened many times to detailed instructions about the use of facilities and equipment which we are never likely to possess. We heard almost nothing of how we might best make use of the rather meagre facilities afforded us, both in the training of H.G. volunteers and in equipment. These facts made a lecture on Home Guard tactics by the commanding officer of a Home Guard battalion tremendously welcome. It was a fine lecture and was one of the four which might have been expected to obtain most marks if we had been asked to vote on them. Three others came near the same mark. One of these, and this was another surprise, was the lecture on war surgery. Many books have been written on this subject but they have not been written for us. This lecture, by a consulting surgeon, dealt with stark realities in and near the front line. We were encouraged to make known our own difficulties, and even to pass resolutions to be put before the proper authorities. We learnt much; maybe we also taught a little.

* * *

One advantage of war is the opportunity it gives us of visiting places we would never have reached in the normal course of events. Recently we have been fortunate in seeing quite a lot of Spitsbergen (or should I say Svalbard?). Although I did not get up as far as the most northerly settlement, which is on the 79th parallel 660 nautical miles from the North Pole, and in which there is a hotel for holiday-making visitors, I spent an interesting day or two in the biggest settlement a few miles further south. In normal times two nationalities lived on the islands, but they dwelt sufficiently far apart for social intercourse between the two to be almost unknown. Except for a few trappers they worked the coal which comes out of mines placed high up on the side of steep mountains 2000–3000 feet high, dropping almost sheer to the sea. The biggest mine lay deep in a U-shaped mountain between two black scars cut into its side two or three miles apart, a scar on each arm of the U. One could go in at one entrance, walk round the mountain so that one came very near the surface on the opposite side, and emerge from the other entrance at the same height but on the second shoulder. It would be an unwise thing to do, however, for I was told one would have to go on hands and knees, the mine being nowhere more than four or five feet high. Most of the mining was done during the dark winter, the work of loading the coal on to the conveyor to be stacked off the quay for shipping being reserved for the unbroken daylight of summer. This type of mining seems to be as dangerous as deep mining, the risk of gas and fire being always present, while an explosion has been known to blow a considerable chunk of mountain-side straight out into the valley.

Several of the miners had lived there for twenty-five years and the local doctor told me he knew one or two who had not been back to the homeland for thirteen years, although most of them got away in the summer for a month to get some fresh air and keep in touch with the folks at home. Many of the younger men used to go up with the idea of working for a few years to earn enough money to return home, buy a farm and get married, but often the farm of which they dreamt proved a delusion, and having lost their money they went back for another spell in the north. There is a fascination about the place and I think many were finally caught by it and decided to make it their home.

Wildfowl abound, while other local supplies of food are gull and eider-duck eggs, cod and haddock and salmon and presumably whale-meat, although I did not see any hanging up outside the houses as one does in the Faroes. They keep their own pigs, a few horses and a few cows but for all vegetables they had to rely entirely on imports. Of the birds, I saw the big glaucous gull, arctic skuas, kittiwakes, and the apparently ubiquitous fulmar; and ashore hopping about the paths and seemingly taking the place of the house-sparrow in England, were purple sandpipers. In the spring there used to be good skiing, and races down the mountain-side, but on my exclaiming to my friend the doctor that that must be the best time of year his reply was that they preferred the winter with its perpetual dark, when the ice kept any ships from disturbing them.

Of the people I met, two had claims to special distinction. One was the doctor from the settlement further north who considered he had the most northerly practice in the world. He is not long qualified and seemed to enjoy the life tremendously. The second was a trapper who came on board with some skins, a cheerful red-headed man who I later learnt had made a wonderful though unsuccessful journey of about 180 miles from West Spitsbergen to North East Land to find Nobile when he was stranded there in 1928. The fox-skins are really beautiful, most of them being white; but a few of the rare blue are trapped and fetch a big price in Europe. Polar bear and seal are also caught. Spitsbergen, land of rocky spires, with its glaciers sweeping irresistibly down to the sea, its fiords of great depth, its almost tangible silence, and its long months of darkness has a great and subtle fascination. Living was hard there, but these people gained contentment through mastering it. Some of them will have been sorry to exchange it for smoother parts.

* * *

"You know what he is doing?" said my colleague in the tone of one describing a nameless enormity, "he is advising half-a-dozen commercial firms, and I have heard he even takes a hand in the advertising of one of them!" "Why shouldn't he?" I asked. "Good heavens, man, he is a professor in a medical school and a qualified doctor. A fellow in that position should have no truck with anything commercial." I did not see this, and said so, with the result that the discussion tended towards the acrimonious. (After all, we know each other intimately.) I did agree that this kind of thing might occasionally lead to abuse, but that seemed no reason to condemn the practice any more than the existence of a few dishonest doctors can be taken as proof that all the profession is corrupt—even though some novelists may do so with impunity. I argued that if a commercial firm is engaged in any activity impinging on the field of health clearly they must have skilled advice, and many employ completely reputable doctors on a full-time basis. There are many occasions, however, when either some special problem arises or a full-time appointment is uneconomic. It is in the interest not only of the firm but of the public also that the advice they seek should be of the best quality. It is only fair that such advice should be remunerated. Q.E.D.

My colleague was unappeased, and while he was gathering breath for a counter-attack I swept on. This noli-tangere view adopted by our universities and research institutions to commercial contacts and problems has, I urged, done the country a lot of harm. In German universities they adopt the reverse attitude. For example, I met a professor of international repute working in one of the research laboratories of the I.G. Company. I was a little surprised to see him, and really surprised when I learnt he was on the pay roll for a more substantial sum than the university paid him for his chair. He spent something like three long afternoons a week in his department and the remainder of the time in the commercial laboratory. The arrangement suited both sides—the university obtained the services of a first-class man for a much smaller salary than they would otherwise have had to pay, and the company had the kudos of a professor of high standing on their staff. This case was only one of many, and I think the system was one of the chief reasons for the advanced position which German industry held in so many fields before the war. It was also the reason why they could provide so many ersatz substances to replace materials obtainable only from abroad.

I should like to see our universities setting up departments of industrial cooperation each according to its special facilities. These departments would be available in an advisory capacity to commercial firms or trade associations. Research on specific problems or the general basic problems of the industry could be carried out. Fees could be charged for advice which would be split appropriately between the university and the department staff. But perhaps most important, students both undergraduate and postgraduate would be trained in the actual problems of an industry which they would later enter. Some industries have already set up machinery which approximates to the idea in some directions at least—for example, in wool research and rubber research—but the idea is capable of much wider application. Bristol could specialise in physical problems, Manchester in chemistry, Leeds could have a department of wool technology and dyeing, Sheffield could extend its metallurgical work still further and London would be a centre for economic consultation. Edinburgh ought to be a special centre for pharmacological investigation and Aberdeen might take on the food industry. The educational pundits will raise their hands in horror at such a plan, and maintain that the sciences must stick to fundamentals and eschew practical applications. The best answer to them is Aberdeen's motto "They say, what say they, let them say." The universities can no longer dream quietly; they must adjust themselves to the impact of events. We do not need to become soulless pragmatists, but we must be practical.

* * *

Somebody remarked of Florence Nightingale that she was a sharp-tongued, fierce virago battling for reform with ruthless passion. This may be a little strong, but so was Miss Nightingale. She interfered continually with what today is described as politics and did not hesitate to procure ventilation of official incompetence, being quite unconcerned at the risk of so-called scandal. It would be interesting to trace the exact point in history which led to the perversion of her story into the mushy and phoney fiction of the "Lady of the Lamp." One thing is certain—she would have trounced those present leaders of the nursing profession who adopt the conventual vocation attitude. I know of few practical nurses who share the opinion of one of the great Dames of the nursing profession who informed her junior colleagues that they were "God's own little gentlewomen" and proceeded to warn them that any combination on their part for the advancement of professional and economic status was improper and, by inference, against His wish. The nursing profession has been in a position of increasing danger for the last decade. Today it is not only a danger to itself but to the nation too, by reason of its inadequacy in numbers and organisation to serve the expanding needs of war. The nurses, just as the doctors, can scarcely expect anybody else to put their house in order for them. What is usually called the rank and file is ready to support any strong and active lead. The pity is that those who are already in a position to settle nursing on an equal footing with other women's professions content themselves with appeals founded on a platitudinous sentiment and shy with a skittishness unbecoming to their years away from the words "salary" and "working conditions." If they would intersperse Milton along with their pious thoughts I would recommend these words of his:

> I cannot praise a fugitive and cloister'd vertue, unexercis'd and unbreath'd, that never sallies out and sees her adversary, but slinks out of the race, where that immortal garland is to be run for, not without dust and heat.

* * *

That penicillin paper made one think. What is being utilised? An ancient feud between cocci and mould, started perhaps on some dead saurian's flesh, a thousand ages ere they were to be a mammal's guests or chanced on bread of merely tertiary man? Hundreds of these antagonisms must have been formed in that fierce mycotic struggle, started not long after earth's cooling surface caught the emanation of life. Do the bigger fungi have these hatreds too? Do men who eat mushrooms not get mumps? Do blewits and bolets protect against the 'flu? I don't know that they don't. What a subject for a vast investigation, for the organisations of those princes of prescience, Rockefeller and Nuffield. "Ah, Sir, what have you? A touch of carcinoma? We'll soon put that right, but you must take a peck of common morel. And you, Ma'am, for your child's diphtheritic croup, I know an ancient enemy of this—a white mould growing on a long-cast boot." Of course, botanically speaking we shall be sinking below the level of the herbalist to that of the messy mycologist.

Letters to the Editor

MEDICAL ASPECTS OF BOXING

SIR,—Your review and annotation of June 14 on Dr Jokl's "Medical Aspects of Boxing," leave me with the impression that the writers could not have read the book with care, for the main facts on which Dr Jokl relies for his conclusions are imperfectly stated and in some instances misrepresented. Perhaps your readers will be interested to learn how Dr Jokl came to publish the results of his scientific investigations in book form.

In July, 1939, the annual conference of the South African Association for the Advancement of Science was held at East London. At one of the meetings (at which I presided) Dr Jokl delivered an address on the medical aspects of boxing. The results of his investigations and the conclusions arrived at were so important and astounding that he was urged to publish his findings in book form. The present book is the result of that request.

Since 1939 Dr Jokl has added many new facts in support of his thesis—that "in boxing the typical accidents are inherent to the sport as such and can, therefore, only be eliminated by the abolition of this sport. . . . Special consideration must be given not so much to the question of accidents which always occur during sport and recreational activities, but rather to the problem of the intrinsic dangers inherent in boxing. There is not the slightest doubt that all the educational benefits derived from boxing can be achieved equally well through sports which do not constantly endanger health and efficiency of the central nervous system." It surprises one that the common sense of the man in the street has not long ago stumbled on the discovery that boxing is inherently dangerous. The sole object of each boxer is, by all the physical force at his disposal, deliberately to inflict such injury to the head, the heart and other vital parts of the body of his opponent as would cause unconsciousness or incapacity to continue the fight. The opponent's head is the main object of attack in this so-called sport, whereas in other forms a ball is usually the concern of the contestants, and should fatal results follow they are not "deliberately" intended, as in boxing, but are accidents in the proper sense of the term.

In view of the truths that science has revealed as to the nature and consequences of the injuries inflicted and intended in boxing, our law courts will have to revise their conception of the criminal liability of the person who has caused the death of his opponent and of those associated with him. Undoubtedly, due to the popularity of this so-called sport and the rules controlling it, our courts have dealt leniently with the accused person. The doctrine of "volenti non fit injuria" was held to apply. It was however not sufficiently realised that he who deliberately causes and intends to cause an injury which probably would have fatal results should be held to be responsible for the natural and intended consequences of his act. The boxer, therefore, in future cannot escape the full implications of the law, and, what is more, those who pander to the sadistic tendencies of human nature by staging prize fights solely for financial gain should be held criminally liable as accessories before the fact or as accomplices. No-one would dream of contending that the duellist who is quick on the trigger and kills his opponent would not be guilty of murder.

In South Africa, Dr Jokl's book has been received by scientists with approval, and the only criticism which has appeared has come, as was anticipated, from persons who either make their living out of boxing or who are financially interested in this so-called sport. The facts disclosed and the conclusions arrived at have not been questioned by any scientist of standing; resort has been had to the usual red herrings—that fatal accidents also occur in other forms of sport and that none would advocate their abolition for that reason or that the research has not been sufficiently comprehensive to justify the total abolition of boxing.

It cannot be correct to assert that "fatal cases hardly ever escape public attention." The reason why the public is kept in ignorance of the great many fatal cases that do occur is very simple, when one remembers that every device is employed, especially by those who are financially interested in boxing, to uphold its popularity either by suppressing facts or by obtaining a death certificate which would preclude the necessity of a public inquiry. One can only wonder at the fact that so many fatal cases, directly due to injuries received in boxing, have received any public attention at all. Popular press reports are valueless in establishing the frequency of the occurrence of any such event.

It is satisfactory to note that your annotator admits “ that it might be wise to forbid it [boxing] to special categories of men, such as air pilots, who need all the mental alertness and neuromuscular coordination they can get.” But why confine it to special categories of men if, in fact, it is dangerous ? It may be conceded that the inherent dangers of boxing may be minimised by, for example, increasing the weight and size of the gloves, but that would be staging a pillow fight—it would not be boxing as popularly understood—and no-one would pay a large sum to witness such an exhibition, or be attracted to such a tame sport without a “ knock-out blow ” ; that is, after all, what the public come to see.

Dr. Jokl has done a great service in boldly exposing the inherent dangers of boxing, and no parent or teacher of physical training should fail to study his case-histories and conclusions.

Pretoria, South Africa. F. E. T. KRAUSE.

SIR,—I have read with interest your editorial comment on Dr. Jokl's book. Boxing is either a good sport or a bad one and I cannot make out from your annotation which category you favour. Your remark that “ it might be wise to forbid boxing to special categories of men, such as air pilots, who need all the mental alertness and neuromuscular coordination they can get ” seems to indicate that you are in favour of the abolition of this sport. I shall be glad if you will explain the reasons for this conclusion, for the critical tone of the rest of your annotation does not bear this out.

JACK PENN,
Johannesburg. Major S.A.M.C.

⁂ Boxing may be a good sport but, like love, it acquires an evil smell when it becomes a business proposition. Amateur boxing has merit in harmonising courage and self-control. As a training in self-defence boxing is popular with the police and the military. But that has no comfort for the poor loons who get punch drunk in the ring for other people's profit.—ED. L.

EXCLUSION OF NEUROTICS FROM THE FORCES

SIR,—The incidence of acute neurosis in the Services is extremely low, and the number of men who break down under the acute stress of war is very small, a fact well illustrated after Dunkirk. In almost two years 2045 Service patients have been admitted to a special centre where neurotics are concentrated, and 80–90% of these were cases of chronic neurosis which could in no way be described as war neuroses. They are the chronic neurotics of peace-time who have broken down as a result of trivial stresses, such as inability to bear Army discipline or separation from their families, and they are admitted to hospital with an exacerbation of their chronic neuroses. Some were able in peace-time to carry on in spite of symptoms ; in the Army they are unable to do so. They report sick, are seen by a command psychiatrist and are admitted for treatment. They show an almost monotonous repetition of symptomatology, and their treatment is enough to break the heart of able and experienced psychiatrists. Moreover, many chronic neurotics have an extremely bad effect on the better patients in hospital, being chronic grumblers, unwilling or unable to make any effort to return to Army life. Most of them should never have been passed by the medical boards. In addition men suffering from chronic neurosis are sometimes admitted who were doing skilled work of national importance before being called up ; they are unable to do the work in such units as the Pioneer Corps, to which they are often posted, and are admitted to hospital because of an exacerbation of their neuroses.

This waste of man-power, apart from waste of money and time, could easily be avoided. In the United States a circular has been issued to physicians of medical boards who are not psychiatrists, briefly presenting the main symptoms by which they can recognise psychoneurosis, neurosis or organic diseases of the nervous system (see *Lancet*, May 17, 1941, p. 633). Should the examining physician suspect any neurotic disorder, he sends the man for expert psychiatric examination. By this means many chronic neurotics are eliminated before they have the chance of being enlisted. If more care were taken in England at the time of medical examination (one epileptic had enlisted five times), the number of admissions to hospital for neurosis could be drastically curtailed and much trouble to the pensions authorities avoided ; moreover, psychiatrists attached to special neurosis centres would have time to act in an advisory capacity to medical boards, and so prevent this large group of chronic psychopaths—anxiety states, hysterias, mental defectives, epileptics, &c.—from being passed into the Army.

A follow-up of chronic neurotics invalided from the Army and living in the London area has been begun. It was thought that when these patients were invalided out their more acute symptoms would disappear, and this was found to be the case. In fact, they were restored to their pre-war neurotic level, and said they felt as fit as usual. Yet social workers found that some who before enlistment had had good work records were now unable to hold down jobs similar to those which they had been doing in peace-time. If this finding holds good for a *large number of cases, it provides another important* reason for excluding the chronic neurotic from the Services.

The remedies seem to me to be as follows :—

(1) That recruits with a history of neurosis should be required to produce a letter from their family doctors or a hospital stating their history, family or personal, of neurosis or psychosis, fits, mental defect or backwardness. If a man produces any such evidence or the examining doctor finds any sign of oddness, personality disturbances or psychopathy the patient should be referred to a psychiatrist, preferably one who has had experience with the neurotic under Service conditions, who will decide as to his fitness for military service. It does not follow that all chronic neurotics will be rejected —many of them are suitable for particular trades in the Army, and can release other men who are efficient fighting units. This is already being done under a War Office training scheme with many inpatients who would formerly have been invalided out. The argument that many recruits would use this letter to avoid military service is not valid, since a man bringing such a letter would be referred to a competent psychiatrist who would decide whether he was fit or not. In several cases recruits have brought letters from psychiatrists, but the letters have been ignored and the men passed A1.

(2) That all doctors on medical boards who are not psychiatrists should be issued with a circular like that used in the U.S.A., giving the symptomatology of personality defects, neuroses and psychoses concisely and simply, and also telling how to examine the patient from the psychiatric point of view, and what to look for.

Obviously such a document as I suggest must be highly confidential ; in America the contents became known and in some cases recruits anxious to avoid service knew the answers beforehand. But I believe by some such means admissions to neurosis centres could be cut down by half.

Sutton. LOUIS MINSKI.

FIRST-AID FOR EVERY SOLDIER

SIR,—Your leader of Sept. 13 has made a very sensible suggestion which is based apparently on the observations of an anonymous lance-corporal. Now lance-corporals in the nature of things have not much knowledge of the Army apart from their own unit, and would not be likely to know if other troops had received instruction in first-aid. It is a fact that in the division with which I served in France all ranks had received such instruction before proceeding overseas. I have reason to believe it is usual to give divisional troops an inkling of the basic principles of first-aid. The regimental medical officer is the man to do it, not the subaltern who already has enough on his plate. I do not think it is a good idea to hand out Mr. Keogh's cards with diagrams and brave words, however well intentioned. The soldier of today has to be approached in quite another manner which may be left to the discretion of the R.M.O., who should know the men he is dealing with.

Manchester. W. A. RAMSAY.

INTRACAPSULAR FRACTURES

Sir,—In your annotation of Sept 13 you refer to a commission set up by the American Academy of Orthopedic Surgeons, which reported bony union in 70 1% of cases of intracapsular fracture of the femoral neck treated by pinning and followed up for one year You then refer to an article of ours in the *British Journal of Surgery*, quoting our results as 58 7% bony union But close inspection of our figures will reveal that bony union did actually occur in 70% of cases followed up for one year Seventy-five cases were reviewed, but 4 died shortly after the operation and a further 8 could not be followed up either because of death from other causes, in the years intervening between the operation and the follow up, or because (in 2 cases) the patients were never traced Forty-four cases of bony union out of 63 cases is 70%

ARTHUR L EYRE-BROOK,
Bristol KENNETH H PRIDIE

SOLDIER'S DEFENCE AND PUBLIC'S ATTITUDE

Sir,—Dr Clifford Scott's paper is very interesting but a trifle vague, perhaps that is inevitable in a subject like psychology, but I feel there is excuse for commenting on some of his statements

Before the last war he says, the valorous soldier was considered to be fearless the implication being that other views hold the field now There has, of course always been a school of thought which held, and still holds, that fearlessness and courage are more or less the same thing, as indeed they are, if by courage is meant an ability to do dangerous things without being afraid, or appreciably afraid By afraid in this connexion one means something more than merely that state of mind which prompts one to take precautions There is also and always has been, a rather more subtle school maintaining that the truly brave is he who does dangerous things in spite of intense fear, and if we like to define courage in that way there appears to be no objection, provided we are consistent Thirdly, there are, and always have been (at least for many centuries), those who believe that human behaviour is determined by the ultimate laws of nature, and therefore courage is merely a convenient name for one of the characteristics of Homo sapiens You pays your money and you takes your choice of these views, according to your temperament, intelligence, upbringing and so on

The point is that, in my submission, none of them is new, and none has greatly lost favour, it is not clear that there has been anything amounting to a complete change in the public's attitude The public still believes in cowardice as it does in sin and it is likely to go on doing so, not because of the truth or otherwise of these conceptions but because they provide a practical rule-of-thumb for obtaining *certain* results Just as murderers are hung pour encourager les autres (or, if revenge enters into it that is presumably a primitive mechanism designed for the same purpose) so cowards are shot on the field of battle (and will continue to be shot, all the psychiatrists in the world notwithstanding), because it is sometimes the only way to produce the desired effect There are, rather naturally times when no milder stimulus than the fear of being shot in the back will suffice to override the stimulus of the fear of being shot in the front Doubtless in many cases the fear is not a fear of death pure and simple but of something more complicated perhaps rather of the manner of dying If I understand Dr Scott, there is no such thing as fear of the unknown, but only fear of a repetition of the known, or something like it The result is unfortunately the same in this case

Newcastle-on Tyne W E HICK

FIRST-FIELD DRESSING

Sir —Your timely and encouraging leader "First-Aid for Every Soldier" prompts me to draw attention to one pattern of first-field dressing which has been issued to the Forces

In a lecture on first-aid which I gave recently to a platoon of Home Guard I invited one of the audience to come to the platform and show us how he would apply his field dressing He stripped off the layer of Cellophane, loosened one end of the brown calico outer cover by breaking the thread which secured a flap, and withdrew one of two dressings each encased in waterproof white calico The package resembled a sealed letter-card, and nothing seemed simpler than to tear off the half-inch strip which ran along three sides However, he paused to read the instructions "Tear apart the uncemented corner as indicated by the arrow" For several minutes he wrestled with the packet, but to no purpose The corner indicated by the arrow was not "uncemented" enough Finally very red in the face, he grasped the dressing firmly in one hand and with a mighty effort managed to tear open one end of the cover The whole performance took about five minutes I later tried to open three similar packets and had the same difficulty with *all of them* I can well imagine that a soldier whose hands might be tremulous in the excitement of battle or benumbed by frost would find it utterly impossible to open one of these dressings I hope the products of other makers are more amenable

May I suggest that every medical officer in the Forces should pick at random a dozen of his men and see whether they have any difficulty in opening their first-field dressings?

STANLEY ALSTEAD
Glasgow

GLYCERIN-GELATIN BASE

Sir,—The title of our article of Sept 13 (p 329)—A Glycerin-gelatin Base for Irradiation Dermatitis and Burns—may be open to misconstruction The base for which the formula is given was first employed by me some years ago in the treatment of ordinary burns As tannic-acid jelly has been widely employed in the treatment of both thermal burns and moist desquamation of the skin following irradiation, the attempt to treat the latter condition by the glycerin-gelatin compound seemed logical The advantages claimed for the preparation have been amply demonstrated for both types of lesion

PERCIVAL P COLE
London, S W 3

BULLETIN OF WAR MEDICINE

Sir,—In your annotation on Anglo-Russian alliance in medicine (*Lancet*, Sept 20, p 344) you refer to the journal which the Tropical Diseases Bureau of the Medical Research Council has been publishing for more than a year as *War Medicine* May I remind you that the actual name of the journal is *Bulletin of War Medicine*, it should not be confused with the recently produced American publication *War Medicine* The bulletin is edited for the M R C by the Bureau of Hygiene and Tropical Diseases under the direction of Sir Harold Scott, but this bureau is not part of the organisation of the Council, and the bulletin is not concerned, except incidentally, with problems of hygiene and tropical diseases These are dealt with by the two other publications of the Bureau the *Bulletin of Hygiene* and the *Tropical Diseases Bulletin*

CHARLES WILCOCKS
London, W C 1

PLUMP TYPE OF GRAVES'S DISEASE

Sir,—I have read with much interest Dr Trotter and Mr Eden's paper on this type of Graves's disease, especially with regard to the high mortality of subtotal thyroidectomy—namely, two cases of sudden death out of seven operated on At autopsy generalised lymphoid hyperplasia was found and apparently no other cause They say in their paper "The cause of the two deaths was not apparent but since their condition deteriorated after a brief period of respiratory embarrassment these patients may be unduly susceptible to anoxæmia" Unfortunately no more clinical details were given and I wish to suggest that the patients died from interstitial emphysema and pneumothorax

This mediastinal emphysema arises from the neck incision, especially in those cases which have a drainage-tube in them and the pneumothorax is bilateral and will rapidly cause death An excellent paper on this condition by H J Barrie (*Lancet*, 1940, 1, 996) gives clinical and post-mortem details The condition will be overlooked at the post-mortem examination unless each pleura is opened under a water seal for issuing air This to my knowledge is not done usually at routine sections I believe that this condition will probably explain some deaths on the operating table during thyroidectomy, as it is overlooked in the general excitement to perform

(Continued at foot of next page)

Obituary

HENRY ASHBOURNE TREADGOLD

C B E , M D LOND., F R C P , GROUP-CAPTAIN R A F (RETD)

Group-Captain Treadgold, who died suddenly on Sept 15 in his 58th year, was the son of Dr F C A Treadgold, who practised at Southport

He was educated at Fettes, Cambridge and King's College Hospital, London, where he won scholarships and qualified in *1909*, taking the M D Lond in 1912 He acted as casualty officer at the Royal Free Hospital, medical Sambrooke registrar at K C H and assistant superintendent of laboratory at the Brompton Chest Hospital In 1914 he joined the R A M C , served as sanitary officer at Colchester, went to France with the 48th Brigade and later to Mesopotamia, being mentioned in dispatches On the formation of the R A F Medical Branch in August, 1919, he was granted a permanent commission as squadron leader After three years in the medical directorate of the Air Ministry he was D P M O in Iraq 1921–24 and then served at medical headquarters, first as president of the medical board and from 1931 as consultant in medicine until his retirement owing to ill health in June, 1936 His name appeared among the Birthday Honours that year, and in the following year he was elected F R C P

Treadgold was a man of exceptional ability who excelled in whatever he undertook, both at work and in pursuit of his hobbies—fishing and gardening He set himself a high standard of efficiency and expected it of others Logical, quick-witted and incisive, he made an ideal president of the Central Medical Board To those who worked in close contact with him he was a loyal and inspiring colleague, qualities which earned their affectionate regard The superficial attitude of indifference which he assumed concealed a sensitive nature and a kindly disposition

In 1909 he married Evelyn Diana Landor, who survives him with one son and one daughter

Public Health

From the School Reports

GLOSSOP

The chief matter in Dr Marcus Milligan's 1940 school report is the description of a new functional test for nutrition and the record of the results obtained from it The test is devised to demonstrate loss of strength and endurance by bringing into play the anti-fatigue powers of the body , it being presumed, in our opinion justly, that anti-fatigue would be the first composite function to show the effects of insufficient nutrition The original test was the length of time a child could support itself on a horizontal bar, but as this gives undue measure to handgrip and hanging power, it was abandoned in favour of pulling up a counterpoise of equal weight to the child's body Dr Milligan says that to judge the physical condition of children by any tests we must have standards and for this reason he includes standards, so far as he has been able to obtain them Since, however, the main value of the test is to show *alteration* of power, the actual standard must be that of the individual child on some given date and the test must be repeated at intervals, for it is a dynamic function which is to be measured The test has the merits of simplicity and comparative freedom from upsetting psychological interferences, and shows promise of being of considerable value

NORTHANTS

Dr C M Smith, school medical officer for the county, had three special surveys in *January*, May and *October* of the heads of native and received children The percentage of those with nits (or worse) was for natives, 4 3, 4 0, 4 6 , for evacuees, 5 5, 3 6, 5 8 The seaso variation of the natives has been usual in all parts of country for the past 30 years , the variation for evacuees is due to receiving householders being fait in cleansing their guests without realising that to k heads clean is a continuous process

Infectious Disease in England and Wales

WEEK ENDED SEPT 13

Notifications —The following cases of infectious dis were notified during the week , *smallpox* 0 , *sca* fever, 1005 , whooping-cough, 2710 , diphtheria, 9 paratyphoid, 141 , typhoid, 49 , measles (exclud rubella), 808 , *pneumonia (primary or influenzal)*, 4 puerperal pyrexia, 151 , cerebrospinal fever, 1 poliomyelitis, 36 , polio-encephalitis, 4 , encephal lethargica, 1 , dysentery, 94 , ophthalmia neonatoru 83 No case of cholera, plague or typhus fever notified during the week

The number of civilian and service sick in the Infectious Hosp of the London County Council on Sept 10 was 1279 , includ scarlet fever, 128 diphtheria, 245 , measles, 41 , whooping cou 484 , enteritis, 19 , chicken pox, 30 erysipelas, 24 , mumps, poliomyelitis, 1 , dysentery, 16 , cerebrospinal fever, 19 , puerp sepsis, 16 , enteric fevers, 40 , german measles, 2 , polio encep itis, 2 , other diseases (non infectious), 41 , not yet diagnosed,

Deaths —In 126 great towns there were 2 (1) dea from enteric fever, 2 (0) from measles, 3 (0) from scar fever, 15 (3) from whooping-cough, 22 (0) from diphthe 25 (3) from diarrhœa and enteritis under 2 years, a 8 (0) from influenza The figures in parentheses are th for London itself

Liverpool reported 1 death from enteric fever Sunderland Cardiff each had 3 deaths from whooping cough There were 3 fa cases of diphtheria at Sheffield

The number of stillbirths notified during the week w 185 (corresponding to a rate of 36 per thousand to births), including 16 in London

Medical News

University of Leeds

At recent examinations the following were successful —

M D

L A Westwood

FINAL EXAMINATION FOR M B , CH B

Part II —A M Bowler, S Keidan, Bertha Klempman E Lawton, J Lees, D Levi J Lyons, Kathleen M Peck C Reichman, B Sidman G H Templeman, Jean M Terry Thon D Velinsky, L Walsh, J L C Ward, and A Wertheimer

University of Durham

Dr F J Nattrass has been appointed to the chair medicine in the university

John Frederick Nattrass graduated in medicine with first c honours from the University of Durham in 1914 and was awar the gold medal for his M D thesis in 1920 He has held lect ships in medical jurisprudence, and lately in therapeutics in university, and he has examined in pathology for the Conj Board and in forensic medicine for the University of Manches He was appointed to the staff of the Royal Victoria Infirmar 1921, becoming full physician in 1935 and since 1931 he has physician to the Newcastle General Hospital He is also neurolo to the Newcastle Throat, Nose and Ear Hospital and to the Hospital and since the outbreak of war has been regional consul in neurology to the Ministry of Health Dr Nattrass was ele F R C P in 1931 His book on the Commoner Nervous Disc was published in 1931 and he has contributed articles on mu diseases and narcolepsy to the British Encyclopædia of Medici

A T S Appointment

Miss C M Hawkes, *organiser of physical education* un the Barking and Walthamstow education committee, an member of the Ling Physical Education Association, has b appointed to take charge of the physical training in the A T with the rank of senior commander

Royal Society of Medicine

At the section of the history of medicine on Wednesd Oct 1, at 3 30 P M , Sir Walter Langdon-Brown will rea paper on John Caius and the revival of learning, and H P Bayon on Paracelsus and the Rosicrucian roma legend On Oct 4 the section of physical medicine meet at Oxford At noon Prof H J Seddon and Dr B Kiernander will demonstrate cases at the Wingfield Mo Hospital, at 2 45 P M Surgeon Lieut Commander J Bunyan, L D S , will show a film on the treatment of bur and at 4 15 P M Lieut Colonel R W Armstrong will gi demonstration of electrically induced convulsive therap

Until further notice the library of the society which op at 9 30 A M will close one hour before blackout

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(continued from previous page)

artificial respiration If it were borne in mind, a rapid aspiration of air from both pleuræ should save life

I have been unable to trace any cases which have been saved by this prompt and simple measure, and would like to be put in touch with any known recorded successes

City General Hospital, Leicester A P M PAGE

Dysentery in Edinburgh

A small outbreak of dysentery has occurred in part of Edinburgh and the infection has been traced to a dairy farm n the south side of the city. An order has been served on he farm to cease selling milk and butter. All except one of he households where the 25 cases occurred obtained their milk from this farm.

Chadwick Lectures

On Tuesday, Oct. 7, at 2.30 P.M., the first lecture in the 9th annual series of Chadwick public lectures is to be given t 26, Portland Place, London, W.1, when Mr. V. Zachary Pope will speak on the influence of war on surgery.

Pathological Demonstration

On Thursday, Oct. 9, at 3 P.M., Dr. W. Pagel will give a emonstration of some cases observed during the past year n the pathological department of the Central Middlesex County Hospital, Acton Lane, N.W.10.

Maternity Leave in the Civil Service

Under an agreement reached between the Treasury and he National Whitley Council, married women civil servants, permanent and temporary, will be entitled to maternity leave.

Medical Casualties

Surgeon Commander A. N. Forsyth, M.B. Aberd., R.N. and Surgeon Lieutenant R. M. Calder, M.B. Glasg., R.N.V.R., are reported to be missing, presumed killed.

Captain I. M. G. Stewart, M.B. Lond., R.A.M.C., and Lieutenant L. F. Smith, M.B. Edin., R.A.M.C., have been posted as prisoners of war.

Royal College of Nursing

The college has set up a reconstruction committee, under he chairmanship of Lord Horder, to consider the immediate steps necessary to carry out some of the Athlone Committee's reforms and to promote more advanced schemes of nursing. The British Medical Association, the British Hospitals Association, the Incorporated Association of Hospital Officers, he Association of Hospital Matrons, the County and County Borough Hospital Matrons Association, the National Association of Local Government Officers, the Women Public Health Officers Association, the Nuffield Provincial Hospitals Trust, he Medical Women's Federation, the King Edward's Hospital Fund for London, and the Society of Medical Officers of Health will all send representatives to the committee, half of whose members will be nurses representing the various branches of their profession.

Planning at Bath

Health education and finance were tackled by a conference on the reconstruction of post-war Britain which met in the pump room at Bath on Sept. 7 under the presidency of Mrs. Mavis Tate, M.P. Mr. R. S. Trueman, F.R.C.S.E., who opened the health session said that the great difficulty of our present hospital system was the provision of treatment for the middle classes. He advocated the setting up of a royal commission of five members all under 40 years of age to consider the problem. He thought we needed a regional national hospital system with each region run by a hospital officer; hospital staff appointments should be made by a board of university professors who would be outwith local politics. He also proposed the enlargement of the hospitals and the closure of all nursing homes. The hospitals would be open to everybody and each should pay what he could afford. Mr. C. E. Kindersley, F.R.C.S., though it best to plan on what we have at present and not try to sweep away the voluntary hospitals which were some of the biggest institutions in the country. Hospitalisation had to be paid for by taxation or by voluntary effort, and he thought it should be "a little bit of both." He urged the medical profession to get on with its own job—the investigation and treatment of disease and if possible its prevention—and he knew no greater damper to enthusiasm than bureaucratic control. Miss Maud Forrester Brown, M.S., contended that the voluntary hospital had often not been able to cope with the expansion of industrial populations. She urged that industry should carry the cost of the health of its population. Dr. Elizabeth Casson stressed the need for an organised mental health scheme. Mrs. Clara Cross, M.D., speaking as a mother and a doctor asked for instruction in mothercraft and fathercraft for older boys and girls. And finally Mrs. Forbes Fraser pointed out that none of these schemes could be brought to fruition without nurses. There must be a new system of training student nurses and some organisation for the assistant nurse.

Notes, Comments and Abstracts

HEALTH INSURANCE IN SOUTH AMERICA

FOR some years the South American states have been giving attention to social insurance, and important conferences were held at Sàntiago de Chile in 1936 and at Havana in 1939 which provided programmes as a basis for governmental action. Chile has been a pioneer and by its example has encouraged other countries. Its act of 1925 from the outset applied to the whole wage-earning population while other states adopted a policy of gradual extension.[1] The responsibility for the health of the workers is placed on the employers in large undertakings such as mines, forestry and plantations, who are obliged to provide first-aid, the services of one or more doctors, and some hospital accommodation, in that order, in proportion to the number of their workers. The Santiago-Havana programme emphasises the value of the preventive and curative services afforded by sickness insurance. The main purpose is "to make available to insured persons and their families the resources of modern medicine for the preservation of their health and for the detection and treatment of disease in its earliest stages." Chile took a further step forward in 1938 with the Preventive Medicine Act which institutes periodical examinations for the whole population. A complete English translation of the act with the decree which put it into operation has just been published in the legislative series of the International Labour Office. Its object is "to bring to light the existence and arrest in time the development of chronic diseases such as tuberculosis, syphilis, rheumatism, diseases of the heart and kidneys and also occupational diseases such as lead poisoning, anthrax, silicosis, ankylostomiasis." The administration of the act is entrusted to medical boards who supervise the periods of partial or total preventive rest which may be prescribed. A preventive rest day means a period equal to half the ordinary working day, and disciplinary measures may be taken by the boards for non-observance of medical directions either by the employer or the employee. Where partial preventive rest days would disorganise work they must be replaced by days of total preventive rest and pay is made up by the provident funds. The place at which the rest-cure is to be taken may be prescribed for the patient. Medical examinations must be made at least once a year, and medical boards may visit the places of work for the purpose though the examination must be made in the employee's own time except when an agreement to the contrary is made with the employer. The examination comprises at least the following tests: (*a*) summary clinical examination (weight, height, general examination, pulse, blood-pressure, auscultation of the thorax); (*b*) radiological examination of the thorax; and (*c*) Kahn or Wassermann reaction. Each board must include a tuberculosis specialist. There is a right of appeal by employers or employed against the decision of the boards to a medical complaints board consisting of medical representatives appointed by the president, the employers and the employees organisations.

The social insurance scheme of Peru has a general resemblance to the Chilean but with a novel feature. With the contributions collected from the employers and the state since 1937 hospitals have been built. The first and largest with 750 beds and the most modern equipment was opened in Lima last December, and another was opened in Ica in February. The scheme includes the provision of 12 other hospitals, 40 polyclinics, 50 rural dispensaries and 10 travelling dispensaries. Only when hospitals are available to provide the benefit within an area are the employed persons called on to make their contributions. Recent developments in the South American states include the formation of the inter-American Committee to Forward Social Security which will work in collaboration with the International Labour Office.

THE ANTISEPTIC CYCLE

IN his Honyman Gillespie lecture on Aug. 28 Sir John Fraser gave an account of wound infection before the first antiseptic era and reviewed the researches of Pasteur and Lister He demonstrated the various antiseptic materials used by Lister for compound infected fractures and quoted extracts from Lister's paper published in THE LANCET of 1867, describing the successful treatment of eleven cases of compound fracture, which might be said to mark the advent of the first antiseptic era Sir John then traced the history of the opposition which arose Critics of the Listerian principle declared that strong antiseptics were unnecessary and were prejudicial to the healing of the wound He quoted from the writings of Spencer Wells and Lawson Tait, and summarised the contentions on which the aseptic school was eventually established Ultimately a compromise was reached Except in a few centres the employment of antiseptics was reduced to a minimum, sterilisation was achieved by heat and steam-pressure The highest standard of cleanliness on the part of the surgeon and all his helpers was exacted, and chemical disinfectants were only used in situations where they were not prejudicial to material or tissues It seemed unlikely that a second antiseptic era would arise, but in 1914 the war casualties reproduced conditions which resembled those of the pre-Listerian period, and there was a renewed interest in the problem of wound infection—in other words, the advent of the second antiseptic era

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[1] Stack, M. *Int. Lab. Rev.* July, 1941, p. 1.

Today we are face to face with the same problem Accepting the premise that all accidental wounds are infected, Sir John insisted on the importance of carrying out bacteriological examination of all these wounds as soon as they came under treatment He described and illustrated the common types of wound infection—the pyogenic, the clostridial and tetanus He drew attention to the value of tissue resistance as it develops in sequence to infection, and insisted that wound treatment must be designed to stimulate natural processes As a preliminary to treatment three considerations must be kept in mind—

1 The certainty that the wound is infected,

2 That two hours will elapse before multiplication of organisms will occur,

3 That there will be no actual infiltration of tissue by organisms until after the sixth hour.

Prophylactic serum should be used wherever a clostridial infection was suspected The sulphonamides have proved of immense value from the prophylactic and therapeutic aspects, and have removed much of the risks attendant on accidental wounds Of the depot antiseptics he favoured Albucid soluble (*p*-aminobenzenesulphonacetamide), and introduced 5–15 g of this salt into all potentially infected wounds

A FREED MAN LOOKS BACK

Jan Slomka was born in serfdom in 1842 and lived all his life in the village of Dzikow on the borders of Austrian Poland His life story, which he finished at the age of 87, personifies the struggles through which the peasants evolved to democracy (From Serfdom to Self-Government Minerva Publishing Co Pp 274 8*s* 6*d*) As a young man he was one of the few literate people in his district, and, being energetic and observant, he was able to apply new methods in agriculture which other peasants, more conservative and superstitious, refused to consider He consequently prospered and for 40 years was mayor of his village He describes the psychological difficulties the peasants had in adjusting to their freedom During serfdom they had got used to regarding work on the land as an imposition Since the land did not belong to them they pottered along from day to day When serfdom ended this ingrained habit remained like a yoke and was not shaken off for twenty years During this time they lived in extreme poverty, and being unable to see any prospect of improvement most of them turned to vodka for solace, rather than to better farming technique Land was exchanged or taken on lease, the payment being made in grain or potatoes delivered in the spring The peasant unlike the more business-like rentier, was slow to appreciate the monetary value of land, the saying was "Am I to live for ever that I should buy land outright?"

Medical services in the village did not exist, and the sick travelled miles to visit quacks who practised magic on them If too ill to travel a delegate would go to ask advice taking along the patient's shirt and a sample urine Slomka's account of malaria reads like somethi from the eighteenth century

Fever, so called "three day ague," was so common th nearly everyone took it The chill and fever wou return for an hour every three or four days—hence the nan It arose from eating unripe fruit or sourgrass, from drink beer on an empty stomach, from getting soaked through a taking cold or from overwork Only when it held on fo long time, a year or even more, and the patient got so b that he could scarce walk, would they get busy and treat with home remedies—herb tea or quinine—this latter bei the thing that helped most in such cases

Slomka's detailed observations on peasant life a customs are shrewd and human He writes as a peasa and the translator has skilfully preserved the rustic tw of his language The book brings a breath of count air with it, reminding the town-dweller that agricultu is still the basis of life, and is a valuable, if inform contribution to sociology

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DESITIN PRODUCTS—Priory Laboratories (Northwoo Middlesex) inform us that from Oct 1 these produ will be manufactured and distributed by them

CHANGE OF NAME—We are asked to state that I Freda B Pratt will in future be known as Dr Freda Bannister, this change back to her maiden name havi been made by a deed poll executed on Sept 8, 19 Address 15, Belsyre Court, Woodstock Road, Oxfo

Appointments

Anderson, H J, M B Camb, M R C P medical registrar St Thomas's Hospital

*Gibson, Marion, M B Glasg temp asst M O H for E Suffolk

King C A, M R C S casualty surgical officer, Royal Gw Hospital, Newport, Mon

Möntz, Bertha, M D Vienna R M O at Cumberland Ho Hospital, Mitcham

Simmons, R W A B M Oxfd examining factory surgeon Eastleigh, Hants

Steed, Evelyn M B Edin, D R C O G temp asst M O H Holland, Lincolnshire

Strauss, Richard, M D Vienna R S O in orthopædic a fracture department, Royal Cornwall Infirmary, Truro

Sutherland, Marie, M B Aberd, D P H asst school M O for Aberdeen

Todd, Kathleen, M B N Z, D P M part time psychiatrist the Child Guidance Training Centre, Oxford

Wilson, Richard, M B Camb, M R C P medical registrar St Thomas's Hospital

* Amended notice

Births, Marriages and Deaths

BIRTHS

Dick—On Sept 18, at Campbeltown Argyllshire, the wife Surgeon Lieutenant H P Dick R N V R—a son

Fyfe—On Sept 18, at St Andrews, the wife of Dr G Matth Fyfe—a son

Pollock—At Market Harborough, the wife of Major C B Pollock, R A M C—a son

Spillane—On Sept 16, at Aldershot, the wife of Major John Spillane, R A M C—a daughter

Toone—On Aug 7, at Nelson, B C, the wife of Dr W Ma Toone—a daughter

MARRIAGES

Cayley—Dalton—On Sept 16, in London, Forde Everard Wend Cayley, M R C S, captain, R A M C, to Eileen Lil Dalton

Dobrel—Smith—On Sept 16 at Lexden, John Hatherl Dobree, M B, lieutenant R A M C, to Evelyn Maud Smyt

DEATHS

Atwill—In August, by enemy action, John Anthony Atw M R C S, of Didcot, Berks

Barnett—On Aug 31, at Beaconsfield, Kennet Bruce Barne M B R U I, F R C S I, lieut colonel, R A M C (retd aged 74

Prothero—In August, by enemy action, David Austin Prothe M R C S

Sparrow—In August by enemy action, Horatio Septimus Richa Sparrow, M R C S, of Dartmouth

Treadgold—On Sept 15, Henry Ashbourne Treadgold, C B I M D Lond, F R C P, group captain, R A F (retd)

Wortabet—On Sept 19, at Bournemouth, Henry George Luth Wortabet, M D Edin, lieut colonel, I M S, (retd), aged 88

ORIGINAL ARTICLES

INFLUENZA IN ENGLAND
IN 1940–41

C H ANDREWES, M D LOND , F R C P , F R S

R E GLOVER,
F R C.V S

DORA LUSH
M SC MELB

N P. HUDSON,*
M D HARVARD

C H STUART-HARRIS,
M D LOND M.R C.P
MAJOR R.A.M C.

ational Institute for Medical Research, London, N W 3, and a Military Laboratory)

ACCOUNTS of influenza in England in 1936–37 (Stuart-rris Andrewes and Smith 1938) and in 1939 (Stuart-rris, Smith and Andrewes 1940) have described the ncal features of the outbreaks of those years and the erimental studies then carried out on ferrets and mice. order to bring the story up to date and to help in imately viewing the epidemics of these times in per-ctive the following account of experiences in 1940 1 1941 is published

In 1940—Circumstances, in particular the absence oad of the clinical member of our team (C. H S -H), l not permit us to make correlated clinical and patho-ical studies in the spring of 1940 It may be said, wever that the outbreak of respiratory disease then valent in southern England was of the long-drawn- rather than sharply peaking form, that "clinically ical" influenza was relatively infrequent, and that a cheo-bronchitis with slow recovery was very prevalent rglings from patients diagnosed as clinical influenza re tested by intranasal inoculation of ferrets as in rlier studies The ferrets were observed for the velopment of fever or respiratory symptoms, and in any instances subsequently tested for immunity to fluenza A virus (Horsfall et al 1940) No evidence was tained that that virus was prevalent at all in southern gland in 1940 The garglings tested were of the llowing origins —

oolwich	2		tested	in	January,	1940
mbridge	3		„	„	„	„
erborne	3		„	„	„	„
ndon	3	(pooled)	„	„	„	„
ampshire	1		„	„	„	„
ndon	1		„	„	March	„
„	3		„	„	April	„
eltham, Mlsex	1		„	„	May	„
ondon	1		„	„	September	„
„	3	(2 pooled)	„	„	November	
iltshire	2		„	„	December	„

s already mentioned, none of these produced infection ferrets

In 1941—In spite of the absence of any general pidemic in the winter of 1940–41, sporadic cases of linical influenza occurred in London and elsewhere in outhern England We received during January and ebruary garglings or serum samples from 19 patients iagnosed as clinical influenza ; all but 2 came from the ondon area As will be shown, 8 of the specimens 42%) provided evidence that the disease was influenza A

During the same period, a detailed clinical study of he acute respiratory infections occurring in patients dmitted to a military hospital in southern England was eing made by one of us (C H. S -H) No actual pidemic was observed, but there was a sharply increased ncidence of cases in January and February, and many ases presented the clinical picture of influenza as seen n 1937 and 1939 Pathological investigations on 30 cases carried out locally and on material transported to Hampstead showed that 79% of the cases investigated in January and February were examples of virus A influenza As a number of cases of pneumonia and miscellaneous ailments were included, the actual incidence of virus A infection in cases of clinical influenza in the area was probably even higher A number of cases of influenza with the signs of bronchiolitis as seen in 1937 (Stuart-Harris et al 1938) were also seen, and each of the three cases investigated was found to have evidence of influenza virus A infection It is necessary to emphasise that the military hospital cases were selected only in so far as fever was concerned They therefore represented the average case of febrile acute respiratory infection during the period stated ; the investigations at the military hospital are described in more detail elsewhere (Stuart-Harris 1941).

The higher proportion of positive tests for influenza A virus infection in the group from the military hospital compared with those from London (79% : 42%) may be due to a real difference in the type of respiratory infection in the areas concerned It may, however, be only apparent, for the material examined from the hospital consisted for the most part of serum samples to be tested for antibodies , that from London comprised chiefly garglings for inoculation into ferrets As we shall show, the ferret test has proved, more especially this year, to be a far less delicate index of infection than the other.

Specimens from 16 patients from various districts were examined during March and April 1941 , not one gave evidence that influenza A was concerned

ATTEMPTS TO RECOVER VIRUS IN 1941

Tests on ferrets—Garglings from 22 patients were inoculated into ferrets between January and early March, 1941 The majority of the ferrets developed fever and symptoms of respiratory infection. Since it was not possible to make serial passages with all material believed to contain virus, some febrile ferrets were allowed to recover, then bled and their antibodies studied We confirmed earlier findings that no antibodies against the virus occurred in ferrets of our normal stock , accordingly the development of potent neutralising antibodies against influenza A virus in 3 inoculated ferrets was accepted as proof of the presence of A virus in the 3 specimens of garglings used to infect them. In 15 other ferrets fever or symptoms of nasal infection or both appeared, and serial passages were made at intervals of 3 or 4 days , 5 strains proved immunologically to be influenza A virus were thus established In previous years a strain once adapted to the ferret has been transmissible in series with great regularity , in 1941 less regular results were obtained, occasional ferrets in a series failing to respond with typical fever and symptoms Furthermore, 7 "strains" were obtained which were apparently capable of propagation for 2, 4, 5, 5, 6, 7 and 9 passages respectively, but eventually "petered out" and were lost Tests on sera from recovered ferrets in each of these series showed that no antibodies against influenza viruses A or B were present The symptoms of upper respiratory tract infection and the fever were, however, typical of influenza in the ferret, though there were rather more "misses" than with the 5 strains which proved to be A Cultures of turbinate suspensions were made as a routine , some trouble was met with by the picking up of *Pasteurella bronchiseptica*, hæmolytic streptococci and other organisms in the course of ferret to ferret passage, but ferrets receiving culturally-positive material have been excluded from the account just given On two occasions filtration through a gradocol membrane (average pore diameter 0 7μ) apparently permitted an active agent to pass

During these investigations those of us doing the ferret tests (C H A. and R E G) felt it likely that an agent, probably a virus, had been transmitted to and was being passed through ferrets , but that it could not be securely established in those animals No conclusive evidence of the correctness of this view was obtained Suspensions of ferret turbinates containing the supposed agent were passed serially through Swiss mice , with 3 strains passages were made through 5, 5 and 6 mice in series respectively , no virus was recovered. Inoculations of chick embryos amniotically (Burnet 1940a) were equally unsuccessful , filtrates of 6 strains of the series under discussion were used The queer results obtained in 1941 contrast sharply with those of 1940, when all the material inoculated into ferrets gave unequivocally negative results

Tests in chick embryos—As has just been mentioned, Burnet (1940a and b) has lately succeeded in infecting chick embryos by the amniotic route with filtrates of human garglings Infected embryos showed macroscopic changes in the lungs, or microscopic changes in smears of tracheal exudate , further, many embryos died After a few passages it was possible to adapt the strains to mice. Such by-passing of the ferret would represent a definite improvement in technique, since ferrets are not easy to work with in the average laboratory. Experience with two of our strains, TAY and BER, obtained early in January, 1941, seemed to confirm Burnet's findings, the changes described by him in tracheal smears of inoculated embryos were seen in one instance in the first chick embryos injected, and material from these chicks infected mice. Unfortunately, the first successes were the only ones, no other virus was induced to infect eggs straight from human garglings, though 21 were tested, 8 of them being certainly from cases of influenza A. In almost every instance at least 3 serial passes were made through chick embryos before the material was abandoned as negative. The loss of virus was confirmed by the negative results of complement-fixation tests (4 strains) or of ferret inoculations (3 strains).

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* Member of the Health Commission to Europe International Health Division of the Rockefeller Foundation.

Infection of chick embryos was also attempted with strains which had previously been established in ferrets or mice. Ferret material of the BIR strain produced macroscopic changes in chick embryos at the third passage, and, after one further pass, infected mice, as will be seen later, we failed in two attempts with this strain to infect mice directly from ferret material. In other trials, made in the spring of 1941, filtrates of turbinate suspensions from 4 ferrets infected with the HER, WOR and WES strains of virus gave entirely negative results in chicks, though one (WOR) would infect the chick after previous adaptation to the mouse—a curious contrast to the findings with the BIR virus, which would go from ferret to chick but not directly from ferret to mouse.

Repetition of these attempts in June and July gave rather different results, ferret material of strains HER, WOR and WES was in each case successfully adapted to chicks after a few passes, and thence (HER and WES strains) to the mouse. The ferret material had been kept dried during most of the intervening time, and had only undergone one or two further passages in the ferret. It is probable that greater susceptibility of chick embryos in the summer accounted for the greater success, seasonal differences in the susceptibility of chick embryos have been recorded for ectromelia virus infection by Burnet and Lush (1936).

In positive embryos it was found, as also with well established strains like PR8, that, at any rate in later passages, an almost constant feature was depletion of the amniotic fluid around the embryo, so that embryos appeared "tied up in knots," often with their feet behind their necks and the membranes closely pressed around them. This finding has been in our experience more constant than anything in lungs or tracheal smears, indeed the changes described by Burnet have been noted only in embryos with the above described naked eye appearances. Altogether, the chick embryo studies have been disappointing, it remains to be seen whether the differences between our findings and Burnet's are due to differences between virus strains or between the eggs or some other, unsuspected, factor.

Work with mice.—In view of our failures in the past, we made no attempts to transmit a virus directly from man to mice. We tried to infect mice with the 5 strains established in ferrets. One (WOR) produced lesions after 4 passes through Swiss mice, this was found immunologically to be closely related to both the GAT and CHR strains of 1937 (Smith and Andrewes 1938). Three others failed to infect Swiss mice after 5 passages in series (MAR strain), 9 passages (WES strain), 5 and 9 passages in two separate trials (HER strain) and 7 passages (BIR strain). The WES and BIR strains were, however, later adapted to mice after being previously grown in chick embryos, as has already been described. It then appeared that the BIR strain was antigenically very like the TAL and CHR strains.

Two other strains (TAY and BER) infected mice after only one and two chick embryo passages respectively, these were serologically related to our 1937 CHR and TAL viruses. Since 1935, when several viruses were readily induced to pass from the ferret to the mouse, we seem to have encountered progressively greater difficulty in infecting mice with influenza viruses. In 1937 we succeeded with 8 out of 10 strains, obtaining lesions by the 5th or 6th passage, often earlier. In 1939 the results were not very different, and we seemed to be getting over the difficulties in adaptation by using Swiss instead of our own "farm" mice. In 1941 we have failed to adapt a number of strains directly from ferret to mice even when we used Swiss mice.

SEROLOGICAL STUDIES ON HUMAN SERA

Tests against influenza A virus.—As in previous years we have compared the neutralising antibodies in "acute" and convalescent sera, and have taken a five fold or greater rise in neutralising antibodies against influenza A virus during an illness as evidence of infection with that virus. Table I shows that of 34 pairs of sera from the military hospital taken in January and February the tests on 27 indicated that the patient had suffered from influenza A infection, 7 that the patient's infection was something else, 4 pairs of sera obtained in March and April disclosed no evidence that influenza A was concerned. Only small numbers of sera from other areas were examined (see table II).

TABLE I—RESULT OF TESTS ON MATERIAL FROM MILITARY HOSPITAL, JANUARY AND FEBRUARY, 1941

—	Virus A recovered in ferret test	No virus recovered in ferret test	No test in ferret
"A" infection indicated by serological test	1	2	24
Not an "A" infection by serological test	0	0	7

TABLE II—RESULT OF TESTS ON MATERIAL CHIEFLY FROM LONDON AND NEIGHBOURHOOD, JANUARY AND FEBRUARY, 1941

—	Virus A recovered in ferret test	No virus recovered in ferret test
"A" infection indicated by serological test	2	3*
Not an "A" infection by serological test	1*	1*
No serological test	5	7

* The serological diagnosis was here based on the antibody level in a "convalescent" bleeding only, no "acute" sample being available, the result is thus less dependable than when two specimens could be tested.

Tests against influenza B virus.—Since Francis (1940) described an influenza virus, named B, serologically unrelated to A, we have sought for evidence of its occurrence in England. None of the ferret inoculations carried out in 1941 yielded B virus. Of 8 sera from recovered ferrets, 3 were infected with A and 5 with something other than A, these were tested for antibodies against B virus, but none neutralised. Similarly 11 human sera from patients in Hampshire who failed to show a rise in antibodies against A virus in the course of their illness also gave no indication of infection with influenza B, though a low level of anti-B antibodies was present in all samples. There is thus no evidence that influenza B was prevalent in this country during 1941.

The presence of some antibodies against influenza B virus in human sera is possibly related to the existence of that infection in England in the past. Evidence will be published that some B was present in southern England in 1939.

DISCUSSION

Results shown in tables I and II confirm our previous experience that test of acute and convalescent sera for neutralising antibodies is a far more delicate index of infection than ferret inoculation, 5 patients whose garglings failed to yield virus yet seem to have been examples of influenza A as judged by the serological test. In spite of Burnet's promising findings, the amniotic method of chick inoculation has in our hands given even poorer results than has ferret inoculation.

In 1940 (Stuart-Harris, Smith and Andrewes) it was pointed out that a four-year cycle of major influenza epidemic peaks had been recently prevalent in England. Peaks in 1929, 1933 and 1937 had been interspersed with minor prevalences in 1931, 1935 and 1939 and almost nothing in the years adjacent to the peak years. If the cycle had continued, 1940 should have been a year free from influenza A—and so our laboratory studies indicated, but 1941 should have been a peak year, and this, fortunately, it did not prove, the deaths from influenzal pneumonia in London and the great towns having remained at a fairly low level.

One naturally wonders why no epidemic arrived, why the 1941 virus was so poorly adaptable to the ferret or from the ferret to the mouse, and why we could not reproduce Burnet's results in chick embryos, further, whether these facts are related The power of a parasite to produce disease—its virulence—is known to vary independently of its infectivity or power to spread from host to host It seems, however, that the influenza A viruses prevalent in England in the spring of 1941 were poor things in all respects , their infectivity for man was low, virulence for man not very high and virulence for laboratory animals also low

SUMMARY

No evidence of the presence of influenza A virus was obtained in material from the respiratory infections prevalent in England in the early months of 1940

In January and February, 1941 no widespread influenza epidemic occurred in England, but laboratory studies indicated that a considerable proportion of the sporadic clinical influenza prevalent in those months was due to influenza A virus The viruses recovered infected ferrets less easily than those of other years and were less readily adapted to infect mice In contrast to Burnet's recently published findings (1940), we only succeeded in 2 instances out of 23 in infecting chick embryos by the amniotic route directly from material of human origin

We wish to thank the medical men, both Service and civilian, who kindly provided us with material

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EXTRA-ORAL SPLINTING OF THE EDENTULOUS MANDIBLE*

LEANDER POHL, M D VIENNA, L D S

IN treating fractures of the edentulous lower jaw or cases where resection of the edentulous mandible has to be performed, difficulties may arise so that fixation cannot be achieved by the methods commonly used, such as intra-oral splinting, splints in combination with flanges, saddles, hooks, screws, clamps, nails, circumferential wiring, bandages and so on Rhodes (1934), referring to fractures of the molar region when no teeth are present posterior to the fracture, writes " It is difficult to see how any dental appliance can overcome such a difficulty as this, even if treatment can be taken in hand at once " Kelsey Fry (1939), in a lecture on first-aid treatment of fractures of the jaws, says " I shall be surprised, however, if, by the end of the war, a satisfactory method has been found of replacing a displaced edentulous posterior fragment " Gillies (1935) doubts whether any surgical or dental control of the moderate displacement that occurs is either justifiable or possible in cases where the posterior fragment is short and edentulous Warwick James (1940) goes so far as to accept malposition in certain cases of extreme difficulty

One of the methods commonly used in the last war was to control the posterior fragment by vulcanite plates with flanges or saddles fitted to them Round (1939) describes a method similar in principle He fits a small bite block on a local cap of hard vulcanite fitting one or two upper teeth and carrying a cushion of soft vulcanite (Ash's soft rubber) to engage the lower fragment When the bite block is in position he wires the upper and lower teeth together, thus assisting the posterior fragment to take up its normal position

Nakamura (1937) has designed a device for splinting the edentulous posterior fragment by means of a metal screw vulcanised to a plate The screw fits into a channel drilled in the edentulous fragment, or is fixed by a wire ligature through a hole drilled in it He quotes a number of cases in which it was possible to leave the plate and screw in position from the date of resection until the final healing of the bone graft without complications

Bruhn and Lindemann (quoted by Wassmund (1927)) have treated a series of fractures by using the Codivilla-Steinmann nail traction The posterior fragment is drilled with a burr, and two silver or aluminium wires connected by a plate are passed through Schroeder's method (also quoted by Wassmund) is somewhat similar , he uses a metal plate which is fixed by means of a screw passing through a slit in it Foramitti (1917) fixes the edentulous fragment with a nickel splint screwed direct to the bone

Wassmund (1927) described cases which he treated by traction by means of an U-shaped wire passed through the bone and soft tissues Collins (1937) reports on a similar method, advocated by Ivy and Curtis (1931) After an incision at the angle of the jaw, a wire is passed through the bone, and its end is brought out through the skin and twisted into a loop The wire loop is attached to the wire in the head piece, which is incorporated in a plaster bandage around the head The two fragments are brought in perfect alignment after sufficient traction has been applied, and a firm union is achieved

Darcissac (1933) and Lenormant and Darcissac (1927) point out that fracture of the edentulous mandible is perhaps the only condition in which interosseous wiring is justifiable Their method is as follows (Darcissac 1933) An incision is made along the lower border of the jaw about 2 cm long The bone is drilled on each side of the site of the fracture with a burr 2–3 mm from the lower border A thick silver or bronze wire is passed through the hole and the ends twisted to form a loop by which traction can be made on the fragment The external wound is then closed The same procedure is done on the side opposite to the fracture so as to exert counter-extension on the larger fragment Traction is made by elastic to the two handles of wire passing round the neck Gillies (1935) advocates this method when the edentulous fragment is long and displaced and its control is of great importance He recommends for such cases either drilling a hole in the angle of the jaw and passing a wire retractor band through it, vulcanite appliances, or gutter splints, which can be fixed by circumferential wiring in order to obtain good alignment of the fragment without causing necrosis of the medullary portion of the bone Circumferential wiring is according to him particularly applicable to the depressed central fragment in an edentulous or partially edentulous case

Berry (1941) describes a method of fixation for fractures of the edentulous mandible in which vitallium screws are inserted vertically into the bone fragments through the oral mucous membrane The heads of the screws are then joined by a bar bent into appropriate shape The apparatus may be applied outside the mouth if desired

Rogers, Hall and Shackelford (1932) employ in certain cases open reduction intra-orally An incision is made, the two ends of the jaw are exposed and two holes are drilled in the bone, through which silver wire is passed and twisted together

The results of the various methods so far mentioned are not invariably satisfactory The value of flanges or saddles in combination with vulcanite plates of fixed metal splints is according to my own and others' experience (Wassmund 1927, Steadmann 1939, Fell 1940) questionable, for they invariably carry the danger of necrosis owing to abrasion and ulceration of the tissues overlying the posterior fragment, and offer but small hope of success My experience has been the same with wiring the fragment to a vulcanite plate Methods of drilling holes in the bone and passing nails screws or even wires through it as well, especially where a deliberate communication is made between the medullary portion of the bone and the oral cavity are open to the grave risk of causing necrosis Samuels (1934) reports a rare case of a fracture of an edentulous mandible where the patient died from embolism after holes had been drilled in the bone and wires passed through them Conditions are sometimes most unfavourable for bone-grafting Some of these methods are applicable only if enough teeth are standing in the larger fragment to provide anchorage for a plate Surgical intervention may sometimes not be possible owing to lack of accommodation, time or skilled personnel if a great number of cases have to be dealt with, for instance at a first-aid post behind the front line

The external splint suggested by Vaughan Tomey (1940) cannot be considered as a treatment splint but is a useful means of giving external support to a bandage and should prove useful in emergencies

According to my experience with the elevation of a depressed malar bone, Bruhn's hook-extension, a modification of nail-traction, seems to be far superior to other methods, for the hook being inserted only superficially into the bone, there are fewer cases of necrosis The method which I am going to describe is based on the same principle, using hook-extension (hook-traction) but avoiding most of the disadvantages of other methods Its principle is the extra-oral application of hook-screws into each fragment of the fractured mandible, and connecting them by a bar welded to them

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* It was intended to read a paper on this subject at the Congress of Structive (Plastic) Surgery in London in 1937

DETAILS OF METHOD

The hook-screw (fig 1) is made of stainless steel in three sizes It consists of three main parts (1) a hook ending in a sharp point, the shaft of which is square in cross-section, (2) a simple screw tapered at one end and with a square head at the other, and (3) a connecting rod between the two The connecting rod is threaded at one end for the screw, and has a square hole at the other for the hook, as well as a locking screw

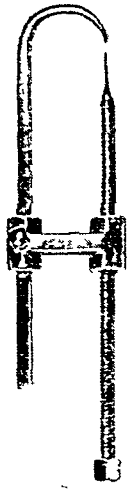

FIG 1—The hook screw

Insertion of the hook-screw —The site of insertion of the hook-screws depends on the type of fracture, the extent of external injuries present, and so on It is applied best at the thickest part of the bone and as far from the line of fracture as is considered necessary Before application the hook-screw is taken to pieces, and after the skin is surgically cleansed the hook is inserted so that injuries to vulnerable organs are avoided as far as possible As soon as one can feel bone either slight pressure or traction is exerted While the fragment is thus held in position with one hand by means of the hook the connecting rod together with the screw is slipped over the hook and then screwed tight The screw is then screwed down, and advanced into the compact bone only, in order to avoid any injury to the bone-marrow Three or four hook-screws should provide sufficient stability, but more may be used if necessary There is no difficulty in inserting the hook-screws in the body of the mandible or the horizontal ramus, whereas care has to be taken if the ascending ramus is very short in order to avoid damage to the facial nerve or the parotid gland (see case-record)

The bar —With the screws in position on both sides of the fracture a stainless steel bar 4 mm thick is bent to shape according to the position of the hook-screws and the extent of external injuries present The distance of the bar from the skin should be not less than an inch

The welding process —The hook-screws are then joined by means of the bar, which is welded to them in situ with the Rakos welder † (fig 2) after alignment of the fragments No special preparations are necessary except covering the skin with wet gauze for the heat during the welding process is only local A cold-water spray is sufficient to cool the metal, so that no ill effects to the adjacent tissues need be feared if ordinary care is taken

Welding has many advantages over soldering the bar on the screws previous to the insertion of the whole splint First, one never knows the exact position of the hook-screw before it is inserted Secondly, it may prove necessary to change one or the other hook before the fracture has united By the use of welding this can be done without removing the whole splint, thus avoiding undue damage to the bone Furthermore, any additional appliance can be welded to the bar—e g, in cases where absolute fixation may become necessary An additional bar is then welded to the main bar on one side, and fixed on the other to a head harness Other auxiliary appliances, such as extra-oral joints, can be fitted in the same way without removing the splint

FIG 2—Rakos welder in use

Nevertheless, although welding is in our experience preferable, the bar can be joined to the hook-screws by means of special screws, or even soldered

CASE-RECORD

Exact anatomical studies had been made regarding the site and mode of insertion of the splint as well as experiments with materials and the welding process before the technique was applied to the following case.

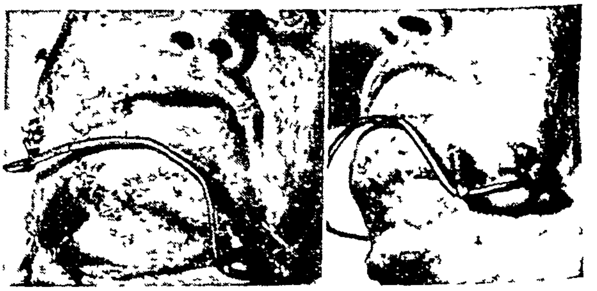

FIG 3—Hook screw splint in position, immediately after operation

A man, aged 57, complained of pain and swelling in the right horizontal ramus of his mandible His mouth was practically edentulous, for the lower canines, the only teeth present, were both very loose A swelling could be seen extending from the right lower canine to the angle of the mandible, covered by normal mucosa It was painless to palpation and showed the typical signs of a cyst The radiogram seemed to confirm the diagnosis, but one very small hard indolent gland in the right submaxillary region caused suspicion of malignancy After the cyst had been dissected out in the usual way microscopical examination of the cyst wall confirmed the suspicion of carcinoma

Previous to the radical operation both canines were removed and dentures fitted After a block dissection ‡ of the affected glands and the soft submaxillary tissues involved, the diseased portion of the mandible was freed from its mucosa and

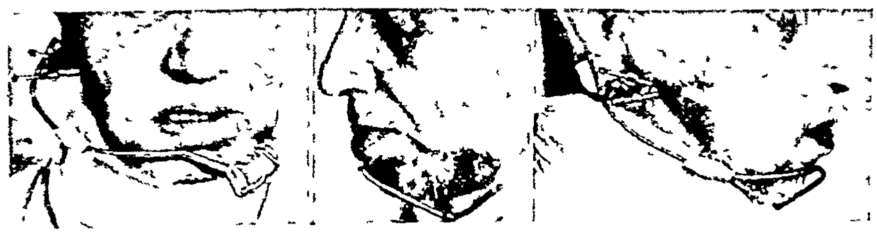

FIG 5—Three weeks after operation

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† The Rakos process is a fusion welding It is executed with a high resistance welding torch which is brought into direct contact with the pieces to be welded, thus preventing the development of a stationary arc The temperature employed is about 3000° C This heat is developed within a fraction of a second, and the welding completed before the heat can be conducted from the welding spot Thus, in spite of the intense concentration of heat there are no ill effects to tissues or materials in the immediate vicinity of the spot welded, even within the patient's mouth The electric power used is of very low voltage, thus avoiding any danger of electric shock The apparatus is now manufactured in England by Technotherm, Ltd, of 113, Victoria Street, St Albans

‡ The operation (resection of the mandible and bone grafting) was performed in collaboration with Dr O Hofer at the Policlinic in Vienna in June, 1937

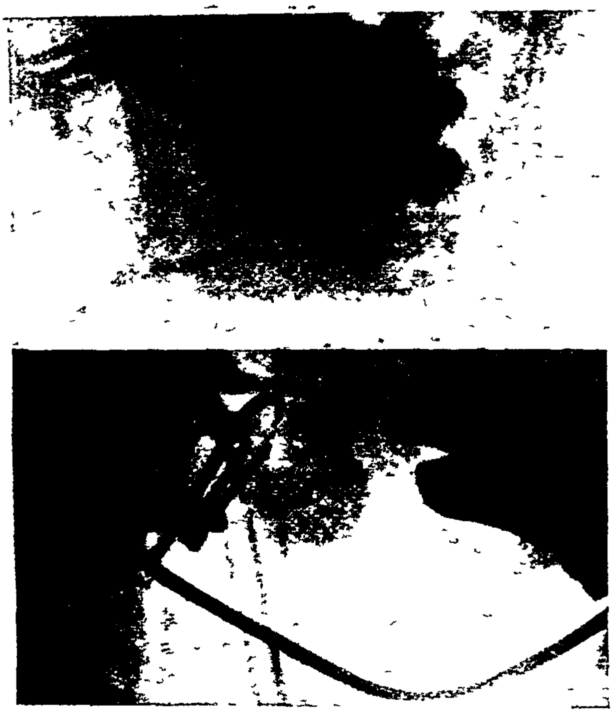

FIG 4—Radiograms showing hook-screw splint in position Above, anteroposterior view, below, lateral view of posterior fragment.

periosteum The splint was then applied as described above before the bone was severed Two of the hook-screws were inserted in the ascending ramus and two others before and behind the left mental foramen Fig 3 shows the patient immediately after the resection of his mandible with the hook screw splint in situ In fig 4 the positions of the hook screws are seen in radiograms The posterior fragment was kept in position, and the patient was able to move his temporomandibular joints and chew gently shortly after the operation The skin around the hook screws was painted with Mastisol and covered with silver foil immediately after their insertion to reduce the danger of external infection No signs of necrosis could be observed during the whole course of treatment, the only complication being a salivary fistula which developed at the site of one hook screw on the ascending ramus This unpleasant incident was of course, anticipated, and is unavoidable with other methods as well if the posterior fragment is short Fig 5 shows the patient three weeks after the operation The salivary fistula healed without any surgical intervention when the splint was removed after six weeks, leaving only slight scars at the site of the hook screw The posterior fragment remained in correct position until bone grafting was performed

DISCUSSION

The method described has been applied in this single case only, for circumstances did not allow me to make further investigations on this subject But it proved so successful that I should like to see it more extensively used It seems to offer an alternative way of treating cases where other methods are not satisfactory It permits immediate reduction and fixation of the fragments without losing valuable time in the preparation of splints The mouth, as well as all the parts of the face are left free for any surgical treatment which may be necessary in a case of major injuries Any alteration in construction required during the course of treatment is easily made without changing the splint or interrupting fixation Proper feeding is facilitated from the first day after the splint has been inserted, and the patient is even enabled to masticate to a certain degree—both important advantages of this method The mouth can be kept clean, and the muscles show much less atrophy because partial function is maintained The simplicity of the technique allows its use by those without any special knowledge of dentistry Its use should be limited to suitable cases [No doubt the posterior fragment is best left alone when displacement is only moderate and the fragment very short But the method might prove useful in cases with much displacement as well as those with great loss of substance, especially of the body of the mandible, in order to avoid unsightly disfigurement and allows unrestricted movement of the temporomandibular joint

SUMMARY

A method is described for the fixation of fractures of the edentulous mandible by means of steel hook-screws attached to each fragment and connected together by a bar welded to them in situ

The technique is especially suitable for fractures in the region of the angle, or where there is great loss of substance in the body of the mandible It permits immediate reduction and fixation without loss of time in preparing splints The mouth and face are left free for necessary surgical treatment Feeding is facilitated and the patient can chew to a certain extent as soon as the apparatus has been applied The mouth can be kept clean and the muscles of the jaw can be exercised sufficiently to prevent atrophy

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EXTERNAL PIN FIXATION FOR FRACTURES OF THE MANDIBLE

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FRACTURES of the mandible in the tooth-bearing area present a problem which can be efficiently solved by purely dental methods The Curtis loop, the arch wire or the dental cap splint offer a good chance of an excellent result When the patient has no teeth or when the fracture occurs behind the tooth-bearing area, the problem is not so simple In the region of the horizontal ramus Gunning splintage with circumferential mandibular wires is likely to succeed, but in fractures through or posterior to the angle the accepted methods of fixation have not proved universally satisfactory These methods have included ingenious intraoral splints with extension apparatus intended to bear on and control the ascending ramus Such methods depend for their success on the capacity of the mucous membrane to withstand pressure, and this capacity is limited to that part of the jaw which normally carries teeth The alternative has been to fix the anterior fragment in correct relation to the upper jaw, and to apply traction to the angle of the mandible by means of a wire loop passed through the bone and then fixed either to a post-auricular support or by means of a bar to the cap splints on the anterior fragment A wire at the angle, however attached, controls flexion at the temporo-mandibular joint but cannot and does not control the other two deformities —rotation and adduction

We therefore considered that the method of crossed Kirschner wires, as introduced by Roger Anderson for

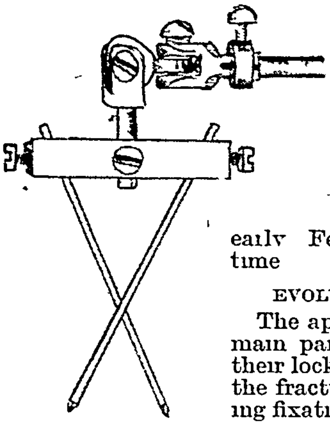

FIG 1—Earliest type of plate and bar

long bones might enable us to apply direct skeletal fixation to the mandible It may be of interest to follow the evolution of the method of applying these pins and of the type of intervening fixation from our first case in early February to the present time

EVOLUTION OF APPARATUS

The apparatus consists of three main parts a pair of pins and their locking plate on each side of the fracture line, and an intervening fixation bar

Standard Kirschner wire is used, and it has been found that sizes smaller than 1 5 mm in diameter are insufficiently stable, particularly under torsion The wires, therefore, consist of 2 or 2½ in lengths of 1 5 mm Kirschner steel sharpened to a short bevelled pyramidal point A pair of wires, crossing each other at an angle of about 60° before entering the bone, are introduced on each side of the fracture line and about ½ in away from it They are inserted close to the lower margin of the bone to avoid the inferior dental canal and they penetrate as far as the inner plate It is now necessary to lock the outstanding ends of each pair together The earliest type of plate used for this purpose is shown in fig 1 It was found to be awkward in use, and a split type was then introduced The screw employed to clamp the two halves of each plate together was at first also used to fix the connecting bar which ultimately unites the plates This meant that each time an adjustment was made the plates had to be loosened on the pins and control of the bone fragments from outside was lost In the next type (fig 2*a*) the two halves of each plate were clamped together by two separate screws and a third screw was used to attach them to the connecting bar This was too cumbersome, and fig 2*b* shows a later type in which only a single thickness of metal is required

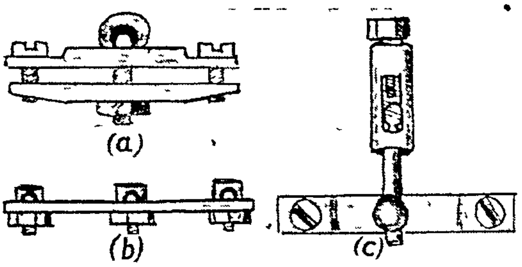

FIG 2—*a* and *b*, stages in development of plate, *c*, universal joint at end of bar

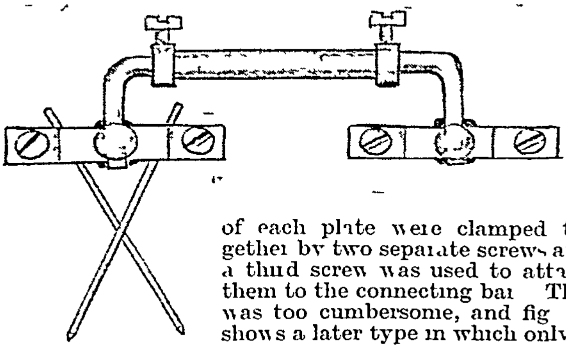

FIG 3—Last stage but one in development of apparatus

The next problem was to devise an intervening bar This must be capable of lying slack and allowing movement in any direction so that the fracture can be easily reduced When reduction is effected the bar must be capable of being locked rigidly in its final position The first type of bar contained, in effect, two universal joints, one of which is shown in fig 1 It worked well, but was felt that if these joints were to be of reasonable the chances of positive fixation were small We therefr tried to use a single piece of ⅛ in German silver wa which was to be bent to the required shape on the op ing table, but it was found that minor corrections difficult to make, even with specially devised keys T third type incorporated a universal joint at each end the rigid bar (fig 2*c*), but no miniature universal is really satisfactory The next type of fixation (fig consisted of two ⅛ in rods, bent at right angles and fitte into a short length of tubing These rods were attache to the plates in such a way that universal movement wa possible At the same time positive locking was ob by only four screws one on each plate and two on th central tube The whole apparatus is extremely simp and can be constructed by any mechanic, even withou specialised tools An even simpler type is now used, which one of the screws on the tube has been eliminate On one or two occasions pins have become slack betw the second and third week, and the weight of the appara tus may have been partially responsible for this have therefore constructed the appliance in alloy and it now weighs considerably less than half ounce Its construction and use are shown in fig 4

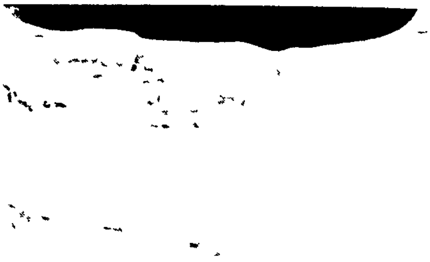

FIG 4—Latest type of apparatus applied to skeleton jaw

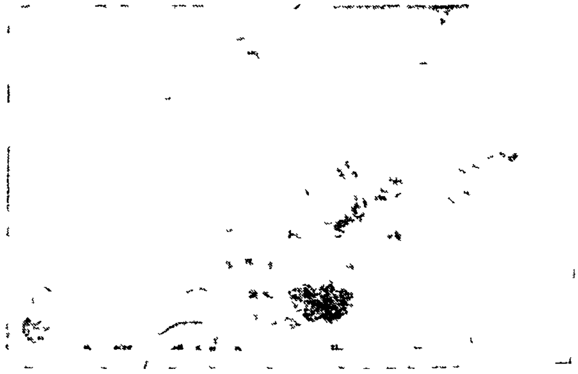

FIG 5—Radiogram of early type of splint in use

FIG 6—Patient opening his mouth 18 hours after fixation of fracture

It may be argued that the introduction of 1 5 mm Kirschner wire through the skin of the face is an unwarranted barbarism Against this must be offset three facts First, hardly any discomfort is experienced by the patient Secondly, fixation is so positive as to enable the surgeon to avoid locking the mandible to the upper jaw in many cases ; the resultant maintenance of movement of the temporomandibular joint ensures that blood-supply remains at its optimum, the patient is enabled to eat in comfort and oral cleanliness is readily obtained Thirdly, such scars as do occur seldom need treatment but at the worst it is simple to carry out the necessary minor excision under a local anæsthetic

The apparatus has now been used in 19 cases We feel that the principle is worthy of further elaboration though it is probable that it will be applicable only to chosen cases and that it should not be used to replace the simpler and more standard methods for the great majority of fractures

SUMMARY

By the use of an orthopædic principle it has been possible to elaborate an apparatus to control fractures of the mandible occurring behind the tooth-bearing area

A pair of crossed Kirschner wires are inserted into each fragment Various methods of locking each pair into a unit and then joining the units to maintain reduction are described

The advantage is absolute fixation by extra-oral means Oral cleanliness is readily obtained and function at the temporo-mandibular joint is maintained Postoperative discomfort is negligible and feeding is simplified The disadvantage is the occasional necessity to treat the small residual scars

The method is in the early stages of its elaboration and its use should be limited to those fractures which cannot be adequately controlled by standard methods

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BLOOD CHANGES FOLLOWING CONTROLLED HÆMORRHAGE IN MAN

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With technical assistance of A C PINCOCK

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RECENT experience of the treatment of air-raid casualties in the resuscitation wards has shown that most of the cases requiring intravenous infusions are suffering mainly from the effects of hæmorrhage On admission of a patient to hospital it is often difficult to assess the amount of bleeding which has taken place It is not until a day or two later, when the degree of maximum dilution can be measured and when blood corpuscles have not been transfused in treatment, that the extent of the hæmorrhage can be estimated The clinical picture of such a patient may be complicated by wound infection or other conditions which reduce hæmoglobin percentage, but in the majority of cases reduction of hæmoglobin indicates hæmodilution following hæmorrhage A simple method of measuring circulating blood-volume would be of great value although there is still the objection that the original blood-volume is unknown Such a method is not at present available

The hæmoglobin percentage in a case of recent traumatic hæmorrhage gives no indication of the extent of the hæmorrhage, since dilution may not have occurred The object of this work has been to investigate the course of dilution following controlled hæmorrhage Hæmoglobin percentages, plasma proteins blood-pressure and pulse changes have been followed, as well as blood-volume, plasma-chloride and blood-urea in a few cases

METHODS

Volunteers were venesected and 28 observations were made The subjects were convalescent hospital patients and each one had a thorough clinical examination were found to have normal circulatory systems : from three cases (Nos 6 7 and 9) who had hyperten The clinical diagnoses of those with normal circul: systems were neuroses (nine cases) chronic ne diseases (eight cases) chronic bronchitis (two c: convalescent lobar pneumonia (two cases), uncompli gastric ulcer, orthostatic albuminuria undesce testicles and headache (each one case) Two sub (Nos, 2 and 7) were found to have low initial h: globin ; both had been previously bled and regener of hæmoglobin was not complete Nos 7 and 9 13 and 24 are the same subjects venesected on diff occasions

Venesection was performed in the usual m: through a wide-bore needle, the subject resting couch with the trunk at an angle of 30° Care was t to keep the subject warm and at a constant temper: An initial resting period was allowed for blood-pre: pulse and hæmoglobin estimations to reach an librium

Hæmoglobin was estimated by taking 0 02 ml samples from a freely flowing ear puncture and estim the percentage by a photoelectric method (Hill and Pi to be published) accurate to 0 4% (standard error)

Plasma-proteins, plasma-chlorides and blood-urea estimated by the methods of King, Haslewood and I (1937)

Blood volumes were estimated in three subjects modified carbon monoxide method This was in pri similar to that described by Hartmann (1937) excep the use of red and infrared light instead of green and light for measuring carboxyhæmoglobin

RESULTS

The main data are shown in the table

Blood-pressure —Sixteen subjects showed a fa blood-pressure, but in eight of these the pressure returned to its previous level within an hour , cases (Nos 12 26 and 28) showing this temp reduction in blood-pressure developed a simulta: bradycardia of 60 beats per minute or less , in subjects the fall in blood-pressure was prolonged as much as 24 hours, a group which included two h tensive subjects

The fall in pressure usually occurred with dra: suddenness at the end of venesection which was st at the first sign of a fall Other symptoms appea the same time The face became pale the skin and clammy, and the respiratory rate frequ increased Yawning was also a prominent fe: The patient complained of faintness dizziness nausea There was frequently a desire to def: and urinate, and one subject actually passed Unconsciousness often supervened, with depressi respiration cyanosis twitching of the limbs rot of the eyes, disappearance of the heart sounds absence of pulsation in the large arteries Brady occurred with the first fall in blood-pressure and sisted Loss of consciousness was usually brief case 6 was unconscious for five minutes Case 2: a fall of blood-pressure, bradycardia and syncope the removal of 500 c cm blood , he was then al to recover, and half an hour later a further 600 was withdrawn without a significant change in pressure or a recurrence of other symptoms

In nine subjects the effect of posture on sy blood-pressure and pulse was investigated after section All showed a striking and immediate f systolic blood-pressure on sitting sharply upright couch The extent of this fall was in every case g than 40 mm Hg and always occurred within 10 se of sitting upright If the sitting position was maint: in most cases the systolic blood-pressure rose 30 seconds to its previous resting level or to a slightly lower than that resting level but in a few syncope terminated the observation Fig 1 illus this exaggerated response of systolic blood-press alteration in posture compared with the normal re: in the same individual after he had restored his o blood-volume The heart-rate, which was follow continuous electrocardiographic tracings show tachycardia with an increase of more than 30

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* Working for the Medical Research Council

RESULTS OF CONTROLLED HÆMORRHAGE IN MAN

Subject	Age	Sex	Blood withdrawn (c cm)	Time of vs (min)	Blood pressure (mm Hg)			Pulse-rate (per min)		Hæmoglobin (%)				Time of max dilution (hr)	Expected dilution	Plasma proteins (g per 100 c cm)				Blood volume (litres)		Plasma chlorides (mg per 100 c cm)				Blood urea (mg per 100 c cm)		
					Initial	At end of vs	Duration of fall	Initial	At end of vs	Initial	Immediately after vs	1 hr after vs	At max dilution			Initial	Immediately after vs	1 hr after vs	At time of max dilution	Initial	At max dilution	Initial	Immediately after vs	1 hr after vs	At max dilution	Initial	1 hr after vs	At max dilution
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2	44	M	1150	15	115/70	105/75PR +		76	100	50	49	49	40	24	38	6 4			7							40		43
3	50	M	1150	10	118/86	105/85PR +		54	94	107	101	101	86	23	82	7 6	7 6		7 2							28		32
4	19	F	1150	8	148/80	128/82PR +	20min	80	92	72	70	70	57	72	55	7 1			6 8							28		17
5	68	F	1150	11	140/75	45/ ? PR +	8 hr	72	56	96	88	87	74	23	75	8 2		7 9	7 8							36	36	38
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9	42	M	1100	12	194/120	172/118	6 hr	92	116	70	68	66	56	26	56	7 4	7 2		6 8			417	420		421	46	88	65
10	16	M	1100	10	120/80	115/80PR +		76	84	92	90	89	74	48	71											38	38	38
11	45	M	1060	20	124/76	122/80		84	80	107	103	103	90	9 5	85	7 1	7		6 3			624	624		624	31	31	36
12	45	M	1050	18	120/90	40/ ?	20min	58	40	109	106	105	87	48	86	6 9			6 9							40		40
13	19	M	1000	21	125/80	110/68	10min	68	72	97	98	94	89	96	78	6 2			6 2			610			611	34	34	
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15	40	M	800	11	122/86	100/86	24 hr	78	118	100	100	99	88	21	84		6 1		6 2			640	642		660	22	22	27
16	48	M	800	10	110/80	110/85		84	86	89	86	86	71	19	74	7 8	7 8		7 8							38	38	38
17	69	M	800	15	130/80	135/85		88	90	95	94	94	87	92	80													
18	60	M	800	15	114/74	98/70	1 hr	72	76	95	95	95	84	22	80	6 6		6 5	6 5									
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21	45	M	720	15	108/62	95/50		68	74	84	77	75	62	19	73	7 8	7 2		6 8	5 3	6 6							
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26	30	M	550	10	114/90	78/68	20min	60	48	89	83	87	83		80	8	8					621	647			32	32	
27	40	M	465	10	128/90	92/72	24 hr	80	82	95	92	95	87	4	85	7 1	7 1		6 7			607	594		594			
28	47	M	500 600	5 10	120/72 110/ ?	60/50 98/ ?	20min	72 72	44 72	105	100	100	84	48	82	7 3			7 1							46		46

PR + = Exaggerated response of blood pressure to postural changes Vs = venesection Max = maximum

per minute, except in two cases where a bradycardia developed On lying back there was in every case a rapid return of the blood-pressure and heart-rate to normal The nine subjects who showed this response are indicated in the table by PR + This exaggerated response to posture could be repeated at will, and some subjects still showed the response 5 or 6 hours after venesection

Pulse-rate —Six subjects (Nos 1, 5, 6, 12, 26, 28) showed bradycardia, always associated with a fall of blood-pressure, another five (Nos 2, 3, 8, 9, 15) showed tachycardia with a rise of heart-rate of more than 20 beats a minute, the remainder had little or no change in heart-rate

Hæmoglobin percentage and blood-volume —Initial dilution as judged by the hæmoglobin values was small Eight subjects (Nos 1, 3, 5, 6, 8, 19, 26, 28) showed a fall of Hb of 5% or more and the rest less than 5% The majority of the cases showed a maximum dilution which corresponded closely with the theoretical dilution calculated on the assumption that the blood-volume was five litres Three subjects (Nos 6, 21, 22), however, showed a maximum dilution which was considerably greater than the calculated figure, and in two of these subjects actual blood-volume estimations confirmed that there had been an overdilution and that the blood volume had increased over the initial value In cases 19, 21 and 22 the theoretical dilution is calculated from the observed blood-volume Case 13 seemed to show failure to dilute to the theoretical figure, though followed for a considerable period A week later the same subject (24) was again venesected, and on this occasion showed a normal dilution The time taken to reach a maximum dilution showed great variation, from 3 to 90 hours, no reason has yet been observed why some subjects take a long and others a short time to reach maximum dilution

Plasma-protein, plasma-chloride and blood-urea —There was but little change in plasma-proteins while dilution was taking place Cases 9 and 21 showed a fall, case 21 being one of those with over-dilution, while case 8, who had a rapid dilution, showed a rise in plasma proteins There was no significant change in plasma chlorides after venesection Blood-urea changes were also negligible except in cases 6, 7 and 9, who had hypertension with some renal involvement The duration of the azotæmia in case 9 is illustrated in fig 2

DISCUSSION

The mechanism of dilution and regeneration of plasma-proteins and hæmoglobin after experimental hæmorrhage in animals has been reviewed by Whipple (1938) In man, Stead (1940) removed 760–1220 c cm of blood from six subjects Five showed a sudden fall of blood-pressure and bradycardia There was an immediate small dilution with protein-poor fluid, and dilution continued up to 72 hours without further changes in plasma-proteins Our results show that the rate of dilution varies greatly in different subjects, and that therefore the hæmoglobin percentage estimated at an arbitrary time after hæmorrhage from an injury may give no indication of the extent of the hæmorrhage The rate of dilution may also vary in the same subject, as illustrated by cases 13 and 24, the same subject being venesected on two separate occasions at an interval of 5 weeks There was no obvious change in conditions between the two observations, and regeneration of blood had taken place

The dilution of hæmoglobin is not paralleled by a dilution in plasma-proteins In only one subject, case 21, was the small initial dilution associated with the passage of a protein-poor fluid from the tissues into the blood Further fall of hæmoglobin continued without dilution of plasma-proteins, suggesting that there are available proteins in the tissues which pass into the blood-stream and maintain its colloidal content The mechanism of this mobilisation of proteins is unknown, although there is evidence that the liver is an important source (Whipple 1938) and the cells of the reticulo-endothelial system may play a part (Cutting and Cutter 1935) Over-dilution may occur occasionally, a phenomenon that might be of clinical importance when considering the transfusion of patients with low hæmoglobin levels after hæmorrhage, and indicating the advantage of actual blood-volume estimations in such states

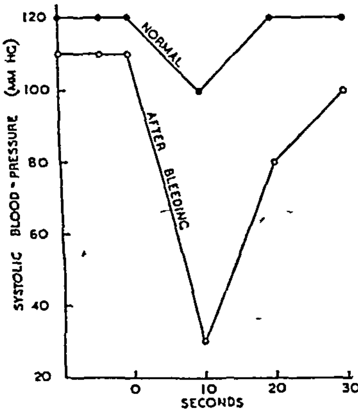

FIG 1—Exaggerated response to sitting up after bleeding

The fall of blood-pressure in certain subjects has a practical application to "shocked" casualties and the bleeding of donors Emotional causes seem unlikely in our subjects, since the fall occurred only at the end of a large venesection, and a sudden drop of blood-volume appears to be the initiating mechanism The prolonged fall in a few cases is in accord with well-known clinical observations after hæmorrhage The exaggerated postural response may be part of the same mechanism, for it is known to happen in other conditions in which there is reduced venous return, such as long standing in the erect posture (Turner 1927) and untreated Addison's disease (Berry, Horton and MacLean 1940) Although an exaggerated postural response can occur in conditions in which there is no reduction of blood-volume, yet its presence in casualties suffering from hæmorrhage may be one further indication that a diminished blood-volume is present Thus the postural response may be of value clinically to demonstrate reduction of blood-volume after suspected hæmorrhage The pulse-rate seems to be of little value after hæmorrhage, since it may be slow, fast or show no change, an observation that agrees with the findings in air-raid casualties that have bled extensively (unpublished data)

The insignificant alteration in plasma-chloride confirms the observations made by Black (1940) after experimental hæmorrhage in dogs The same worker observed a slight rise in blood-urea, but this is not confirmed except in those cases in which there is pre-existing renal damage

Mr D K Hill was responsible for the blood volume estimations, and coöperated in the study of some of the cases in this series Biochemical estimations were made in the school laboratories (director, Dr E J King)

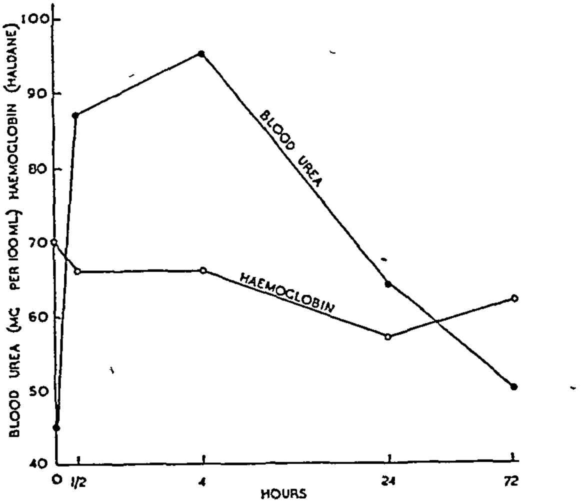

FIG 2—Azotæmia following bleeding in subject 9 with malignant hypertension Venesection of 1100 c cm was carried out at zero time

SUMMARY

Twenty-seven convalescent patients with normal circulatory systems were bled up to 1150 c cm and blood-pressure, pulse-rate, hæmoglobin percentage, plasma-protein, plasma-chloride, blood-urea, and, in a few subjects, blood-volume were followed

Sixteen showed a fall of blood-pressure with syncope, six of these had bradycardia In half, the fall of blood-pressure was temporary, in the rest it was prolonged up to 24 hours The response to posture (fall of blood-pressure on sitting up) was exaggerated in all of nine subjects investigated

The heart-rate may be slowed, increased or unchanged after hæmorrhage

The time taken to reach maximum hæmoglobin dilution varied greatly, from 3 to 90 hours average (32 hours) Three subjects showed overdilution

Plasma-protein concentration showed little or no change while dilution was taking place Plasma-chloride showed no change, nor did the blood-urea except in cases with known renal impairment

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PHARMACY IN EXILE —The college of the Pharmaceutical Society continues to sojourn happily in Cardiff, while the pharmacological laboratories and the department of nutrition have found a billet with the National Institute for Research in Dairying at Reading As Mr H Berry, dean of the college, in the annual report for 1940, points out, reduction in teaching staff has decreased the amount of research work, but even so the report contains much that is of interest to the medical researcher in war-time The influence of cooking on the vitamin-content of food, the components of acriflavine and the chemistry of the vitamin-B complex are some of the subjects which have engaged the attention of the college staff The department of pharmacology records a rapid and convenient method for the assay of heparin, and observations on the property of a transparent artificial resin, perspex, to delay the clotting of blood, suggest that this substance may replace the paraffin-lined test-tubes and paraffin-lined glass cannulæ used in animal experiments

RESULTS OF CONTROLLED HÆMORRHAGE IN MAN

Subject	Age	Sex	Blood withdrawn (c cm)	Time of vs (min)	Blood pressure (mm Hg)			Pulse rate (per min)		Hæmoglobin (%)				Time of max dilution (hr)	Expected dilution	Plasma proteins (g per 100 c cm)				Blood-volume (litres)		Plasma-chlorides (mg per 100 c cm)				Blood urea (mg per 100 c cm)		
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THE LANCET

LONDON: SATURDAY, OCTOBER 4, 1941

COLONIAL WELFARE BEGINS ITS CLIMB

Our colonial empire, as distinct from the dependencies and mandated territories administered by the dominions, is inhabited by 60 million people, two-thirds of whom live in Tropical Africa and the remainder mostly in the West Indies, Ceylon, Hong-Kong and Malaya. The colonies are administered by more than forty separate governments, and are responsible for an enormous volume of trade: in 1939 the value of exports amounted to more than £4 per head of population, the imports to £3 10s. About a quarter of the average expenditure is on social services; but since the revenues in many colonies are small in relation to their size, while the field of social service to be covered is very large, the sum is grossly inadequate. The Earl of Listowel, speaking in the House of Lords on July 9, showed how the principle of trusteeship on which the colonies are held and administered had been disregarded until 1929 when the first Colonial Development Act was passed. Even this was aimed more at relieving unemployment at home than at stimulating production of subsistence crops in the colonies. But last year, with the passing of the Colonial Welfare and Development Act, opportunities for raising the standard of living among the native populations have been greatly increased. This act authorises the expenditure of up to £5 million a year for ten years, with an additional yearly grant of half a million for research. Lord Moyne, speaking in the same debate, said that but for the war the expenditure authorised might have been much higher. Last year the fall of France made it necessary to convert every available penny into aeroplanes and arms; but this year it is felt that war or no war we must not let the peoples of the colonies—many of whom already live at too low a standard—suffer from the disorganising effects of war. The obligation is the greater because the colonies have been so generous in offering us help, amounting already to more than £20 million. Some have offered their surplus revenues as a gift for the prosecution of the war. Lord Moyne, uneasy about accepting these generous offers from the poorer colonies, has proposed that they should be accepted as loans, to be repaid in time to come, for post-war development. The effects of the war on the various colonies have been uneven; a few produce materials which are in demand, and they are in a state of unwonted prosperity, especially Malaya and Northern Rhodesia; in others, such as the West Indies, there has been no serious interruption of their usual economy; but a few—especially Malta and Cyprus—are cut off from their ordinary trade; and some have lost their overseas markets through lack of shipping space—West Africa, for example, cannot dispose of cocoa and palm products, East Africa of sisal, Palestine of oranges or Jamaica of bananas. The home government has helped in these difficulties by buying up crops or financing the growers in other ways.

At the outbreak of war there was for a time a tendency towards the arrest of social programmes, but now the aim is to carry on all that were in progress and to plan ahead for others. Much of the personnel, of course, has been seconded for military service, but recruitment has been officially approved and young doctors are advised that service in the colonial empire is of as much national importance as service in the forces. The Mediterranean colonies of Gibraltar, Malta, Cyprus and Palestine are in a peculiar position at present and their medical services are necessarily subordinated to war needs. In other colonies schemes initiated before the outbreak of war are still being maintained. In Sierra Leone, for example, a campaign against sleeping sickness and yaws had been newly begun when war broke out and this is being carried on, the cost of it being £50,000 for three years. In the gold fields an attempt to get rid of onchocerciasis by evacuating the area for a time was found to be holding up gold production seriously; Mr. J. J. C. Buckley, D.Sc., of the London School of Hygiene and Tropical Medicine has been seconded there and is making progress in the study of the simulium fly responsible for spreading the disease. In Nyasaland Dr. B. S. Platt, a member of the staff of the Medical Research Council, directed a team to make a nutritional survey, and this piece of work has been continued although on a diminished scale. The M.R.C. have also cooperated in other directions, and Dr. Frank Hawking and Dr. A. J. Haddow holding M.R.C. fellowships for research in tropical medicine worked in Tanganyika and in Kenya. Dr. E. M. Lourie, a member of the M.R.C. staff, has been carrying on research in chemotherapy in connexion with the sleeping-sickness survey in Sierra Leone which is being conducted by the local government with a grant from the Colonial Development Fund. Prof. D. B. Blacklock of the Liverpool School of Tropical Medicine, and Dr. Carmichael Wilson of the Colonial Medical Service, are carrying out an investigation at Freetown into the occurrence of malaria there. Dr. G. M. Findlay of the Wellcome Research Institute has recently made tours in East and West Africa and the Sudan to study the incidence of yellow fever, and has made reports and suggestions. He has emphasised the need for further research and coordination in the African territories. Much investigation has also been going on at Entebbe under Dr. A. F. Mahaffy of the Rockefeller Foundation, the unit there having been established for several years. Many public-health measures to be effective must be on a massive scale; for example, a sleeping-sickness campaign is going on in Nigeria, where a fly-free belt is being created some 70 miles long and 20 miles wide—the size (say) of Salop or Wilts. The first part of the work entails the destruction and clearance of jungle and undergrowth and is thus a considerable task. It represents one aspect of a settlement scheme, with the provision of safe water-supplies, of sanitary latrines, and of clean markets for meat and food. In Tanganyika a central development committee has been established and the study of trypanosomiasis and the tsetse fly is going on. In Northern Rhodesia a plan for establishing rural dispensaries is being continued; a new maternity block, the gift of the Beit trustees, and a pathology laboratory have been opened, and there is provision for more hospitals. In British Guiana the spread of malaria and yellow fever is being investigated, with

Antigen skin test strongly positive

Autopsy performed by Dr Arthur Davies showed the following positive findings Lungs Subpleural petechial hæmorrhages, with zones of hæmorrhage in substance of left lung, basal congestion and œdema Heart and liver extreme fatty degeneration

Stomach and uterus few petechial hæmorrhages

Right psoas muscle extensive hæmorrhage into substance (similar findings in a case of fatal trichiniasis were described by Frothingham in 1906)

Prof R T Leiper demonstrated microscopically the presence of a trichinella larva in the tendinous portion of the diaphragm

Histological examination (Dr A B Bratton) Microscopical examination shows presence of larvæ in voluntary muscle, numerous in tongue, scanty in diaphragm and right psoas muscle, in these sites also foci of inflammatory infiltration shown by serial sections to indicate proximity of a larva in many cases but not in all, such foci present in laryngeal muscles and an intercostal muscle, though sections include no larvæ Myocardium shows subacute inflammation, mainly focal, serial sections do not show larvæ, even in vicinity of inflammatory foci Excess of eosinophil leucocytes in sternal marrow Sections of lung, liver, spleen, kidney, suprarenal, pancreas, gall bladder, duodenum, uterus, thyroid, frontal, parietal, temporal and occipital cortex, centrum semi-ovale, basal ganglia, pons, medulla and cerebellum show neither larvæ nor inflammatory foci

COMMENT

The mental attitude of the patients was identical with that seen in encephalitis It is noteworthy that this is the most fatal form of trichiniasis "Splinter" hæmorrhages were present under the toenails in one case as well as under the fingernails in both As far as we know, hæmorrhages under the toenails have not so far been reported in this country Other notable features were the persistent splenomegaly in case 1, and the detection of the embryos in the blood in case 2, (probably the first time that has been done in this country)

We must thank Dr W Allen Daley, medical officer of health, L C C, for permission to publish this paper, and Dr B A Young, medical superintendent of St Alfege's Hospital, Prof R T Leiper, F R S, Dr Arthur Davies, Dr A B Bratton, Dr E N Allott and Dr E Davis for their cooperation

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Reviews of Books

Surgery of Modern Warfare

Part V Editor Hamilton Bailey, F R C S, surgeon to the Royal Northern Hospital, London Edinburgh E and S Livingstone Pp 641-876 17*s* 6*d*

With this instalment the book is complete Wounds of the neck are discussed and the central nervous system is covered by experts in neurology and neurosurgery A section is devoted to diseases encountered in subtropical countries, another to the administration of casualties in the Navy, the Army and the E M S, and an appendix reviews recent articles on war surgery In the section on the care of the bladder in spinal injuries the author advises suprapubic cystotomy as a routine, a conclusion to which most surgeons of experience are coming In dealing with burns he shows a reluctance to abandon measures of proven value for such as have yet to stand the test of time The articles on organisation are excellent, but it is doubtful whether first-aid posts can act as filters, cases being taken there and sorted before being transferred to more fully equipped hospitals If a patient is ill enough to require an ambulance he should be taken direct to hospital, F A P 's dealing with ambulance cases only when they are isolated or when neighbouring hospitals have been put out of action Posts near or attached to big hospitals should deal only with walking wounded The writer on head injuries refers to cerebral compression by bleeding from intracranial veins, without explaining how this can happen with blood at a lower pressure than normal cerebrospinal fluid The editor reopens the question of tying the vein also when it has been necessary to tie the artery to a limb The book in fact fairly bristles with controversial matter A fine level of production has been maintained and here is certainly a standard work in the making

Medicine and Human Welfare

Henry E Sigerist, M D, Welch professor of history of medicine in the Johns Hopkins University London Humphrey Milford, Oxford University Press Pp 148 15*s* 6*d*

"The study of history is not a luxury," writes Professor Sigerist, but as his 148 pages (including 20 well-chosen illustrations) cost a pretty penny, some may not quite agree with this dictum However, under his guidance, the study of the history of medicine, if not a luxury, is certainly a pleasure The subject is approached from the aspects of disease, health, and the physician Mankind's changing attitude to medicine is surveyed from the earliest religious ideas, through the scientific to the sociological aspect He describes the salient features of the Babylonian, Assyrian, Greek, early Christian, medieval and modern schools of medicine and relates their development with man's philosophical conceptions of a changing world His brief sketch is in no sense superficial, for he has used a wide canvas and his sense of historical perspective gives meaning to the realities underlying the illusions that physicians cling to in their profession Man has gradually become conscious of the need for socialised medicine, advocates of a state medical service will find that L Mende wrote, as long ago as 1820, that "the state must protect health as its most precious property", and when we are advised, as human cobblers, to stick to our last, we may gain new inspiration from Virchow who wrote, in 1848, "The Physicians are the natural attorneys of the poor, and social problems fall to a large extent within their jurisdiction"

Professor Sigerist, of course, is writing for an American public, which has as yet no insurance against doctor's bills comparable to our National Health Insurance, but he goes much further than we have done so far in outlining a solution to the sickness problems of the population as a whole—and such problems should be the concern of all true physicians He is convinced that medicine like education will ultimately become a public service in every civilised country The scope of medicine has broadened the doctor is no longer a shaman, priest, craftsman or cleric, and he must be more than a mere scientist The new physician will be "scientist and social worker, prepared to co-operate in team work and in close touch with the people he serves, a friend and leader, he will direct all his efforts towards the prevention of disease, and become a therapist when prevention has broken down—the social physician protecting the people and guiding them to a healthier and happier life"

Effective Living

C E Turner, A M, Sc D, Dr P H, professor of biology and public health, Massachusetts Institute of Technology, and Elizabeth McHose, B S, M A, director of physical education for girls, Senior High School, Reading, Pennsylvania London Henry Kimpton Pp 432 10*s*

"To help youth discover ways of effective living" is the avowed purpose of a long and comprehensive book by two American authors The subject is considered under three heads effective living for the individual, in the family and in the community Part I deals with such matters as physical activity, food, social behaviour, care of the skin and teeth, part II with healthful living conditions in the home, and part III with sanitation and public health services The book is a mine of sound, if perhaps not always very exciting, information, it is profusely illustrated and at the end of each chapter is a searching and formidable questionnaire Much of the advice given is very proper and sensible Some young readers may feel that the exhortation not to expect too much of life is a trifle redundant at present while those who worry unduly may feel the need of something more invigorating than "if you have no control over the object of your worry, think of something else" It may well be that effective living is to be achieved by taking thought along the lines advocated in this book, but it is at least equally arguable that this desirable end is often secured by careless souls who never give a thought to the matter at all Moreover, there is a possible danger that the earnest student might devote so much attention to acquiring the necessary efficiency in living as to leave himself little or no time to live

THE LANCET
LONDON SATURDAY OCTOBER 4, 1941

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At the outbreak of war there was for a time a tendency towards the arrest of social programmes, but now the aim is to carry on all that were in progress and to plan ahead for others. Much of the personnel, of course, has been seconded for military service, but recruitment has been officially approved and young doctors are advised that service in the colonial empire is of as much national importance as service in the forces. The Mediterranean colonies of Gibraltar, Malta, Cyprus and Palestine are in a peculiar position at present and their medical services are necessarily subordinated to war needs. In other colonies schemes initiated before the outbreak of war are still being maintained. In Sierra Leone, for example, a campaign against sleeping sickness and yaws had been newly begun when war broke out and this is being carried on, the cost of it being £50 000 for three years. In the gold fields an attempt to get rid of onchocerciasis by evacuating the area for a time was found to be holding up gold production seriously; Mr J. J. C. BUCKLEY, D.Sc., of the London School of Hygiene and Tropical Medicine has been seconded there and is making progress in the study of the simulium fly responsible for spreading the disease. In Nyasaland Dr B. S. PLATT, a member of the staff of the Medical Research Council directed a team to make a nutritional survey and this piece of work has been continued although on a diminished scale. The M.R.C. have also cooperated in other directions, and Dr FRANK HAWKING and Dr A. J. HADDOW holding M.R.C. fellowships for research in tropical medicine worked in Tanganyika and in Kenya. Dr E. M. LOURIE, a member of the M.R.C. staff, has been carrying on research in chemotherapy in connexion with the sleeping-sickness survey in Sierra Leone which is being conducted by the local government with a grant from the Colonial Development Fund. Prof. D. B. BLACKLOCK of the Liverpool School of Tropical Medicine, and Dr. CARMICHAEL WILSON of the Colonial Medical Service, are carrying out an investigation at Freetown into the occurrence of malaria there. Dr. G. M. FINDLAY of the Wellcome Research Institute has recently made tours in East and West Africa and the Sudan to study the incidence of yellow fever and has made reports and suggestions. He has emphasised the need for further research and coördination in the African territories. Much investigation has also been going on at Entebbe under Dr A. F. MAHAFFY of the Rockefeller Foundation, the unit there having been established for several years. Many public-health measures to be effective must be on a massive scale: for example a sleeping-sickness campaign is going on in Nigeria, where a fly-free belt is being created some 70 miles long and 20 miles wide—the size (say) of Salop or Wilts. The first part of the work entails the destruction and clearance of jungle and undergrowth and is thus a considerable task. It represents one aspect of a settlement scheme, with the provision of safe water-supplies, of sanitary latrines, and of clean markets for meat and food. In Tanganyika a central development committee has been established and the study of trypanosomiasis and the tsetse fly is going on. In Northern Rhodesia a plan for establishing rural dispensaries is being continued; a new maternity block, the gift of the Beit trustees, and a pathology laboratory have been opened and there is provision for more hospitals. In British Guiana the spread of malaria and yellow fever is being investigated, with support from the Rockefeller Foundation Thanks to the work of Sir Frank Stockdale, comptroller of development and welfare to the West Indies, and his experts, a preliminary survey of nearly all the West Indian colonies is already available and plans are being put forward for various new schemes, numerous health units are being started in all these colonies Similar health units—designed to educate people in hygiene as well as to treat them—are being planned elsewhere Ceylon has been a pioneer in this direction Sir Frank has also visited St Helena, where housing is being improved and he has advised on the production of crops there In Hong-Kong there has been a large reorganisation of Chinese hospitals

Thus, taking it all round, the health and welfare services of the colonies have not been allowed to drift backwards since war broke out At the moment developmental work which requires imported machinery or essential war materials cannot be undertaken, owing to difficulties of supply and shipping and because personnel is difficult to obtain, but everything is being done to increase local industries in the colonies, to get them to undertake production of their own necessities, and to extend their internal markets They are to be encouraged to grow more foodstuffs of the right kind and to improve housing and sanitation, meanwhile the training of agricultural demonstrators, health workers and others to educate the community in matters affecting their social well-being is also proceeding All this will help to raise the standard of living Moreover Lord Moyne is encouraging the colonial governments to put forward any schemes for development, especially in social welfare, which do not require imported material, and is able to assure them that the money to finance them will be forthcoming. He is specially anxious that schemes for development should be drawn up which can be put into action as soon as the war ends Some schemes have been approved under the new act, many others are under consideration, where war exigencies allow, these no doubt will be approved This may well be the beginning of a new era in colonial government which will end for ever the charge of our enemies that our colonies are neglected estates

THE BIOPSY

The premature death of the Emperor Frederick is said to have altered the whole course of modern European history, and there is no doubt that his death from laryngeal carcinoma was accelerated because more attention was paid to Virchow's negative biopsy reports than to Ernst von Bergmann's clinical impression of malignancy, so that operation was delayed Even now, after fifty years, the limitations of biopsy have not been clearly defined and the pathologist's colleagues too often rely either too much or too little on the help he can give in diagnosis Lately surgeons, radiotherapists and pathologists have put forward their views on the value and technique of biopsy at the Faculty of Radiologists A biopsy may be required to determine the nature of the disease process, or, if that is known, to ascertain its character and so assess the best form of treatment and the prognosis, or it may be used to observe the response to treatment Even though there is seldom more than a 15% difference between expert clinical and histological diagnoses the conference agreed that a biopsy is an expedient and almost essential preliminary to treatment, but there was much discussion as to the form it should take

In small lesions of the skin mouth and breast, where the lesion is reasonably accessible and of such a size that complete local excision can be achieved this is the method of choice In extensive lesions, where a biopsy can only remove a portion of the tumour, discretion is needed If the growth is ulcerated there is little danger, though the surgeon may merely remove necrotic material impossible to interpret In cases of suspected melanoma and anaplastic growths an incisional biopsy is not advisable, and as a rule the endotherm cutting current is preferable to the scalpel It is well that in this country pathologists have educated surgeons away from the rapid frozen section When there is considerable doubt about the nature of the condition an experienced pathologist should be in the theatre, but if he cannot make up his mind on the naked-eye appearances of the tissues in situ or when excised it is doubtful if an imperfectly fixed frozen section will help him, and it is better to wait a short while until an adequate preparation can be made It is true that good preparations can be made in from 30 seconds to 6 minutes, but these methods are seldom adequate for the difficult case, there are numerous tricks which can be employed to accelerate the production of satisfactory sections, many of which are described in a new book by Krajian[1] In regions not readily accessible to direct excision it is usual to use biting forceps and excise a portion of the growth This is the routine method employed for growths of pharynx, bronchus, œsophagus, rectum and bladder, but it is open to the disadvantage that a very small fragment is removed, difficult to interpret and not always from the most suspect area

In deep-seated lesions there is a further possibility—the aspiration biopsy This method was first used by Kuss[2] in 1847 but was reintroduced about ten years ago and is gaining favour as a simple outpatient procedure The technique is simple the skin area is infiltrated with local anæsthetic or a small dose of Evipan is administered and then a syringe with a wide bore (No 18) needle is introduced into the tumour, the piston is withdrawn fully and the needle pressed further into the tumour, the direction of the needle is then changed to cut off the column of tissue in the needle, the tension on the piston released, and the syringe withdrawn The thread of tissue may then be smeared on a slide and treated by Dudgeon's method[3] or embedded in paraffin and sections prepared The advantages of the technique are obvious and the dangers apparently slight, but it requires close collaboration between the surgeon and pathologist Barringer[4] and McGavin[5] have advocated its use in the diagnosis of prostatic carcinoma, while Russell and Cairns[6] have proved its value in cerebral pathology where the Dudgeon smear method enables a diagnosis to be made in a matter of minutes At the Radiologists' conference, both Dr Frank Ellis and Mr T A Green strongly supported it, and Ellis claimed that it would give reliable results in 70% of cases, though from his figures it is not clear what proportion of cases in which an unsatisfactory or negative aspiration was obtained were subsequently shown to be malignant When it is impossible to obtain material by aspiration a punch biopsy with the aid of a trocar may be used and GREEN has devised a modification of this instrument which seems to have some advantages These methods seem unfortunately to be least satisfactory in breast tumours, indeed CUTLER[7] has said that the hazards and uncertainties of the technique do not justify its use in the diagnosis of borderline breast tumours Sternal-marrow and splenic puncture are used to good effect by the hæmatologist and to an increasing extent by the bacteriologist but the dangers of hepatic biopsy[8] outweigh its value and the "ponction triple" of EMIL WEIL has not found many supporters Nor can aspiration be recommended in lymph-node enlargements, although good results have been claimed, for a satisfactory interpretation of a lymphadenopathy it is essential to have a node from a site of election carefully excised and prepared and examined by the best histological technique Lately VAN ORDSTRAND and LAMBERT[9] have urged the more extensive use of aspiration biopsy in non-tuberculous infective lesions or neoplasms of the lung and pleura Turning to uterine pathology, cervical tissue is removed by cautery or biting forceps, and in most hands Schiller's iodine test has not proved reliable, in the uterine cavity curettage has been in use since the days of MUNDÉ, yet the suction curette[10] which has reduced the operation to an outpatient procedure without decreasing its diagnostic accuracy has not yet received the support it deserves The battle has been waged most furiously in the realm of bone pathology YOUNG[11] decides strongly in favour of an open biopsy of adequate size in every case of suspected bone sarcoma, and has shown by experiment that aspiration methods are perilous as well as giving uncertain results

The biopsy having been achieved and the tissue judged to be malignant, the pathologist has then the responsible duty of assessing its degree of malignancy and probable response to treatment His opinion cannot rest on cytological criteria alone but must be guided by his knowledge of the natural history of that particular type of growth in that situation This requires close collaboration between the laboratory and the follow-up clinic, and it is to be hoped that this aspect will be considered by local authorities when they are implementing the Cancer Act The statistics being collected by the clinical cancer committee of the British Empire Cancer Campaign will prove of great value in this respect and no doubt correct many vague clinical impressions Nevertheless, cytological analysis is of considerable value and many forms of classification have been suggested, that of BRODERS[12] is the most widely used and forms a useful histological shorthand CATHIE[13] brought forward experimental and clinical evidence to suggest that the amount of residual ash in a microincinerated section was a reliable index of the radio sensitivity of neoplastic cells and this method of assay should be further investigated At the Faculty of Radiologists Dr F G SPEAR described a method in which the proportions of resting, dividing, differentiating and degenerating cells at the growing edge of the tumour are assessed and he suggested that they might prove a useful index of the response to radiotherapy, this is clearly a rational method of measurement but must be laborious if it is to be reliable

The risks of biopsy must be borne in mind The danger of causing metastases by neoplastic cells forced into lymphatic or vascular channels has been exploded by both clinical and experimental experience, though there is a possibility of implanting neoplastic cells in the healing scar of an incisional biopsy, yet if the tumour is found to be malignant then a radical operation should follow before this can be significant There is, however, a psychological risk in an incisional biopsy, the patient may agree to this and yet refuse the second radical operation in spite of all advice and procrastinate until a radical operation is impossible The difficulty is unlikely to follow the comparatively simple aspiration biopsy, and although implantation along the track is possible this can be reduced if a diathermy punch is used The chief danger of the aspiration biopsy is hæmorrhage either into the tumour itself or as the result of puncture of an adjacent vein, this may be serious and is always alarming, yet it is the experience of those who execute the method that it is relatively infrequent

It is clear that the aspiration biopsy or an analogous procedure should be used more freely, but before a surgeon resolves to try this diagnostic method he should consult with his pathologist to ensure that the specimens are submitted for examination in a suitable manner, otherwise he may be disappointed.

1 Krajian A A Histologic Technic, London 1941 —2 *Union med* April, 1847 —3 Dudgeon L S and Barrett, N R *Brit J Surg* 1934 22 4 —4 Barringer, B S *Surg Gynec Obstet* 1936, 62 410 —5 McGavin, D *St Bart's Hosp Rep* 1938, 71, 209 —6 Russell, D S Krayenbühl, H and Cairns H *J Path Bact* 1937, 45 501 —7 Cutler M, Buschke, F and Cantrell, S T Cancer Its Diagnosis and Treatment, London, 1938 p 36 —8 See *Lancet* 1939 1, 996 —9 Van Ordstrand, H S and Lambert T H *Cleveland Clin Quart.* 1941, 8 175 —10 Lorincz B and Davis, A *Brit med J* 1939 1, 261 —11 Young J S *Ibid* 1937, 2, 647 —12 Broders A. C *Minn Med* 1925, 8, 726 —13 Cathie, I A. B *J Path Bact* 1939 48, 1

Annotations

VALUE OF RABIES IMMUNISATION

THOUGH genius by its intuition may open up limitless fields for discovery it may at times clog the wheels of progress, for the disciples of a genius are too ready to regard any questioning of the master's words or deeds as sacrilege Thus until the last few years, and despite the fact that it has been practised all over the world, there has been no serious attempt to determine whether antirabic immunisation is really of any value On July 6, 1885, Pasteur announced the successful use of a prophylactic vaccine on a boy, Joseph Meister, who had been bitten fourteen times by a mad dog The scene has been immortalised by the statue which now stands in the gardens of the Pasteur Institute in Paris, but Meister's cheery smile will no longer greet those who seek their letters in the concierge's lodge, for Meister committed suicide soon after the German occupation The institute's figures show that the fatality among the treated patients fell from 0 9% in 1886 to 0 3% in 1890, it varied between 0 2 and 0 35% for the next 30 years, while since 1922 it has been zero, except in 1924[1] According to McKendrick's reports[2] from various Pasteur institutes the fatality from rabies after vaccination with various vaccines has ranged from 0 23 to 0 49% Denison, McAlpine and Gill[3] reported 21 fatal cases of rabies among 34,864 vaccinated people in Alabama (0 06%) from 1922 to 1936 On the other hand, it is possible that the value of the Pasteur treatment has been overestimated Denison and Dowling[4] for instance, reported 48 cases of rabies in nearly half of which prompt and adequate prophylactic treatment had apparently been given Ratcliffe[5] found that of 40 fatal cases of rabies 12 had received Pasteur treatment Yu[6] has lately recorded that from July, 1923, to August, 1940, 383 patients attended the medical department of Peiping Union Medical College because of dog bites, of this series 201 were vaccinated and 182 were not, either because they refused or because they were bitten by dogs which were proved to be normal Among the 201 vaccinated people there were 9 (4 5%) cases of rabies, among the 182 unvaccinated 18 (9 8%) In 2 of the vaccinated people in whom rabies developed vaccination was started a fortnight after the bite, possibly too late The failure of the immunisation could not in the others be ascribed either to delay in treatment or to severity of the wounds, neither could the viruses obtained be identified as reinforced viruses in the sense used by Koritschoner, although in all the cases the first symptoms appeared within 14 days after inoculation and the viruses isolated became fixed after from 3 to 10 passages Even when no cases of rabies develop the value of the Pasteur treatment is not absolutely proved Thus in Shanghai Lieou[7] reported that 402 complete Pasteur treatments were given from 1937 to 1939, no case of rabies was observed However, of the supposedly rabid animals 249 were definitely proved to be free from rabies, 106 were suspected on various grounds of having rabies, 10 had clinical symptoms of rabies and only 37 were proved experimentally to be rabid Of the 37 people who were associated with the animals proved to be rabid only 17 were actually bitten, 9 had had their hands covered with saliva and 11 were licked by the rabid dogs It is known that rabies can be contracted by contact with the saliva of a rabid animal but there is little or no evidence to show how often this happens, while according to Kelser[8] only about 25% of people bitten by rabid dogs actually develop rabies It seems then that in less than 5 out of 402 patients is there any actual proof that rabies was prevented Similarly 442 people received the Pasteur treatment in Paris in 1937 but in only 2 instances was the diagnosis established by histological examination of the dogs' brains Before the value of the Pasteur treatment can be fully assessed much further work will have to be carried out both experimentally in the laboratory and in man Statistics must be based only on cases which can be proved to have been bitten by rabid animals, while the characteristics of the viruses isolated must be carefully studied If after thorough investigation the present method of immunisation is found to be inadequate it should be scrapped Pasteur would be the first to encourage us to find a better

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[1] Cruveilhier L and Viala C *Ann Inst Pasteur* 1932 60, 661

[2] McKendrick A G *Bull Hlth Org L o N* 1937, 6, 17, 1938, 7, 1, 1940, 9, 31

[3] Denison G A McAlpine, J G and Gill, D G *Amer J publ Hlth*, 1937, 27, 869

JOINT RENOVATION

ANY contribution is welcome that tends to lessen the feeling of helplessness in dealing with severe osteoarthritis Magnuson's[9] results with operative treatment based on purely mechanical considerations are particularly encouraging He confirms the experimental findings of Bauer and Bennett[10] that the pathological changes are probably the result of frequent minor traumata and that the typical marginal exostoses are produced in the effort to stabilise a joint which has suffered ligamentous injury or damage to articular cartilage Once these exostoses are formed they limit movement and a vicious circle of recurrent trauma and new peripheral bone formation is set up Clinically, operation aiming at complete removal of mechanical irritants from the joint surfaces was performed on 62 cases with entire relief in 60, no formal synovectomy was carried out since this does not appear to be called for in non-rheumatoid cases In the hip, where old Perthes's disease or slipped epiphysis is often the primary lesion, removal of marginal osteophytes and the overhanging acetabular lip gave gratifying results, in the elbow, after wide exposure with reflexion of the olecranon, the smoothing down of transverse ridges lying in the sigmoid notch was often necessary The knee was most commonly involved and an extensive toilet is advocated in which the condylar margins are excised, all degenerated cartilage removed down to firm fibrocartilage or eburnated bone, the menisci dealt with if injured, and the patella shaped with the chisel to glide unobstructed between the femoral condyles Movement was begun on the fourth post operative day, with gentle passive encouragement and muscle re education, and weight bearing by the tenth day It is then of cardinal importance for the patient to hold the joint quite straight and to use sticks only, the pain of walking on the slightly flexed knee or the use of crutches will defeat the surgeon's endeavours Magnuson's results give point to the observation of Kelikian[11] that trauma and trauma alone is the primary affection of articular cartilage and that metabolic or endocrine factors are only secondarily associated with osteo-arthritis They are encouraging, too, since operations of this type, as opposed to arthrodesis or arthroplasty, have not been very popular It may well be that such a careful removal of mechanical irritants is better than a formal synovectomy or capsulotomy, or the casual removal of osteophytes, but the operation is not a minor one and, unless the patient gives whole hearted cooperation, may leave him worse than before

FIBROIDS

IN reviewing the cases of myomata treated in their wards Mahfouz and Magdi[12] of Cairo discuss almost every aspect of this common tumour including the history of its surgery Avicenna in the 11th century described and advocated the excision and avulsion of vaginal polypoid myomata with or without ligation of the pedicle, and he seems to have been the first to approach the problem of myomata from a purely surgical standpoint All sorts of procedures were tried by the earlier surgeons, including ligation of the uterine vessels and ovarian castration, in an effort to diminish the blood supply to the tumour The name of Lawson Tait will always be associated with this latter procedure, he claimed that the "whole merit of the thing, however much or little it may be, belongs to British surgery," for there was considerable competition from the United States and the Continent to establish a prior claim for its invention and successful performance Tait's first successful ovarian castration was performed in 1872 A few years before this, in 1863, Spencer Wells had performed the first two abdominal myomectomies, and in the same year Charles Clay of Manchester performed the first successful supravaginal hysterectomy in Europe Clay ligated the whole uterine stump with three strands of Indian hemp and only took fifteen minutes for the whole operation The patient left hospital 35 days later

In their series of 931 cases of myoma all treated by operation Mahfouz and Magdi note some interesting facts 86% were multiple, 14% single, 58% intramural, 24% submucous and 18% subserous, only 2% were cervical in situation Ovarian cysts were associated in 16% of their cases and inflammatory disease of the adnexa in 28% This latter complication they regard as a serious one in that it considerably increases the fatality, the commonest cause of death being peritonitis in 52% of he fatal cases Axial rotation of the tumour occurred ı 5 patients, the cause being a pedunculated subserous broid Various degenerations were noted in 18% f the tumours removed and red degeneration in 6 cases n 3 cases the tumours had become detached entirely rom the uterus and gained a new parasitic foothold on he omentum Malignant degeneration was encountered n 3 cases—a low incidence, for in England the generally ccepted figure is 1% The operations performed were ubtotal hysterectomy in 459 cases with 9 deaths, bdominal myomectomy in 362 cases with 5 deaths (a ery creditable achievement, for myomectomy in this ountry is recognised to carry a fatality of 5% and subtotal hysterectomy 2%), vaginal myomectomy in 93 ases with 4 deaths (this high fatality is explained by the arge infected masses impacted in the vagina after years of ill health and hæmorrhage), and finally total hysterectomy in 18 cases with 3 deaths (a high figure, explained as due to tubo ovarian infection resulting in peritonitis) The number of myomectomies is large The reason for this in Egypt is largely a social and religious one, for fertility is of tremendous importance there, but at the same time *it does the surgeons concerned great credit* for holding a conservative outlook Here Victor Bonney has preached just such a doctrine for years Its soundness is illustrated by one of the cases in the Cairo series, a woman of 38, married ten years without issue, in whom they enucleated 52 myomata This lady was 16 months later delivered of an heir. How many surgeons would have sacrificed the uterus? Mahfouz and Magdi put the recurrence figure after myomectomy at 5% They regard the operation as dangerous if the cavity of the uterus has to be opened or if multiple incisions are needed for the enucleation of many tumours The incidence of stump carcinoma in the cervix after subtotal hysterectomy was nil The work of these two surgeons is a strong plea for conservatism and a wider adoption of myomectomy whenever myomata are encountered in a uterus that is still potentially capable of being impregnated They undoubtedly favour the subtotal operation as against the total in hysterectomy and this will give many English and American gynæcologists food for thought

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[4] Denison, G A and Dowling, J D, *J Amer med Ass* 1939, 113 390
[5] Ratcliffe A W *Arch intern Med* 1940, 66, 478
[6] Yü, T F *Chin med J* 1941, 59 326
[7] Lieou, T C *Bull med Universite L'Aurore*, 1940, 5, 84
[8] Kelser, R A Harvard Symposium on Virus and Rickettsial Diseases Cambridge Mass 1940 P 642
[9] Magnuson P B *Surg Gynec Obstet* 1941 73 1
[10] Bauer, W and Bennett, G A *J Bone Jt Surg* 1936, 18, 1
[11] Kelikian H *Surg Gynec Obstet* 1940 71 416
[12] Mahfouz N P and Magdi, I *J Obstet Gynæc* June 1941 p 293

MEDICAL REPORTS AND CERTIFICATES

THE legal position and usual practice with regard to medical reports and certificates is succinctly set out in memorandum No 156, issued by the Central Bureau of Hospital Information[1] Legally neither a hospital nor its medical staff is obliged to give reports or certificates o any third party outside The only legal method of xtracting information from the medical officer is to ubpœna him to give evidence in a court of law This loes not oblige him to say anything to anyone outside he court, and even in court he can object that the nformation is confidential, although the tribunal may lecide to overrule his protest that disclosure would be a breach of professional secrecy The patient's consent hould always be obtained before giving a report or ertificate, one large London hospital refuses all reports nless application is made on a particular form (appended o the bureau's memorandum), this form contains a pace for the patient's express consent in writing

The memorandum usefully sets out the usual practice bout fees Hospitals generally allow a medical officer o receive the fee charged for a report, they sometimes ollect the fee for him The fee does not commonly xceed two guineas, it may be less (according to the ircumstances or the patient's means) or nothing at all n road accident cases one large London hospital charges fee of two guineas to an injured patient who wants a edical report to support his claim for compensation his fee is collected only if the claim succeeds (presumably because in that case the plaintiff recovers it from the defendant), it is then handed over to the medical officer who made the report; if the claim fails the hospital itself pays the doctor a fee of 10*s* 6*d* Where a patient wants a medical certificate in order to recover newspaper insurance compensation, the fee is usually 5*s*, as the amount recovered is small Where a medical certificate (usually the confirmatory certificate) is given by a hospital medical officer under the Cremation Regulations, the usual fee is a guinea It may be recalled, in passing, that regulation 8 of the 1930 regulations, requiring certificates from the deceased's medical attendant and the confirmatory certificate from another practitioner, is suspended by Defence Regulations where the registrar has certified that death has been registered as due to war operations Hospitals sometimes charge 1*s* for "admission and discharge certificates, more often they are given free Nor is it usual to charge for an "unfit to work" certificate Forms of "unfitness to work" and "admission and discharge' certificates are appended to the memorandum There is also a simple form of general information *certificate* *This is useful* where a rough idea of the disability is needed, rather than the medical details—for example, where a workman is in hospital and the employer wants to know whether the injury is so serious that another workman had better be engaged in his place

HISTIDINE AND HISTAMINE

SUBSTANCES which give specific chemical reactions are much more easy to follow and investigate than those which do not, and this generalisation is well illustrated by the amino-acids Most of those with closed rings or unusual chemical groupings in their molecules can be induced to react in some way which betrays their presence whatever the circumstances, and this has favoured their isolation and investigation Those with straight chains are much more difficult to characterise, and, although progress is always being made, much less is known about their occurrence and distribution Indeed threonine was only detected, and that quite recently, because an elaborate investigation led to the discovery that rats would not grow on a synthetic mixture which did not contain it The amino-acid which is known to the biochemical fraternity as histidine and to their purer chemical cousins as β-iminazole-α aminopropionic acid gives colour reactions with bromine which enable it to be detected and estimated in minute quantities in the body fluids; and histamine, the primary amine formed from it by decarboxylation, has equally striking pharmacological properties by which it can be traced Both these substances have been stated to occur in urine, and their presence there has recently been proved by elaborate checking and rechecking of the methods by which the compounds were first detected and estimated. It has been shown that histidine[1] is a constituent of normal urine, and up to 80 mg per 100 c cm have been found there Larger amounts are excreted during pregnancy The quantity depends partly on the subject and partly on the food, and although there are other factors regulating this excretion which have not been exactly defined the histidine appears soon after conception and its elimination seems to be related in some way to the increased excretion of the gonadotropic hormones Pregnant animals do not excrete histidine in this way—a good example of the biochemical differences which exist between animal species and add such zest to comparative physiology During the severe toxæmias of pregnancy histamine is excreted, it must be formed from histidine but why the toxæmias should bring about the appearance of this highly reactive body, and whether it plays any part in the production of the toxæmic syndrome is still obscure It is evident that we have still much to learn about histidinuria and histaminuria, and furthermore, we know nothing at all about the excretion of all those other amino acids which we cannot readily detect and estimate Taking the normal range of histidine excretion to be up to 80 mg per 100 c cm of urine, this amounts to more than 1 g per day—quite a large quantity of a valuable and essential bodily constituent We know of no syndrome due to histidine deficiency, but this rate of loss suggests that such a thing is not inconceivable

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[1] Obtainable from the director of the bureau 12, Grosvenor Crescent S W 1 3*d* post free

[1] Racker E *Biochem J* 1941 35 667 Kapeller Adler, R. *Ibid* p 213

FRACTURED MANDIBLE

In the last war and up to now in the present one the treatment of fractures of the mandible at or posterior to the angle has presented insurmountable difficulties when the patient has no teeth Here, as in other fractures, correct apposition of the ends of the broken bone is the first essential to bony union, and such apposition is very difficult to attain because when the fracture is far back in the region of the last molar the small posterior fragment is drawn upwards and inwards towards the midline by the pterygoid and temporal muscles The many ingenious appliances so far devised have mostly failed to keep the ends together, so that the patient has been left with fibrous union and deformity Moreover, they usually entailed immobilisation of the jaw leading to difficulties in feeding and delayed union from prolonged lack of function Last November Vaughan Tomey suggested to the central counties branch of the British Dental Association in Birmingham that external splinting might be feasible, and the two papers published in this issue demonstrate that it is Dr Pohl grips the fragments with hook-screws of his own design and welds the screws together by an external metal bar Mr Rainsford Mowlem and his colleagues at Hill End maxillo-facial unit use crossed Kirschner wires inserted into each fragment, and fix them by an external clamp Pohl has applied his technique to one case, the other has been used in 19 Both have the advantage of allowing some measure of mastication as soon as the splint is applied

A SOCIAL DIAGNOSTICIAN

Diagnosis must come before treatment, and in his second examination[1] of the symptoms of social ill in York, Mr Seebohm Rowntree once more, as in 1899, diagnoses poverty as their cause In his preface he disclaims any wish to prescribe for the disease, contenting himself with a masterly picture of the syndrome He discusses the remedies that lie to hand, but leaves the choice of treatment to others He has made his diagnosis on the result of a house to-house visitation of over 16,000 families—almost the whole working-class population of York—and in a chapter, which he modestly assumes will interest only the statistician, he compares his figures with those which might have been obtained by the more usual sampling methods Mr Rowntree's technique gives an objective picture of the economic situation of the city, of its housing, of its public-health and education services, and of the leisure-time habits of its inhabitants He found that the proportion of the working class population living in abject poverty has been reduced by more than half since 1899, but that rather more than half of the working-class children under one year of age were still living below the poverty line, 47% of them would probably remain in poverty for five years or more, and 31% for ten years or more Yet Mr Rowntree's standards of poverty are not indulgent He has taken as his criterion for a man and wife with three children a minimum income of 43*s* 6*d* after rent and rates are paid

But during the last forty years there has been progress as well as poverty Housing in York shows a persistent upward trend, and both social and public-health services have increased to a remarkable extent The chapter
on health records a fall in the general death-rate
and in the infant mortality of two thirds, but ev
infant death-rate was nearly twice as high in th
class as in the highest class of those inve
Reduced working hours combined with
facilities for recreation have led to widened
and interests for workers of all ages Less
spent on drink, but the enormous growth of
has created a new "Public Enemy No 1," and
circensian days Mr Rowntree urges that leisur
be a time of re creation and not escapism Andr
is reputed to have said "Many use statistics as a
man uses a lamp post—for support rather
illumination," but Mr Rowntree has used the
searchlight on the murky limitations which
imposes on the life and health of our people

RETINAL DYSTROPHY

The Lawrence-Moon-Biedl syndrome is a
herited condition in which small stature, hypoge
obesity, retinitis pigmentosa, polydactyly and
defect are associated The genetics of its inherit
highly involved, and the evidence available
enough to establish the gene abnormality that
it R W B Ellis and F W. Law[1] record an inc
example of the full syndrome—an obese undersiz
of normal intelligence, with hypogenitalism and
changes Mental defect and polydactyly were
in her case, but a maternal uncle had a supernu
digit and a sister was mentally defective
observations alone will hardly make the genetic
clearer, though they may be set alongside Sorsby,
and Cockayne's observation[2] of "the frequent
rence of one or more components of the Lawrenc
syndrome in the ascendants of patients showing
syndrome" Ellis and Law describe the retinal
in their case in some detail The retinæ appeare
especially at the maculæ, which were atrophic
choroidal vessels were easily seen There was
deficiency of retinal pigment, but a number of p
or veils of pigment, varying in size up to tw
diameter of a disc, were scattered over the retin
at about the level of the retinal vessels, and ther
peppering of the macular area with pigmenta
These appearances bear no resemblance to what
monly called retinitis pigmentosa, although the
fairly closely with Lawrence and Moon's descrip
their original cases In other published recor
siderable variation in the retinal appearances is
but few of the accounts approximate to that of
retinitis pigmentosa Ellis and Law therefore
that, for the sake of precision in terminology, th
retinitis pigmentosa, applied to a component
Lawrence-Moon-Biedl syndrome, be dropped an
tinal dystrophy" be used instead They quote La
and Moon who said (in 1886) "In calling these c
the name of retinitis pigmentosa, we have been
rather by usage than by the intimate nature of the

Sir Girling Ball has been appointed a men
the Shakespeare Committee in place of Sir
Webb Johnson, who retains his membership
capacity of president of the Royal College of Su

A luncheon party at Grosvenor House on
celebrated the 21st anniversary of the opening
Tavistock Clinic, where the first patient was r
on Sept 27, 1920 Since that day 14,700 patien
been treated at the clinic in Tavistock Square,
Street, and since the outbreak of war at W
College, Hampstead Colonel J R Rees, the
director, said that these patients had come fro
county in Britain

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[1] Poverty and Progress London Longmans, Green and Co Pp 510 15*s*

[1] *Arch Dis Childh* 1941 16, 105

[2] Sorsby, A Avery H and Cockayne, E A *Quart*
1939, 8 51

Special Articles

NUTRITION OF RURAL CHILDREN IN WAR-TIME

DAGMAR CURJEL WILSON
M D GLASG, M R C P, F R C O G, D P H
WOMEN'S MEDICAL SERVICE, INDIA (RETD)

IN December, 1939, and January, 1940, I obtained records of the state of nutrition of a group of children who might be expected to continue to live in the same neighbourhood It seemed possible that war-time diet might prove detrimental to health, and that such records would prove useful for comparison Schools were chosen for the survey since growing children show evidence of dietary deficiency more readily than adults Children of rural Oxfordshire were selected as suitable, children from the evacuated areas being carefully excluded

Overcrowding of the schools by evacuees hampered examination, so the tests used were limited to those which previous nutritional surveys[1] had shown to give close correlation with nutritional deficiency The following definite and easily recognised signs of vitamin deficiency were sought follicular hyperkeratosis (phrynoderma), xerophthalmia and keratomalacia, angular stomatitis (cheilosis); congested gums (purple discoloration or bleeding), rickets (including the lesser degrees of enlarged epiphyses and bossing) Assessment of the state of nutrition was also made according to the standards of the Board of Education (Health of the School-child, 1937) Such assessment is largely subjective, but when all the children are examined by the same observer results are obtained which are useful for comparison Dental observations (decayed, missing and filled rates) were made and special points of clinical interest were also noted

Visits were paid to 41 different places in Oxfordshire, 1568 children were examined, 531 aged 6–7 (group A), 508 aged 10–11 (group B) and 529 aged 13–14 (group C) Fourteen months later the same schools were revisited, some children had meantime moved to senior schools and others had left school on reaching the age of 14, but it was possible to examine 499 children again—316 in group A and 183 in group B The numbers of group C remaining were too few to justify comparisons The results of the two surveys are compared in table I

TABLE I—STATE OF NUTRITION OF 1568 SCHOOL-CHILDREN IN DECEMBER, 1939, COMPARED WITH THAT OF 499 OF THEM IN FEBRUARY, 1941

Group	When examined	Total	Boys	Girls	Signs of vitamin deficiency: Phrynoderma	Xerophthalmia	Cheilosis	Congested gums	Rickets	Nutrition: Excellent	Good	Subnormal	Bad
										%	%	%	%
A*	Dec. 1939	531	260	271			4		27 (5%)	32	58	10	0
	Feb 1941	316	145	171			1		6¶ (1·8%)	29	58	12	0
B†	Dec 1939	508	259	249			5		19 (4%)	29	59	12	0
	Feb 1941	183	95	88			3§			35	53	12	0
C‡	Dec. 1939	529	286	243			4		9 (1%)	37	57	5	0
	Feb 1941	Too few to permit of comparison											

* A (aged 6–7 in Dec 1939) † B (aged 10–11 in Dec 1939)
‡ C (aged 13–14 in Dec. 1939) § All new cases ¶ 3 new cases

If the 499 children who were examined twice are considered separately, there is no evidence of significant deterioration in their nutrition after fourteen months, that is, there has been no increase in signs of vitamin deficiency and no falling off in the state of nutrition as assessed by the same observer At the outset and during the period of inquiry the existence of a slight degree of dietary deficiency was indicated by the occurrence of cases of cheilosis and of low grade rickets, but the incidence of these did not increase significantly (table II) Indeed, although the number of cheilosis cases was slightly higher at the second examination the number of cases of rickets was noticeably lower, even allowing for the expected decrease in signs of rickets with advancing age of the child It seems probable that more signs of deficiency would have been found but for the widespread adoption of the county school-milk scheme Throughout the investigation most of the children were receiving ⅓–½ pint of milk daily in school, an amount which though not sufficient to ensure a high standard of health might prevent open clinical signs of deficiency

During the inquiry visits were paid to the homes of families in different villages It was found that the diet of some of the poorest households had actually improved, thanks to more regular wages or allowances received by the father on changing from low-grade agricultural work or casual labour to war-time duty Inquiry in the homes of rachitic children showed that they belonged to large families where the mother had apparently given up the struggle of trying to make ends meet satisfactorily on a low income, often more than one child showed signs of rickets

TABLE II—INCIDENCE OF RICKETS AND CHEILOSIS IN THE 499 CHILDREN EXAMINED TWICE

—	Examined	Cheilosis	Rickets
Group A	Dec 1939 Feb 1941	1 1 (same case)	20 6 (3 new cases)
Group B	Dec 1939 Feb 1941	2 3 (all new cases)	8 Nil

The occurrence of cheilosis among these Oxfordshire children is of interest because this clinical sign of riboflavin deficiency has not hitherto been sought during school health inspection in England Cheilosis—as evidenced by white sodden excoriation at the angles of the mouth—was noted in 17 of the 1568 rural children examined during this inquiry It was present in 13 of those seen at the first examination and 4 of those seen at the second examination Of 13 cases revisited 11 cleared up without treatment within a period of eight weeks, 2 cases of greater severity did not improve spontaneously, and at the end of eight weeks were treated with pure riboflavin Both these children belonged to large families of low-grade agricultural labourers The most severe case, in a girl aged 13, healed after treatment with riboflavin 30 mg over a period of thirty days, but relapsed three months later, and required an additional 40 mg of riboflavin over twenty-four days for cure The second case, in a boy aged 6, was less severe and was cured by riboflavin 20 mg over twenty-three days, and remained free of symptoms during four months' subsequent observation He had been recognised as undernourished at routine school medical inspection, and was receiving 1 pint of free milk daily at school The presence of riboflavin deficiency, in spite of such a daily milk consumption, may be explained by the low riboflavin content of milk at certain seasons[2]

SUMMARY

The nutritional state of 499 rural Oxfordshire school-children was determined in December, 1939, before the introduction of rationing, and again in April, 1941, after more than a year of dietary restrictions There was no sign of increasing nutritional deficiency and no deterioration in the state of nutrition as assessed by the same observer Some degree of deficiency of the vitamin-B_2 complex was present throughout the period of observation as indicated by the presence of 17 cases of angular stomatitis (cheilosis) among 1568 children between the ages of 6 and 14 Pure riboflavin was successfully used to treat 2 cases

I am indebted to the education committee of Oxfordshire county council for access to the schools, and to Dr H C Jennings, county medical officer of health, for the assistance of health visitors in home visiting Pure riboflavin was provided by Messrs Roche Products

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[1] Wilson, D C, Widdowson, E M and Walt, C *Lancet*, 1937 2 1445

[2] Houston J Kon, S K and Thompson S Y *J Dairy Res* 1940 11 145

MEDICINE AND THE LAW

Punishment for Bogus F R C S

UNQUALIFIED practitioners who are guilty of sheer fraud will attract little public sympathy On June 23 James Leroy McCune, aged 40, described as a physician, of Alma Square, St John's Wood, was arrested on the charge of wilfully and falsely pretending to be a physician He was subsequently charged at Marylebone with wilfully and falsely pretending to be a Fellow of the Royal College of Surgeons on June 24, with a further similar charge relating to Aug 29 A detective sergeant informed the magistrate that he found a car, with the word "Doctor" on the windscreen, outside the accused's address on a door-post was the visiting card "James L McCune, M D M A , F R C S" Told that he would be charged with pretending to be a physician McCune replied "I am" Documents bearing the name "Dr McCune" were inside the car He had examined a boy on June 23 who was suffering from hay-fever and had told the boy's grandmother that he was suffering from congestion of the lungs and eye trouble, and that, if not taken care of, he might have T B The boy had neither of these diseases Writing to the patient's grandmother, the accused signed himself "James McCune, F R C S , physician and surgeon" He pleaded guilty He had 20 previous convictions in Australia and two in this country , 17 were offences of dishonesty McCune said he put the label on his windscreen to avoid being questioned about petrol rations He had obtained no financial benefit by posing as a doctor The police witness did not agree with this statement , there was a warrant against the accused at Edinburgh over the purchase of a practice It was also said that, being a married man with two children, he had been posing as an unmarried man and associating with a 21-year-old unmarried woman from whom he had borrowed £20

Mr L R Dunne fined him £60 or two months' imprisonment, and refused to allow time for payment of the money It was always a serious matter, said the magistrate, for an unqualified person to hold himself out to be a qualified medical practitioner , but it was much worse when the person was a man of bad character

Child's Death in Hospital

We noted lately in this column an allegation of delay in treating a child admitted to a Manchester hospital for serious burns The Manchester public health committee appointed a subcommittee to investigate the occurrence The subcommittee's report, adopted by the full committee, disposes not inadequately of the complaints which had led the coroner to criticise those concerned

The report establishes the following facts The ambulance arrived at the hospital as the clock was striking 2 30 P M Three minutes later the assistant resident medical officer examined the child in the admission ward , it was then wrapped in warm blankets He ordered an injection of morphia At 2 40 he described in detail to the medical superintendent the areas affected by the burns He put aside his other duties and went to the surgical ward Morphia was injected at 2 45 and the child had been removed to the surgical ward by 3, at which time the assistant resident medical officer, putting aside his other duties, went to the ward and gave the intravenous injection of blood plasma , he remained with the child till after 5 P M No complaint of delay was received until a police officer attended the hospital to take statements The report suggests that the absence of complaint gives conclusive value to the times entered in the drug book and case-record

The subcommittee had previously considered the propriety of the treatment Competent opinion was agreed that the child was suffering from severe burns and shock , that it would be bad practice to attempt to treat the burns until the child had been treated for shock , that the proper treatment was to apply warmth and to inject morphia , that, after the morphia, no further treatment must be given until there had been time (approximately 15 minutes) for the morphia to take effect, and that during this interval the child should not be moved Competent opinion advised the committee that not only was this the proper treatment to apply in the first instance but that this was the treatment in fact given After this preliminary treatment, and not before, it was desirable to give an intravenous injection of blood plasma Here also the correct treatment was given The report thus removes the adverse impression left by the inquest proceedings If it was right that the matter should be ventilated before the coroner, it is fair that the result of the hospital inquiry should also receive publicity

Counterclaims for Professional Negligence

Allegations of professional negligence are a not unfamiliar sequel or set-off to a claim for fees The practitioners to whom the fees are owed have then to consider whether the trouble of suing the defendants is worth while Allegations, however ill founded, must be rebutted , their "nuisance value" looms large to a practitioner who has other preoccupations more profitable and attractive than a day in court A successful claim for fees, on the other hand, promotes the advantage of the profession as a whole The labourer is worthy of his hire and there is no reason why he should submit to what he may regard as the process of being blackmailed out of it

In McKeag *v* Shah, a recent case in the Bath county court, the defendant was doubtless misguided rather than mischievously minded The plaintiff, a dental surgeon, sued him for a fee of half a guinea for the extraction of a tooth The defendant filed a long letter in answer and counterclaimed for £15 for alleged negligence Having read the letter, the judge told the defendant that, on his own showing, there must be judgment for the plaintiff for 10*s* 6*d* with court fees , his allegations were serious , had he, asked the judge, any professional evidence in support of them ? Mr Shah had fortified himself with no such testimony He gave his own story of the extraction , a fragment of the tooth, he said, had been left behind , there was continued bleeding and swelling afterwards, for which treatment was required Mr R K McKeag (who holds a medical as well as a dental qualification) gave evidence that it was a perfectly normal extraction , for reasons which he explained to the court there was more than ordinary bleeding in a certain percentage of cases The defendant asserted that an X-ray photograph should have been taken before probing , Mr McKeag replied that this was unnecessary The judge found for the dentist on the claim and found against the defendant on the counterclaim for damages for negligence The allegations, said the court, were entirely without foundation, ought never to have been brought, and, having been brought, ought not to have been persisted in The dentist had given sound advice and excellent treatment and had been most wise in coming to court and facing the allegations "So far from having his reputation impaired, he will, in my judgment, have established it on a higher footing" Here, at any rate, we may conclude, the trouble of suing for a fee was well worth while

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VAPORISED SULPHONAMIDE IN BRONCHIECTASIS —Three Argentine physicians [1] are using a method of treatment for bronchiectasis and other forms of chronic pulmonary suppuration, which in their hands has proved highly successful in cases where ordinary medical measures have failed Inhalations of a vaporised solution of Prontosil Soluble are given thrice daily For each inhalation 3–5 c cm of the 5% solution is used, made up to 25 c cm with saline and vaporised in a special apparatus Treatment must be continued for at least three months, and each patient receives on an average a total of 50 g of prontosil soluble The only toxic effect observed has been diarrhœa, which in a few cases has been persistent enough to preclude further use of the drug In these cases Rivanol inhalations have been substituted, but this drug has an unpleasantly bitter taste The method can easily be used for ambulatory patients

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[1] Castex M R Capdehourat E L and Lavarello A *Arch argent Enferm Apar resp* 1941 9, 29

In England Now

A Running Commentary by Peripatetic Correspondents

I WAS talking the other day to the former chief of the astro-enterological section of the Sanidad de Guerra—he Spanish Republican R A M C This brilliant surgeon has spent the last two years (with an interval when he was torpedoed while working in Atlantic convoy) reading he surgical literature of this country and has become an ardent admirer of the British School of proctology After so long a wait it seems almost unbelievable that his kill and that of his other colleagues may soon be at our disposal He told me about a staff routine which the Sanidad kept up even in the bitter final phases of the Republican's defeat The case-records of every wounded oldier were centralised on the desk of a specialist and so my friend received the reports of every abdominal njury These would comprise the front-line casualty ward, the operation notes dictated to the anæsthetist during the course of the first surgical intervention near the line itself, the ward notes in that same advanced urgical post, the notes made in the hospital train and the record of the base and convalescent treatment He would analyse these and send to each surgeon concerned a note of the end-result of his work together with comments given not in the form of military orders but as the advice of a senior colleague to a co-worker in a common task He did not believe in rigid standardisation of treatment, for, as he said, putting a doctor in uniform may make him keep step and salute but cannot be used as a means of depriving him of his own professional initiative and judgment Standardisation pushed to these lengths defeats its own end It would be interesting to know whether R A M C methods do permit of such coordination of surgical work

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THE EGO AND THE ID

Said the Ego to the Id
"Pray tell me all you did
In the days when your subconscious fast was locked,
It would interest me vastly,
Be it ne'er so grim and ghastly,
And, let me add, I'm very rarely shocked

For myself," continued Ego,
"I early learned to leggo
And see my fancy take me where it would,
But years of self expression,
Have left me the impression
That I've always really hankered to be good"

Quoth Id "When I was five,
I used to catch alive
And torture little insects by the hour,
At six I shot my sister,
I can't pretend I've missed her,
This complex Adler calls the lust for power

I spent the next few years,
Despite my parents' tears,
Defying every code or book of rules,
My elders and my betters
Received indignant letters
Demanding my removal from five schools

Throughout my teens I joyed
In libidos dear to Freud,
The twenties saw me rush from crank to crank,
I tried out thirty diets,
I headed fifteen riots,
I broke my father's heart and broke his bank

I've dabbled since that time
In every sort of crime,
And sowed a goodly harvest of wild oats,
I've tried my hand at arson,
But since meeting with a parson,
I feel the time has come to burn my boats

By dint of free confession,
I have banished all repression,
The cupboard's bare, the skeleton is out,
No more can I pretend
When I cut my oldest friend
That I really do not know what I'm about

For I've been analysed,
And motives once disguised,
Have now, alas, become an open book,
Gone crime with all its glory,
Life's quite a different story,
The analyst has got me on a hook

So if there's anyone
Who thinks it would be fun
To talk for hours to one who's paid to listen,
Consider first the price,
And take the *free* advice
Of a wistful, erstwhile out and out Narcissan

Henceforth you must eschew
All excuses old or new,
And say farewell to irresponsibility,
Essay not to recapture
Crime's first fine careless rapture,
But concentrate on middle aged utility

Maintain a state of grace
By reflecting on the Race,
The future is to them and not to you,
Let their synthetic good
In mating or in food,
Become the theme of all you think or do

And now the least, but last,
Forget about the past,
No longing, lingering looks at childhood's horrors,
So cut the Gordian Knot,
And remember Mrs Lot,
Have done with all your Sodoms and Gomorrahs

I hope I've said enough
To deter all but the tough,
This business is no joke, please rest assured,
But if with groans and tears,
You can stick it for three years,
You can count on being killed or being cured!"

* * *

The compulsory evacuation of the London teaching hospitals has brought to the fore a problem which has worried some of us for a long time Many members of the staffs of these hospitals have a comparatively slight knowledge of educational methods, and some of them refuse to believe that there is any connexion between the teaching of clinical subjects and university education In the provinces the problem does not exist to anything like the same extent, for the medical schools there are so intimately linked with the university that they cannot help being imbued with its methods and traditions But the London teaching hospitals have led a life of proud independence Though latterly hard economic facts have made them face up to the fact that but for their grant from the University of London their very existence would be problematical they still adopt the attitude that it is the university which should be proud of its association with their ancient seats of learning

In the prewar days the organisation of the London teaching hospitals was of little practical importance and capable of a simple solution The preclinical departments were run quite efficiently as more or less independent units with their own whole-time teachers, and the clinician took little interest in them As often as not they were practically ignored and comings and goings between hospital and school were few and far between Again, so far as the clinical side of the teaching was concerned, there was little to worry about The material in the form of patients was there, the organisation in the form of the hospital authorities was there, and what little organisation seemed necessary from the point of view of the students was considered mere office routine, efficiently looked after by a dean who usually was an occupant of a chair in one of the preclinical departments Many clinicians were quite cynical about it all—no clinician of repute had time for office work, that was a job for a whole-time professor Under these circumstances teaching was little trouble to the clinician He turned up for his rounds or outpatients—part of his statutory duties as a member of the honorary staff—and his clerks or dressers accompanied him, gleaning what facts they could from the great one as he visited or examined his patients A call to the country of course took precedence, no matter how little warning it might be possible to give to the waiting students Actually they did not suffer much for there were usually juniors available to take the place of their chief With our happy faculty for evading unpleasant issues the question of conflicting loyalties as far as hospital and private practice was concerned never arose, for the latter came first

The evacuation of the hospitals and medical schools has changed all this No longer are patients, organisation or juniors supplied with unfailing regularity No longer are there alternatives to which the students can go if a round is cancelled Organisation has been necessary, planning has been indicated, awkward questions have had to be faced What constitutes a medical curriculum ? How can the absence of outpatients be compensated for by the use of inpatients ? Are medical and surgical lectures essential ? If so, how many should be given what subjects should they cover and who should deliver them ? How long should any one student spend in any one hospital ? Can students be left for, say, a term in a hospital with ample clinical material but little in the way of teaching ? The response of the average clinical teacher to this barrage can only be described as lamentable There have been notable exceptions and the picture has perhaps been overpainted, but the essentials are true enough to life to be depressing Alas that such august institutions should be so bankrupt of ideas Not only the existence of our London medical schools is involved, but the whole future of the medical curriculum If medical education is to keep pace with the progress of medical science and medical service to the community, reform must be drastic A whole-time dean, as he exists in many American medical schools, will be needed, for the organisation of a medical school can no longer be left to the whims of consultants fastened into an unstable framework by a part-time dean in his spare moments. We must produce an adequate supply of whole-time deans from among the most able members of the profession—men with experience of clinical work and research and with a flair for administration who will be prepared to give their lives to the absorbing probems of medical education As a corollary, the clinicians must realise that teaching is as important a part of their life as medical practice and that to conform to the requisite standards they will need to give a much larger part of their time, energies and abilities to the task than many of them do now

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A fantastic thing happens every month or so in my area which I suppose has its counterpart in every section of the kingdom Eight or ten commercial competitors, none of whom have military interests, sit round a table to decide which among them or among other competitors not directly represented (at any rate in a voting capacity), should go into the Army Their choice is guided by the imposition of a quota, an arbitrary number of Army "vacancies" to be filled Consideration of the needs of the district does not seem to be within the competence of the meeting The picture is made all the more bizarre when you realise that these men are not only commercial competitors but also professional colleagues , they are in fact medical practitioners

Doctors by and large seem to take an individualistic view of their relations to society This is illustrated by the fractional attendances at B M A meetings, and it seems an odd anomaly of war-time planning that the health of the nation should be exposed to the voracious demands of the fighting Services transmitted through the very coarse filter of local medical war committees So far as can be seen these committees, subject to an occasional appeal to the more balanced central body, are the real and deciding factor in shaping the civilian health services It is hard to find any other principle in the adoption of this method of medical conscription except perhaps the old one of "set a thief to catch a thief" which was, after all, abandoned by the administration of Sir Robert Peel so far as it concerned the police about 100 years ago I am not suggesting that the personnel of committees do not try to be honest, but the general practitioner member is qualified neither by experience nor his own interests to make a good job of it There is no "consumer" advice to the committee, since neither local governments, public-health authorities or insurance committees have a vote

The Shakespeare Committee was said to be on tour finding out just what the medical needs of the community are If silence and inconspicuousness be a mark of efficiency its report should be good, though it does not need a committee to show that reception areas need more doctors, that public-health responsibilities increase with war, and that hospital treatment is no more efficacious to soldier patients if the doctor has got a Sam Brown belt

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A minor revolution gets scant notice these days and it is not surprising that the fall of a distinguished leader and the establishment of a new order have caused no stir in the medical world The pituitary has always occupied an exalted anatomical position but in recent years it prestige in the endocrine system also has been steadily growing America's leading brain surgeon honoured it by special study and summed up his views of it importance in the famous phrase "the leader of the endocrine orchestra" And then we came to learn how "the leader" exercised control by this and that tropic factor The hormonal jigsaw puzzle was all but solved But now Dr Cramer (*Bull N Y Acad Med* 1941, 17, 3 comes along to make us start all over again The pituitary, he says, is not the leader The endocrine orchestra has no leader The members know the secret of working together and are a model for any League of Nations Their bond is simple and is based on one point, not on eight or fourteen points The One Point is the necessity of keeping the peace, or, if you prefer it in terms of physiology, of keeping the internal environment constant They know, what the human race has still to learn, that by pulling together they survive , by pulling apart they perish

SANITARY CONGRESS IN SCOTLAND

Sir Alexander Russell, M D , whom the Department of Health for Scotland has charged with the organisation of their diphtheria immunisation campaign, at the annual meeting in Glasgow of the Royal Sanitary Association of Scotland said it was ironical that the first national effort to immunise British children against diphtheria should have been postponed until the time of a world-wide war During 1940 there had been 15,711 notifications compared with an average of 10 000, and the total deaths numbered 676, the highest recorded for many years During the first quarter of 1941 the epidemic continued but there had been a steep fall in the notifications from April to June Recent weekly figures were still above average and there was reason to expect that the number of cases might shortly increase, perhaps reaching epidemic numbers during the winter Analysis of the deaths showed clearly that pre-school children were far the most susceptible, and it was disturbing that of the total immunised 60% were school-children and only 33% pre school Immunisation against diphtheria should now take a permanent place in every health officer's annual programme Sir Alexander Macgregor, M O H for Glasgow, gave a warning that the wave of incidence of diphtheria was not over He said that half the child population of Glasgow had been immunised but there was a serious need to protect the remainder of the children Dr G V T McMichael, M O H for Paisley, suggested that doctors should make it a routine practice to advocate immunisation in every home they visited He could not see how 75–80% of the children could be immunised without another intensified national propaganda campaign

Mr William Cunningham, chief sanitary inspector for Clydebank, said that before the raids they had theorised about emergency measures , in practice they found many of their pre-war deductions were wrong He was convinced that mutual help was the only way to meet the disorganisation which might be caused by attack All local authorities would do well to arrange for their public-health departments in an emergency to be augmented from the staffs of other authorities

Dr Nora Wattie, senior child welfare M O for Glasgow, had been surprised that most children had come through the bombing with so little effect But the small amount of clinical air-raid shock did not mean that no harmful influence was at work and the evacuation of children was still an urgent problem

Dr Frank Main M O H for Perth, thought that a drastic overhaul of school quarantine for infectious diseases was overdue Thousands of school attendances were unnecessarily lost each year by the exclusion of contacts, while a child with a severe cold might, and usually did, remain at school to infect the whole class

Letters to the Editor

NURSING RECONSIDERED

SIR,—Over ten years ago THE LANCET rendered a great public service in setting up a Commission on Nursing. Very little progress has been made since that commission reported because neither nurses nor their employers have been willing to face the problems involved The title of your leader "Nursing Reconsidered" gives us hope that THE LANCET is still interested in the nursing question

Many of us have worked for years on projects for a more comprehensive training for the general trained state-registered nurse We published our scheme in the *Nursing Mirror*, on which you were good enough to comment, because we had come to the conclusion that reorganisation of training would be useless unless carried out as part of a much wider plan to embrace the provision of suitable nursing care for everyone who wants it, including the old, the infirm, and the incurable—all those unfortunate people most inaccurately lumped together under the designation "chronic sick."

Looking at it from another angle we realised that there are thousands of women of all ages who could never be described as the "cream of our public school girls," many indeed who have left and are still leaving school at 14, who have a real liking for nursing and are prepared to do it, if conditions and salary scales are attractive The majority of these women have neither the aptitude, education, nor ambition to become teachers and administrators, but many have the patience, kindliness, faculty of accurate observation and practical good sense which are the marks of a good nurse We want to attract these people and give them a first-class training, and then register them and so provide the public with enough nurses

You rightly wish to protect the title of nurse, but unfortunately it is already debased, for it is given indiscriminately by private individuals and public bodies to trained and untrained alike We want to end this and to protect the public by registering every woman who makes a living at nursing and to debar from practice all the rest of the nursing miscellany In our scheme we ask for two types of nurses, Grade 1 and Grade 2, both state-registered, both well trained and excellent in quality Such a plan will not harm those state-registered nurses present and to come who can add other talents to the common store There will be ample room in the nursing profession for teachers, leaders and specialists if the public is to get all the nursing and the health teaching it needs

When the war started an Interdepartmental Committee on Nursing Services was sitting It had issued an interim report and was accumulating facts, lacking which final judgment on the needs of the nursing profession cannot be made This committee ceased working when the war started THE LANCET would do no more than seek the fruition of its own work if it could stimulate a demand for the resuscitation of the Athlone Committee

Richmond Surrey

EVELYN C PEARCE
G. B CARTER

HOME GUARD PROBLEMS

SIR,—In your last issue both Mr Abel and a Peripatetic correspondent mention what to me appears as the core of the Home Guard problem—viz , the isolation which military necessity will impose on treatment As administrator of the 1st British Medical Unit to Spain I had in the first months of the Spanish war some experience of improvised hospital work in forward areas where fighting was evolving from guerrilla form towards positional warfare This leads me to stress a point neglected (or rather, in my view, misrepresented) by Mr Abel—that of *concealment* He recommends that "A large notice with the letters H G and a red cross should be exhibited in a conspicuous position" so as to mark the casualty collection point My difficulty (which would be shared by the casualties) is that this distinctive marking would be available to the enemy, who would have a local air superiority in order to be engaging the Home Guard at all Facing the same opponents in Spain we had to discard all red cross markings, even brassards, as experience showed us that they invited priority of attack by aircraft artillery and sharpshooters

Apart from this criticism, which in no way affects the main argument, Mr Abel's communication demonstrates very clearly that the period during which the Home Guard was considered to be unique amongst fighting units anticipating a casualty rôle of nil (or was it annihilation ?) is now ended As Mr Abel points out, casualties may have to stay near their units, as evacuation may be a military impossibility This isolation may well continue for days or even weeks Their points of concentration then must be equipped to care for them until they can be passed further back, which means that some surgery *must* be done The scope of this work will in effect be parallel to that of a rural practice 50 years ago With the help of the district nurse staffing difficulties may be minimised , materials, under present conditions, obviously have to be "scrounged," or at any rate earmarked in advance of the emergency for transit to the point by M O (his own surgical kit), district nurse (her armamentarium) and voluntary housewife-nurses (scrounged ward kit)

On the question of nomenclature, it seems to me that the function of the Home Guard first-line casualty service indicates the title "casualty concentration point" "Casualty collecting point" is surely euphemistic if named with reference to any evacuating service and suggests that function is confined to assembly Manifestly more than this is required

K. W C SINCLAIR-LOUTIT

M O for Civil Defence, Finsbury

SANATORIUM STAFF

SIR,—Committees may come and committees may go, but a general appreciation of the present difficulties facing those engaged in the treatment of tuberculosis in this country is still long overdue The tuberculosis system of this country is not merely a useful thing to have around, it is of vital importance to the nation , this is even more evident since the advent of war At the present moment the sanatoria are not merely dealing with their usual quotas , one's clinical impression is that the number of discovered tuberculous cases is increasing, return cases are on the increase, and furthermore there is every indication that this increase will continue The actual treatment is not a matter which can be learnt out of a book, nor will the possession of a D P H give any clue to the problem , it is solely the prerogative of experience Yet at this time invaluable key personnel, and I say key personnel advisedly, are being removed from the staff of various sanatoria on the excuse that they are wanted in the Forces They are irreplaceable and surely their services are of more use to the nation in the proper place which is the sanatoria Their removal is short-sighted policy, and there can be no doubt what section of the community will eventually suffer—the general public

Royal Chest Hospital, E C 1

J A KENNEDY

SOLDIERS AT CIVILIAN V.D CLINICS

SIR,—Will you allow me to reply to the letters of Dr White and Dr Erskine in your issue of Sept 20 ?

That a man should have been diagnosed gonorrhœa by a civilian specialist and urethritis subsequently by a military specialist has done *no* harm, so far as I can see, except to the civilian specialist's amour propre If there is any known method of ensuring that some thousands of medical officers and some tens of thousands of soldiers all obey regulations—and there are regulations about filling up the pro formas—I should be glad to be informed of it The pro forma was made to fold once and be kept in the paybook , if it is filled up correctly it contains all the information necessary. There is no guarantee that a V 44, if adopted, would always be filled up correctly and always be sent with the patient when he attended a civil clinic A soldier's proficiency pay is restored from the date when his C O , acting on the recommendation of a V D specialist, considers he has regained his physical efficiency The date of his final test of cure therefore should have no effect on the loss of proficiency pay

Perhaps I did not make myself clear as regards "theorising" What I tried to convey was that it is impracticable, even forbidden, to tell civilian medical officers where a soldier (and his unit) is stationed where he is going and when This would entail a great deal of extra work and Hitler might be listening !

It is not suggested that the present scheme is perfect but it was evolved only after much thought and discussion If Army form I 1247 were sent backwards and forwards each time a man attended a civil clinic the chances of it surviving to reach the War Office, where it is reviewed, would be small If Dr Erskine will refer to my letter he will see I did not say there *are* a multiplicity of forms It must be remembered that the commercial traveller, the actor and the merchant seaman go to a clinic only when they wish Do they always attend regularly and do they never default? The soldier is *sent*, often unwillingly It is admitted that in some cases there are gaps in treatment, this is bound to occur in those cases where there are adequate military reasons why a man cannot attend A soldier suffering from V D has direct access to his M O, he merely informs a N C O that he wishes to "report sick"

If M O 's in charge of civilian V D clinics will communicate with me direct in future, or with the Army specialist who treated the case in the first instance, we shall be only too pleased to cooperate to the best of our ability, and I feel sure this method will secure better results than ventilating the matter in the press and casting aspersions on Army methods

T E Osmond,
Adviser in Venereal Disease

War Office

FATAL STINGS

Sir,—In his interesting and important account of cases of sudden death following wasp-stings Dr Dyke discusses the possible explanations of such tragedies The one he favours is, I think alone tenable—that the insect happens to puncture a vein in the dermis so that some of its venom enters the circulation directly instead of being "fixed" and destroyed by the skin I remember many years ago discussing this question with Sir Patrick Laidlaw to whom I never took a problem without receiving enlightenment or being shown a new angle from which to tackle it He agreed with me that the above explanation was the only one that covered the facts These rare cases afford another illustration of the importance of defensive reactions in the skin in protecting the organism from major disasters Brocq in his "Cliniques Dermatologiques" describes some cases in which this function of the skin is strikingly apparent Dr Dyke refers to the experiments of Arthus in which rapid death in dogs was caused by injecting bee-venom intravenously Injection of the venom intradermally, of course, merely provokes a local reaction in the skin Another example of the disaster that may follow direct penetration of the skin-barrier is afforded by the rapid development of acute streptococcal septicæmia in surgeons or in those doing autopsies after puncture-wounds as opposed to scratches

London, W 1 H W Barber

HAMMER TOE

Sir,—In times like these there is great need of a safe and simple cure for hammer toe which will permit the patient to return to duty with the minimal delay I suggest that such a cure can be obtained from removal of the proximal phalanx Wounding of the tendons must be avoided The expanded extensor tendon soon retracts and the end-result is a slightly shortened toe which retains some movement Inflammation in the bursa over the bony prominence of the hammer toe subsides after a few days, and the corn which is always present can quickly be removed by using collodion salicylicum (20%) as a corn paint No other method seems to me to need so short a time off duty and none gives so good a permanent result

Bradford Norbert Schick

JOHANN PETER FRANK

Sir,—The significance of Frank's pioneer work in the development of medical clinics and of public health in general has hardly been overlooked in Germany as completely as you suggest (*Lancet*, Sept 6, p 296) Laudatory references to him are to be found in standard handbooks of medical history—e g, Puschmann's—and in historical introductions to hygiene manuals, apart from the scholarly monographs of Rohlfs (1880), Doll (1910), and K E F Schmitz (*Veröff Med Verw* 1917, 6, 196) Frank was, moreover, honoured by medical historians of other nationalities Thus Garrison writes "His great work on public hygiene, as covering the whole of man's life from the womb to the tomb—sewerage, water-supply, even school hygiene sexual hygiene taxation of bachelors and suitable benches and meals for the children, as well as the ideal of a scientific 'medical police,' really left little for Pettenkofer and the moderns In the preventive medicine of the future, the name of Frank will loom larger with meanings, for he was himself a true modern" And quite recently Sigerist has published (*Bull Hist Med* Jan 1941) an oration by Frank, entitled The People's Misery Mother of Diseases of which he says "One hundred and fifty years have passed since Frank delivered his address A great deal has changed since then, and yet his words still sound incredibly modern"

S H Daukes

Wellcome Historical Medical Museum, N W 1

IMPETIGO CONTAGIOSA AND NEPHRITIS

Sir,—Dr Hope Simpson (*Lancet*, Sept 13, p 328) raises a point about nephritis following impetigo contagiosa which deserves comment Nephritis as a specific complication of impetigo must, he says, be very rare, whereas albuminuria and anasarca due to sensitivity to ammoniated mercury ointment is not uncommon Nephritis may at present be a rare complication of impetigo just as it is now a rare sequela of scarlet fever but there are numerous records of "impetigo-nephritis" in the literature (see the recent reviews of Silvers, S H *N Y St J Med* 1939, 39, 1093, Futcher, P H *Arch intern Med* 1940, 65, 1192) For example, R Southby and B L Stanton (*Med J Aust* 1926, 1, 127), in an inquiry about antecedent infection in 103 children with acute nephritis, found that 17 had had impetigo two to six weeks prior to admission to hospital On the other hand, sensitivity or idiosyncrasy to ammoniated mercury is, according to P Harper (*J Pediat* 1934, 5, 794), uncommon, and mercurial nephritis following its inunction must, if it occurs at all, be extremely rare, for this mercury compound, being very insoluble, is poorly absorbed

London, N W 3 Robert Cruickshank

TRAUMATIC ASPHYXIA

Sir,—Mr Grant Bonnin writing of traumatic asphyxia (Sept 20, p 333) states that no case has been reported showing petechiæ only I cannot believe that such cases are rare and suggest that they have not been reported as they are thought to be of little interest I have seen one air-raid casualty with petechiæ of the distribution characteristic of traumatic asphyxia This is the only case of which I have notes but I have seen the phenomenon in civil injuries The patient was a boy of 14, who was buried by debris in a shelter as a result of a bomb explosion I saw him 7 hours after injury He did not appear to be shocked or seriously hurt he had petechial hæmorrhages of the eyelids, brow, neck and upper part of chest None were found in the retinæ X-ray of his chest showed no abnormality, although for 2 days there were signs suggesting consolidation at the right base He did not spit blood His petechiæ faded rapidly and were gone in a week The exact nature of the injury was not determined The boy had not lost consciousness and said that he was rescued quickly

Leavesden Hospital Robin Pilcher

Sir,—The article by Mr Grant Bonnin recalls an interesting case of traumatic asphyxia which I saw 5 weeks ago A young woman had an epileptic attack and came under my care the same day She had subconjunctival hæmorrhages, "total" on the right side, but incomplete on the left Her face and neck were a vivid cyanotic hue She was wearing collar and tie at the time of the attack, and the discoloration stopped abruptly at the level of a constriction mark caused by the collar There was no discoloration below this level I was able to observe her for 3 days, during which time the high colour definitely faded, and also became rather more red than blue It is suggested that the epileptic spasm caused venous congestion with swelling of the neck, and that the tight collar then caused further congestion sufficient to produce the appearance described above the constricting band

Lowestoft E E T Taylor

SPLENECTOMY IN ICTERUS GRAVIS

SIR,—The paper by Hardwick and Lloyd in your issue of Sept 20 will have been read with interest by pædiatricians Recovery in this case does not justify the assumption that splenectomy is of any value in the treatment of this disease The operation was practised for a short time in the United States, but this treatment is now regarded as irrational It is generally accepted that the splenomegaly is a reaction to the disease rather than the cause In the last few years I have observed about fifty cases of erythroblastosis of which icterus gravis is the commonest clinical type Many were closely studied from the time of birth in a maternity hospital Spontaneous recovery often occurs and the recognised sequelæ are exceptional I have recorded several cases (*Trans Edinb obstetr Soc* 1939 p 63), and have since seen a number of others, in which a very active reticulocytosis and rapid rise of hæmoglobin occurred without any treatment So long as the ætiology remains obscure blood transfusion is likely to remain the therapeutic mainstay The object of blood transfusion is to maintain the hæmoglobin at a safe level until the rate of regeneration outstrips that of hæmolysis Definite blood coagulability with hæmorrhagic signs often occurs in severe cases of the disease and can be efficiently treated by the administration of vitamin K

J L HENDERSON

Dept of Child Life and Health Edinburgh

WAR-TIME BEHAVIOUR

SIR,—The Mental Health Emergency Committee has been making an inquiry into the behaviour of children and adults under war conditions Questionnaires have been sent out to child guidance clinics, mental treatment clinics, psychiatric wards of emergency hospitals, and to psychiatric social workers in reception areas This inquiry was intended to be only a preliminary survey and before proceeding further the committee would be much interested to learn whether any similar investigations are being carried out, either by groups or by individuals, and if so would welcome opportunities of coöperation

Mental Health Emergency Committee,
24, Buckingham Palace Road, S W 1

EVELYN FOX,
Hon Secretary

Public Health

From the School Reports

HOLLAND (LINCS)

Dr W G Booth throws some light on the cost of the school medical service in a small county The number of school-children on the roll at the end of 1940 was 10,180, and the net cost of their medical service was £5202, or 10*s* a head per annum The Board of Education grants supplied £3282 the remainder came from the rates and absorbed 2*d* out of the general elementary-education rate of 4*s*

The use of paper towels was continued in some schools, and it was hoped to extend this system throughout the county, but that is of course impossible at present In view of the increasing prevalence of scabies this is unfortunate, for the communal school towel is open to suspicion of spreading the acarus Mr C A Johnston, senior school dentist, calls attention to the very bad state of the mouths of school entrants Caries of the temporary teeth seems to be increasing in spite of the undoubted improvement in the general nutrition of children and of expectant mothers

KETTERING

The average number of children on the school registers in 1940 was 4119 and the number of received children who remained in the borough at the end of the year was 2563 The ebb and flow of the evacuated population, most of which came from London, is interesting There was a steady reduction from 2533 in January to 1434 in August, the number doubled in September, and in October reached 1397 It has not been fully realised how great is the strain of this fluctuation on billeting and education in reception areas During the year 112 children were admitted to hostels because they were unfit for billeting Of these 26 were taken home by their parents and 65 were returned to billets because they were cured Dr Cecil Hogg, in his school report, gives some information on unsatisfactory evacuees which will be useful in the future, for evacuation has given us the only chance we have ever had to find out the number of objectionable children what percentage of them can be cured and how long it will take to cure them

Infectious Disease in England and Wales

WEEK ENDED SEPT 20

Notifications —The following cases of infectious disease were notified during the week smallpox 0 , scarlet fever, 1140 , whooping-cough 2289 , diphtheria 957 , paratyphoid, 125 , typhoid, 27 , measles (excluding rubella), 612 , pneumonia (primary or influenzal), 434 , puerperal pyrexia, 134 , cerebrospinal fever, 121 , poliomyelitis, 28 , polio-encephalitis, 3 , encephalitis lethargica 6 , dysentery, 102 , ophthalmia neonatorum, 76 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Sept 17 was 1266 , including scarlet fever, 129 diphtheria, 252 measles, 28 , whooping cough, 571 , enteritis 22 , chicken pox, 24 erysipelas, 20 , mumps, 6 poliomyelitis, 2 , dysentery, 14 , cerebrospinal fever 21 , puerperal sepsis, 12 enteric fevers 45 , german measles, 3 , malaria 1 , polio-encephalitis, 2 , other diseases (non-infectious), 44 , not yet diagnosed, 75

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Dr Thin who died at Stow on Sept 18 in his 81st year had spent the greater part of his professional life in general practice in Edinburgh where his energy and kindly disposition earned him the esteem and admiration of colleagues and patients For fifty years he was associated with the Royal College of Physicians, becoming president 1931–33 when the LL D Edin was conferred on him After qualifying in 1887 and working in the Royal Infirmary and Maternity Hospital he went to Vienna and Prague studying diseases of the ear nose and throat and the use of obstetrical forceps Then as assistant to Dr George Hunter of Linlithgow he lived in South Queensferry where he was assistant surgeon to the Forth Bridge works during the period of erection Later his practice became very large and he did not find much time for writing, but he recorded in the *Edinburgh Medical Journal* a study of five generations of familial cysteinuria He was a lively member of the Old Edinburgh Club and his antiquarian interest found expression in " The Old Infirmary and Earlier Hospitals " and " Medical Quacks of the Eighteenth Century," while at the request of his college he wrote biographical sketches for the portraits hung on the college walls He carried his own years lightly and continued in practice until a few weeks of his death

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THE death of Dr Neil Campbell is announced from Africa where he was serving with the South African Forces Dr. Campbell graduated in Edinburgh in 1927, taking the M D in 1939 After a house appointment at the Royal Infirmary he went out to Natal and set up in practice at Durban where his ability was recognised by his election to the staff of the King Edward Hospital, Durban During his student days he was a keen angler and athlete with a good record at rugby and field athletics He leaves a widow and two young children

It is not suggested that the present scheme is perfect but it was evolved only after much thought and discussion If Army form I 1247 were sent backwards and forwards each time a man attended a civil clinic the chances of it surviving to reach the War Office, where it is reviewed, would be small If Dr Erskine will refer to my letter he will see I did not say there *are* a multiplicity of forms It must be remembered that the commercial traveller, the actor and the merchant seaman go to a clinic only when they wish Do they always attend regularly and do they never default? The soldier is *sent*, often unwillingly It is admitted that in some cases there are gaps in treatment, this is bound to occur in those cases where there are adequate military reasons why a man cannot attend A soldier suffering from V D has direct access to his M O, he merely informs a N C O that he wishes to "report sick"

If M O's in charge of civilian V D clinics will communicate with me direct in future, or with the Army specialist who treated the case in the first instance, we shall be only too pleased to cooperate to the best of our ability, and I feel sure this method will secure better results than ventilating the matter in the press and casting aspersions on Army methods

T E OSMOND
War Office Adviser in Venereal Disease

FATAL STINGS

SIR,—In his interesting and important account of cases of sudden death following wasp-stings Dr Dyke discusses the possible explanations of such tragedies The one he favours is, I think alone tenable—that the insect happens to puncture a vein in the dermis so that some of its venom enters the circulation directly instead of being "fixed" and destroyed by the skin I remember many years ago discussing this question with Sir Patrick Laidlaw to whom I never took a problem without receiving enlightenment or being shown a new angle from which to tackle it He agreed with me that the above explanation was the *only one* that covered the facts These rare cases afford another illustration of the importance of defensive reactions in the skin in protecting the organism from major disasters Brocq in his "Cliniques Dermatologiques" describes some cases in which this function of the skin is strikingly apparent Dr Dyke refers to the experiments of Arthus in which rapid death in dogs was caused by injecting bee-venom intravenously Injection of the venom intradermally, of course, merely provokes a local reaction in the skin Another example of the disaster that may follow direct penetration of the skin-barrier is afforded by the rapid development of acute streptococcal septicæmia in surgeons or in those doing autopsies after puncture-wounds as opposed to scratches

London, W 1 H W BARBER

HAMMER TOE

SIR,—In times like these there is great need of a safe and simple cure for hammer toe which will permit the patient to return to duty with the minimal delay I suggest that such a cure can be obtained from removal of the proximal phalanx Wounding of the tendons must be avoided The expanded extensor tendon soon retracts and the end-result is a slightly shortened toe which retains some movement Inflammation in the bursa over the bony prominence of the hammer toe subsides after a few days, and the corn which is always present can quickly be removed by using collodion salicylicum (20%) as a corn paint No other method seems to me to need so short a time off duty and none gives so good a permanent result

Bradford NORBERT SCHICK

JOHANN PETER FRANK

SIR,—The significance of Frank's pioneer work in the development of medical clinics and of public health in general has hardly been overlooked in Germany as completely as you suggest (*Lancet*, Sept 6, p 296) Laudatory references to him are to be found in standard handbooks of medical history—e g, Puschmann's—and in historical introductions to hygiene manuals, apart from the scholarly monographs of Rohlfs (1880), Doll (1910), and K E F Schmitz (*Veröff MedVerw* 1917, 6, 496) Frank was, moreover, honoured by medical historians of other nationalities Thus Garrison writes "His great work on public hygiene, as covering the whole of man's life from the womb to the tomb—sewerage water-supply, even school hygiene, sexual hygiene, taxation of bachelors and suitable benches and meals for the children, as well as the ideal of a scientific 'medical police,' really left little for Pettenkofer and the modern In the preventive medicine of the future, the name of Frank will loom larger with meanings, for he was himself a true modern" And quite recently Sigerist has published (*Bull Hist Med* Jan 1941) an oration by Frank, entitled The People's Misery Mother of Disease, of which he says "One hundred and fifty years have passed since Frank delivered his address A great deal has changed since then, and yet his words still sound incredibly modern"

S H DAUKES
Wellcome Historical Medical Museum, N W 1

IMPETIGO CONTAGIOSA AND NEPHRITIS

SIR,—Dr Hope Simpson (*Lancet*, Sept 13, p 328) raises a point about nephritis following impetigo contagiosa which deserves comment Nephritis as a specific complication of impetigo must, he says, be very rare, whereas albuminuria and anasarca due to sensitivity to ammoniated mercury ointment is not uncommon Nephritis may at present be a rare complication of impetigo just as it is now a rare sequela of scarlet fever but there are numerous records of "impetigo nephritis" in the literature (see the recent reviews of Silvers, S H *N Y St J Med* 1939, 39, 1093, Futcher, P H *Arch intern Med* 1940, 65, 1192) For example, R Southby and B L Stanton (*Med J Aust* 1926, 1, 127), in an inquiry about antecedent infection in 103 children with acute nephritis, found that 17 had had impetigo two to six weeks prior to admission to hospital On the other hand, sensitivity or idiosyncrasy to ammoniated mercury is, according to P Harper (*J Pediat* 1934, 5, 794) uncommon, and mercurial nephritis following its inunction must, if it occurs at all, be extremely rare, for this mercury compound, being very insoluble, is poorly absorbed

London, N W 3 ROBERT CRUICKSHANK

TRAUMATIC ASPHYXIA

SIR,—Mr Grant Bonnin writing of traumatic asphyxia (Sept 20, p 333) states that no case has been reported showing petechiæ *only* I *cannot* believe that such cases are rare and suggest that they have not been reported as they are thought to be of little interest I have seen one air-raid casualty with petechiæ of the distribution characteristic of traumatic asphyxia This is the only case of which I have notes but I have seen the phenomenon in civil injuries The patient was a boy of 14, who was buried by debris in a shelter as a result of a bomb explosion I saw him 7 hours after injury He did not appear to be shocked or seriously hurt he had petechial hæmorrhages of the eyelids, brow, neck and upper part of chest None were found in the retinæ X-ray of his chest showed no abnormality, although for 2 days there were signs suggesting consolidation at the right base He did not spit blood His petechiæ faded *rapidly and were gone in a week The exact nature* of the injury was not determined The boy had not lost consciousness and said that he was rescued quickly

Leavesden Hospital ROBIN PILCHER

SIR,—The article by Mr Grant Bonnin recalls an interesting case of traumatic asphyxia which I saw 5 weeks ago A young woman had an epileptic attack and came under my care the same day She had subconjunctival hæmorrhages, "total" on the right side, but incomplete on the left Her face and neck were a vivid cyanotic hue She was wearing collar and tie at the time of the attack, and the discoloration stopped abruptly at the level of a constriction mark caused by the collar There was no discoloration below this level I was able to observe her for 3 days, during which time the high colour definitely faded, and also became rather more red than blue It is suggested that the epileptic spasm caused venous congestion with swelling of the neck, and that the tight collar then caused further congestion sufficient to produce the appearance described above the constricting band

Lowestoft E E T TAYLOR

SPLENECTOMY IN ICTERUS GRAVIS

SIR,—The paper by Hardwick and Lloyd in your issue of Sept 20 will have been read with interest by pædiatricians Recovery in this case does not justify the assumption that splenectomy is of any value in the treatment of this disease The operation was practised for a short time in the United States, but this treatment is now regarded as irrational It is generally accepted that the splenomegaly is a reaction to the disease rather than the cause In the last few years I have observed about fifty cases of erythroblastosis of which icterus gravis is the commonest clinical type Many were closely studied from the time of birth in a maternity hospital Spontaneous recovery often occurs and the recognised sequelæ are exceptional I have recorded several cases (*Trans Edinb obstetr Soc* 1939, p 63), and have since seen a number of others, in which a very active reticulocytosis and rapid rise of hæmoglobin occurred without any treatment So long as the ætiology remains obscure, blood transfusion is likely to remain the therapeutic mainstay The object of blood transfusion is to maintain the hæmoglobin at a safe level until the rate of regeneration outstrips that of hæmolysis Definite blood coagulability with hæmorrhagic signs often occurs in severe cases of the disease and can be efficiently treated by the administration of vitamin K

J L HENDERSON

Dept of Child Life and Health, Edinburgh

WAR-TIME BEHAVIOUR

SIR,—The Mental Health Emergency Committee has been making an inquiry into the behaviour of children and adults under war conditions Questionnaires have been sent out to child guidance clinics, mental treatment clinics, psychiatric wards of emergency hospitals, and to psychiatric social workers in reception areas This inquiry was intended to be only a preliminary survey and before proceeding further the committee would be much interested to learn whether any similar investigations are being carried out, either by groups or by individuals, and if so would welcome opportunities of cooperation

Mental Health Emergency Committee,
24, Buckingham Palace Road, S W 1

EVELYN FOX,
Hon Secretary

Public Health

From the School Reports

HOLLAND (LINCS)

Dr W G Booth throws some light on the cost of the school medical service in a small county The number of school-children on the roll at the end of 1940 was 10,180, and the net cost of their medical service was £5202, or 10*s* a head per annum The Board of Education grants supplied £3282, the remainder came from the rates and absorbed 2*d* out of the general elementary-education rate of 4*s*

The use of paper towels was continued in some schools, and it was hoped to extend this system throughout the county, but that is of course impossible at present In view of the increasing prevalence of scabies this is unfortunate, for the communal school towel is open to suspicion of spreading the acarus Mr C A Johnston, senior school dentist, calls attention to the very bad state of the mouths of school entrants Caries of the temporary teeth seems to be increasing in spite of the undoubted improvement in the general nutrition of children and of expectant mothers

KETTERING

The average number of children on the school registers in 1940 was 4119 and the number of received children who remained in the borough at the end of the year was 2863 The ebb and flow of the evacuated population, most of which came from London, is interesting There was a steady reduction from 2533 in January to 1434 in August, the number doubled in September, and in October reached 4397 It has not been fully realised how great is the strain of this fluctuation on billeting and education in reception areas During the year 112 children were admitted to hostels because they were unfit for billeting Of these 26 were taken home by their parents and 65 were returned to billets because they were cured Dr Cecil Hogg, in his school report, gives some information on unsatisfactory evacuees which will be useful in the future, for evacuation has given us the only chance we have ever had to find out the number of objectionable children, what percentage of them can be cured and how long it will take to cure them

Infectious Disease in England and Wales

WEEK ENDED SEPT 20

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ABORTION RATES IN STOCKHOLM

FIGURES relating to illegally induced abortion are not easily come by in this country An analysis of 800 cases treated at the Sabbatsberg Hospital, Stockholm, from 1935 to 1937 throws light on the fundamental causes of the practice The investigation, reported by Dr G Inghe and Dr G A Jonsson,[1] showed abortion to be much commoner among unmarried than married women, as might be expected Among unmarried women the rate reaches a maximum between the ages of 25 and 30 , in married women it rises with age Figures collected from public hospitals showed that pregnancy in unmarried women resulted in birth of the child at term and eventual marriage of the parents in a third of the cases, illegitimate births in a third and abortion in a third Many cases of illegal abortion, however, do not reach hospital, and the practice is estimated to be more common than pregnancy going to term among unmarried women About a third of the 800 cases admitted to having attempted to procure abortion, usually medicinally Most of the mothers were working women earning comparatively small wages—waitresses, kitchen hands, hairdressers and shop assistants Of the married women, those with several children and coming from overcrowded houses were more numerous than those with one or two Most of them had used contraceptives, but seldom selected the most reliable or used them regularly Many of those who knew of reliable contraceptives had not used them because of distaste, or because they grudged the inconvenience About half the 800 women were married, or living as married, and most of the rest had regular sexual intercourse , intercourse was occasional in only 7% Most of the unmarried women had sought abortion on economic grounds Poverty and unemployment had delayed marriage for some and others doubted whether they would be able to support their children Nearly half feared the social criticism which birth of an illegitimate child would provoke, and two-thirds dreaded the anger of their parents Only a third of the whole series had any idea that induction of abortion was attended with risk Among the married women, 75% gave economic reasons for their action, 10% considered themselves to be too much exhausted to have more children and 40% wished to space their children , 20% feared the inheritance of some abnormality by the child, or were influenced by memories of an unhappy childhood Dr Gårdlund, in his experience of practice in Stockholm, found that requests for abortion increased year by year Some years ago he received 170–190 requests of the kind yearly, but in 1937 the figure rose to 266, in 1939 to 278, and in 1940 to 410 Among these the cases in which he could legally undertake abortion amounted to 7 or 8 a year

"WHO WALK ALONE"

Dr Perry Burgess, president of the American Leprosy Foundation, has taken the history of a young American soldier who developed leprosy after service in the Spanish-American war in the Philippines, and told it in autobiographical form (London J M Dent and Sons Pp 318 12s 6d) His reconstruction of the emotional experience of this unfortunate young man from the facts given him during many intimate years have such verisimilitude that it is difficult to credit they were not indeed his own It shows, moreover, that the author possesses that inward sight which is the mark of the true artist, and while the tale is told in factual style the psychological element is never forgotten Nine years after the young man's return from the Philippines to America he developed leprosy, and a year afterwards was sent out to the Leper Colony on the Island of Culion in the Philippines There he started another stage of his painful spiritual pilgrimage Slowly he determined to make the best of a world that had suddenly shrunk to the cramping confines of a leprosarium He made his house and garden the most beautiful in the colony and gradually became interested more and more in his fellow sufferers He organised work schemes, and received the hearty cooperation of both authorities and patients All the time he grew in spiritual stature, and his record should be put amongst the many others of those who have achieved nobility through suffering Despite the horror which leprosy, above all other diseases, seems to inspire, this book is not gloomy but vital and lively The story reveals the mind of the incurable with an uncommon vividness, and though it is a story it is authentic

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INDEX OF FOOD INVESTIGATION —The fascicle dated March 1941 (vol 12, no 4) contains 545 items, varying from brief abstract to a mere mention of articles on every aspect of food investigation which have appeared in Empire and American journals The foreign references are few and old Food investigation has been quickened by war conditions (this issue alone reveals 650 workers) and an index to the literature is essential to codify results and prevent overlapping From H M Stationery Office 4s 6d

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Medical News

University of Sheffield

At recent examinations the following were successful —

FINAL EXAMINATION FOR M B , CH B

Parts II and III —Hazem Barrada, Pauline M Hardcastle, Labib Ishak, L F Q Maclaine, and Margaret E Withers

Medical Honours

The following honours have lately been awarded —

O B E —Acting Wing Commander J P Huins, M R C S , and Acting Squadron Leader B C Curwood, M B Birm

D S C —Temp Surgeon Lieutenant A G Reid, M B Aberd R N V R , H M S *Mashona*

Medical Prisoners of War

The following R A M C officers have *been posted as* prisoners of war Captain A G V Aldridge, M B *Camb* , Temp Major Robert Harvey, F R C S E , Temp Major P D C Kinmont, M B Lond , and Temp Major G A W. Neill, M D Belf

War-time Nurseries

On Oct 29 the Nursery School Association of Great Britain will meet in consultation with the National Society of Day Nurseries at the Royal Institute of British Architects Lord Horder will take the chair at 10 30 A M , and other speakers who will discuss problems of establishing war-time nurseries will be Miss Florence Horsburgh, Mr J C Wrigley and Miss Zoe Puxley (Ministry of Health), Miss Greaves (Board of Education), Lady Reading (N S D N) Dr G H Hogben (M O H for Tottenham), Lady Allen of Hurtwood and Miss Freda Hawtrey (N S A) Further information may be had from the secretary of the association, 8, Endsleigh Gardens, London, W C 1

Royal Society of Medicine

A meeting of the clinical section of this society will be held at the Westminster Hospital on Friday, Oct 10, at 2 15 P M The section of orthopædics will meet at Horton Hospital, Epsom, on Oct 11, at 2 P M , when short papers will be read and there will be a demonstration of special cases

Society of Medical Officers of Health

Sir Alexander Macgregor of Glasgow has taken office as president of this society in succession to Dr F T H Wood of Bootle

London Homœopathic Hospital

On Thursday, Oct 9, at 2 30 P M , Dr Thomas Stonham will give a lecture introducing the autumn and *winter post*graduate session at this hospital From October to May, on Mondays and Thursdays, at 2 30 P M , Dr Charles Wheeler will give a course on homœopathic materia medica and therapeutics, and from October to December, on Fridays at 2 30 P M , Sir John Weir will give ten Compton Burnett lectures on homœopathic philosophy and prescribing Tutorial classes and clinical tutorials will also be held throughout the session

Queen's Nurses

During 1940 the Queen's nurses and village nurse midwives attended 85,242 confinements for which no doctor was engaged, and they also acted as maternity nurse for 36,560 cases for which doctors were engaged There are now 1530 Queen's nurses and 2782 village nurse midwives, making 4312 in all This is a decrease of 72 which is said to be due to the reorganisation of the associations and to less work in some coastal areas

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[1] *Nord Med* March 8, 1941 p, 725

ORIGINAL ARTICLES

CYSTICERCOSIS OF THE BRAIN
WITH EPILEPSY AND PAPILLŒDEMA

W E CARNEGIE DICKSON,
M D B SC EDIN , F R C P E
DIRECTOR PATHOLOGICAL DEPARTMENT, WEST END HOSPITAL FOR NERVOUS DISEASES

J D WILLIS,
M B N Z , M R C.P.
CAPTAIN, N Z M C ,
FORMERLY RESIDENT MEDICAL OFFICER AT THE HOSPITAL

SINCE the work of MacArthur[1] at Millbank, infestation of the brain and eye with the larval cysts of *Tænia solium* has been recognised as less uncommon and more important than was formerly supposed and it seems likely that infestation with tapeworm will be frequent among our forces in the Near and Middle East When previously healthy and often comparatively young soldiers, especially any who have been abroad, for example in India, have been invalided out of the service because of " epilepsy " the diagnosis in many instances has, on further investigation, proved to be an infestation with cysticerci The epileptiform fits were usually accompanied by severe and otherwise unaccountable headaches and various obscure nervous symptoms In fatal cases, sometimes as many as 300 or 400 cysts have been found in a single brain , and in these patients there has as a rule, been no definite history of any previous intestinal tapeworm-infestation Almost all the cases recorded in this country have been in soldiers, or in soldiers' families

The case which we record here gives a typical clinical history, and also illustrates several other important points upon which MacArthur lays especial emphasis, for instance, that serious cerebral symptoms supervene as a rule only when death and degeneration of the larvæ themselves have taken place , this is because the cysts then tend to swell from imbibition of fluid, and irritative phenomena supervene in and around them (fig II*b* and lower specimen in fig IV, plate)

While the parasite is still alive it becomes surrounded and shut off by a zone or capsule of thickened and proliferated glia and a varying amount of fibrous tissue ; and, unless the cysticercus is in some specially vital position in the brain, a species of symbiotic harmony between parasite and host is established, which may last for several and perhaps for many years Serious pathological results thus in many instances ensue only on and after the death of the parasites, so that attempts at killing them by drugs must as yet be regarded as ill-advised as is also the attempted surgical removal of any of the cysts in the brain, unless they are causing serious symptoms on account of their position, or, as in the present case, because the rather unusual complications of progressive papillœdema and raised intracranial pressure threaten the patient's eyesight

Since the larvæ often survive " symbiotically " for a number of years, the more active destructive and necrotic changes around them leading to the epileptiform seizures may not come on until after a considerable " latent period " If the patient does not die in the meantime, the zone of glial and fibrous-tissue sclerosis around the dead and degenerating cysticerci gradually becomes more pronounced , and calcification, beginning in the scolex itself and gradually involving the cyst-wall, tends to be produced—perhaps only after three or four years—and X-ray diagnosis may only then become possible

At this late stage in the development of the disease, the occurrence of eosinophilia in the blood is exceptional, and the specific serum-reactions are often negative If, as in the present case, cysticerci can be palpated in the subcutaneous or muscular tissues or demonstrated in radiograms, the diagnosis may be confirmed by the examination of biopsy-specimens (fig I, plate, and fig II)

CASE-RECORD

A man of 32 was admitted to hospital under Dr Neill Hobhouse on Jan 23, 1940, complaining of " fainting turns " for three years, and severe frontal and occipital headaches for a month A diagnosis of cysticercosis had been made by Dr Macdonald Critchley in 1938 The patient had been an infantryman in India from 1927 to 1933, and during that time he had a considerable amount of illness, including " dysentery " twice, threadworm infestation twice, and several attacks of " P U O " , but, as far as he himself was aware, he had never suffered from intestinal tapeworm-infestation. Previous to going to India, he had never suffered from fits of any kind, and there was no family history of epilepsy In 1937 he became a post-office employee, and three months later had his first epileptiform attack, his own description of this being " I was just walking along when suddenly everything went black and I dropped " He was unconscious for only two or three minutes and was told that he had had generalised twitching of the limbs, but no cyanosis, nor was there any incontinence of urine or biting of the tongue He had a second attack six months later, beginning with " twitching of both elbows and shoulders " In subsequent fits this twitching constituted a premonitory " aura," giving him time to lie down These attacks came on at intervals of five or six months, with freedom from any symptoms between times His last attacks—two in one day—had occurred five weeks previous to admission and began with cramp like flexion of the fingers of the left hand into the palm and pain shooting up the forearm, followed by unconsciousness, on recovery from which he found that he had temporarily lost the use of his left hand, a disability which lasted nearly a week Intermittent severe frontal headaches then supervened, shooting round the right side of the head to the occiput, with pain in the back of the neck and mistiness of vision in the right eye There was no nausea or vomiting In 1938, a tense subcutaneous nodule about $\frac{1}{2}$ in in diameter was detected at the right costal margin near the ninth costal cartilage

The patient was well nourished, intelligent and fully coöperative Two other tense and painless subcutaneous nodules about $\frac{1}{4}$ in in diameter were found in the lower thoracic region, one on each side of the vertebral column about 2 in from the midline Cranial nerves pupils of medium size, equal, central and circular , pupillary reactions normal Vision 6/12 in each eye , visual fields full Fundi (Mr Joseph Minton) showed papillœdema on both sides, + 1 5 D, with hæmorrhage and exudate around both discs There were coarse lateral nystagmoid jerks both to right and left Tongue deviated to the right when extended Other cranial nerves normal Absent upper abdominal reflexes but no other abnormal physical signs found No nodules were palpable in the limbs By Jan 26 the papillœdema had increased to 3 D in the left eye, and to 2 D in the right , it was therefore decided to perform a ventriculography to ascertain if possible the position of any block in the cerebrospinal circulation

Jan 25 Examination of blood Coagulation-time $3\frac{1}{2}$ min , bleeding-time not prolonged Red cells 4,900,000, hæmoglobin (Haldane) 90%, colour index 0 92 ; white cells 7400 (polymorphs 47 5% , lymphocytes, small 34 5%, large 10 5%, total 45% ; large monocytes 1 5% , eosinophils 6% , basiphils 0)—i e , a moderate eosinophilia, with some neutropenia and a relative lymphocytosis, a considerable proportion of the lymphocytes being of large (more immature) type

Jan 27 Lumbar puncture Pressure 300 mm of water , fluid clear and colourless Cells 29 per c mm (small lymphocytes 91%, small endothelial cells 6%, large endothelial cells 3%, polymorphs 0, red cells 0) , total protein 0 06% , globulin a faint trace in excess , Lange's colloidal gold curve, 0 1/0 1/0 1 · 1/0 0 0 0 0 0 Wassermann and Meinicke reactions in blood negative On X-ray examination of the skull, two small rounded suspicious shadows (one about the centre of the right parietal cortical region and the other just below and $\frac{3}{4}$ in to the left of the shadow of the calcified pineal) were seen in the anteroposterior view but not in the lateral In the soft parts around the pelvis and in the upper and lower limbs and neck, typical shadows of calcified cysticerci were demonstrated (fig I)

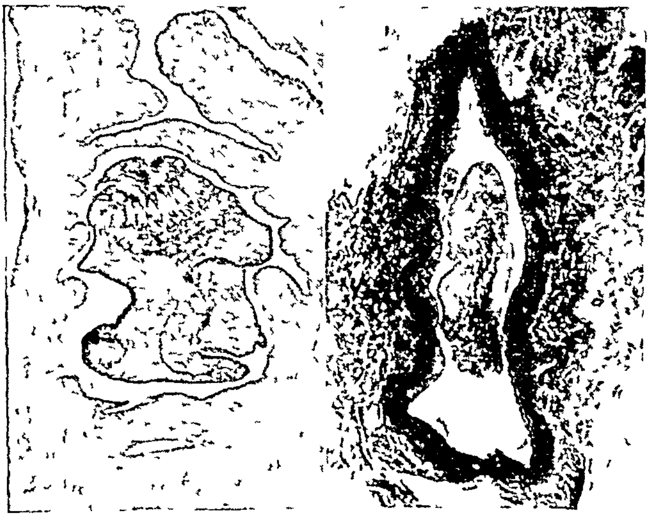
On Jan 30 a ventriculography was done, but no abnormality was detected in the ventricular system The fluid from the right lateral ventricle was clear and colourless and showed cells 1 (small lymphocyte) per c mm , total protein 0 01% , globulin no excess , Wassermann and Meinicke reactions negative , Lange's colloidal gold curve, 0 0 1/0 0 · 0 0 0 0 0 0 0

The ventriculography was followed by a right subtemporal decompression by Mr Geoffrey Knight The meninges were under considerable tension, and on opening them several small firm nodules were palpable just beneath the surface of the cortex in both the motor and sensory areas Two of these were excised for microscopical examination (fig II*b*) The patient's immediate post operative condition was good, some temporary paresis of the long finger-flexors of the left hand gradually passing off and there being no appreciable sensory changes Ten days later the papillœdema had subsided to 0 5 D in the right and 1 D in the left eye, and there was mild analgesia to pin prick and cotton-wool and two point discrimination over the left palm All of these signs gradually passed off except for flexor paresis of the left index finger On Feb 9 two subcutaneous cysticercal cysts were removed from the patient's back for biopsy (fig II*a*)

Feb 14 The patient had an epileptiform attack similar to those from which he had suffered before admission, and during the subsequent three weeks there was flaccid paralysis of, and loss of sensation over, the left hand and forearm, and several Jacksonian attacks occurred in the paralysed limb There was then rapid improvement, with return of power of movement, the cortical sensory loss being the last to recover

On April 3 the patient was discharged in excellent condition, with the decompression area well healed The optic discs were flat and showed no evidence of the previous papillœdema, vision being as on admission (R V and L V 6/12), and there were now no appreciable motor or sensory differences in the two arms

Figs II*a* and *b* are from sections of the biopsy-specimens excised from the lumbar muscles and brain respectively In fig II*a* the larva is healthy and well-preserved, but, in fig II*b*, that from the right motor cortex shows a typically degenerated dead larva enclosed in a calcified cyst, previously tensely distended, but which had ruptured and become collapsed during surgical removal For comparison with these, fig III is from a post-mortem specimen of a brain of an ex-soldier aged 28, which we owe to the kindness of Dr C Worster-Drought It shows the naked-eye appearance and distribution of the cysticerci in the brain (the right half of which was examined and in which it was estimated that there were about a hundred cysts present)[2] Fig IV, from this brain, shows in adjacent convolutions in the same section a healthy "symbiotic" cysticercus lying within its caudal vesicle or bladder, while below is a dead and disintegrating larva in a degenerated cyst which is becoming distended with fluid and the wall of which shows the development of irritative and chronic inflammatory reaction after the death of the parasite, as noted by MacArthur Details of the upper cyst are shown in fig V



a *b*

FIG II—(*a*) Biopsy specimen of cysticercus from lumbar muscles of case recorded in text Oblique section of scolex passing through two of the four suckers and base of rostellum with its armature of hooklets and its musculature Compare the well preserved structure of this undegenerated and "symbiotic" larva with the dead and degenerated parasite from the brain illustrated in (*b*) This shows one of two cysts removed from the hand area of the right motor cortex The cyst which burst and became collapsed during removal is partially calcified Mallory's connective tissue stain × 50

DISCUSSION

Attention has been drawn in several recent papers and articles[3] to the comparative frequency with which the brain is attacked in patients with cysticercosis—in different series varying from 40 to 75 or 80% of the total number The eye itself may be the site of infestation which may destroy the sight, as in Worster-Drought's case Hugh Cairns, in the discussion which followed MacArthur's paper, was of opinion that "there was no place for operative surgery in cases of multiple cysticerci of the brain," and none of the patients he had seen had anything beyond a slight degree of papillœdema "It was conceivable that there might be such cases (e g, a cyst in the precentral gyrus) in which surgery could help, but they must be rare" The case we now record appears, therefore, to be one of those rare instances in which sight was threatened by a progressive bilateral papillœdema and the raised intracranial pressure, and in which surgical interference was justified by the results obtained—the rapid disappearance of the papillœdema and the lowering of the intracranial pressure, as well as the reduction in the frequency of the fits following the subtemporal decompression

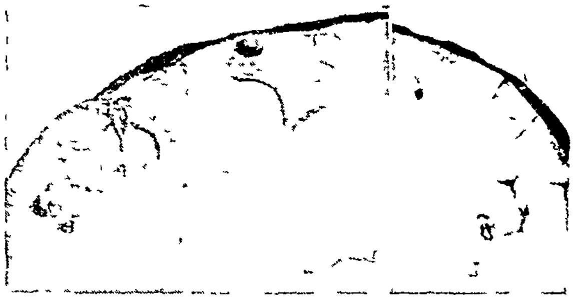


FIG III—Cysticercosis of brain of an ex soldier aged 28, who had enlisted at the age of 18 (Left) in, or just beneath, the frontal cortex are one degenerating and two well preserved cysts, whilst (right) in the occipital cortex are seen one semi degenerated and shrivelled, and two old degenerated and fibrosed, cysticerci Dr Worster Drought's case, half natural size

In his series of 61 patients with cerebral cysticercosis MacArthur mentions only one case in which any serious degree of papillœdema led to blindness some time before death, while in Dixon and Smithers's[4] review of 71 cases there were only 7 with papillœdema More recently, Gottlieb[5] described a case of cysticercosis in a girl, aged 17, with epilepsy, 2 diopters of papillœdema in both eyes, a cerebrospinal-fluid pressure in excess of 300 mm of water, and numerous calcified cysts in the brain demonstrable radiographically

As shown in fig III, most of the cysts lie within the cortex, or just beneath it, relatively few being found in the meninges or deeply within the white matter Although collectively they represent a considerable space-occupying lesion, individually they produce comparatively little interference with the cerebrospinal-fluid circulation and this is perhaps the explanation of the relative infrequency of papillœdema or of raised intracranial pressure, the occurrence of which probably indicates swelling of the brain around degenerating cysts such as that illustrated in the lower part of fig IV No evidence of hydrocephalus was found in the ventriculograms, which showed a normal ventricular system

The character of the epileptiform attacks depends largely on the site of the cysts, as well as on the occurrence of the degenerative reaction and swelling around and in the dying or dead cysticerci The symptoms sometimes produced may simulate those of acute encephalitis, disseminated sclerosis or cerebral tumour, and in some patients, with or without fits, psychical symptoms may predominate and resemble melancholia, acute mania, schizophrenia or certain less grave mental disorders

When in the subcutaneous tissues and muscles, the swellings, if numerous, may simulate von Recklinghausen's peripheral neurofibromatosis or even nodular leprosy (Greig)[4] As is well known, the cysts when in the muscles and near the surface of the body often become palpable or even visible in "crops" This is due to a sudden increase in their fluid-content following the death of the larva rather than to the development of new parasites—previously flaccid and inconspicuous cysts becoming tense and palpable It is conceivable that, in a similar way, several cysts in certain parts of the brain, particularly if situated in the vicinity of the mid-brain and below the tentorium might simultaneously become swollen and obstruct the cerebrospinal-fluid circulation and lead to raised intracranial pressure and bilateral papillœdema, without necessarily producing either hydrocephalus or ventricular distortion especially in cases seen early

The diagnosis of cysticercosis of the brain rests primarily on the occurrence of epilepsy or other cerebral symptoms usually, but not invariably, associated with palpable subcutaneous and intramuscular nodules and a history of residence abroad particularly in India It is confirmed by X-ray appearances and by biopsy when possible. The radiographical appearances are extremely variable, depending on the degree of calcification which may have developed—the brain being usually the last place in which calcification begins Skin-reactions and complement-fixation tests have not so far proved reliable guides The presence of eosinophilia is suggestive in the earlier stages of infestation but is inconstant or absent later One great advantage of a correct diagnosis is the removal of the fear of hereditary transmission and the stigma of idiopathic epilepsy, in soldiers it does away with the difficulty of obtaining a pension, for the infestation may usually be regarded as a consequence of their military service abroad

The prognosis, though serious is not, as has commonly been thought, uniformly bad In a small proportion of cases—5 in Dixon and Smithers s 71 patients—the fits ceased after a variable period A decompression operation is justifiable and desirable where, as in the present case there is raised intracranial pressure and papillœdema; and, in the absence of contra-indications, a right subtemporal decompression serves this purpose

SUMMARY

A case of *Cysticercus cellulosæ* infestation with focal epilepsy is described, in which there were the unusual features of grossly raised intracranial pressure and rapidly increasing papillœdema with a normal ventriculogram

The ventricular fluid was normal, the lumbar-puncture fluid showed a moderate increase of mononuclear cells, protein and globulin, but no polymorphs or eosinophils

The papillœdema quickly subsided after a right subtemporal decompression which also reduced the frequency of the fits

Cases of cysticercosis may be more common now that there are large numbers of British troops in the East

Raised intracranial pressure and papillœdema usually arise from swelling of the brain around degenerating cysts and are indications for decompression.

Diagnosis is made on the development of epilepsy after residence abroad (especially in India) the presence of subcutaneous nodules and the X-ray and biopsy findings Eosinophilia in the blood is of diagnostic value mainly in the earlier stages of the infestation.

The fits sometimes cease spontaneously

We wish to thank Dr Neill Hobhouse and Surgeon Captain Macdonald Critchley for putting their clinical notes of the case at our disposal Dr Worster-Drought for the specimens from his case; Mr C Martin, Mr R Egan and Miss M L Wilson for preparing the pathological material, and Mr A York, assistant radiologist at the hospital, for the radiograms

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SILICOSIS IN STOURBRIDGE FIRECLAY MINERS

SIDNEY DEANER, M R C S.
CHIEF TUBERCULOSIS OFFICER, WORCESTERSHIRE COUNTY COUNCIL

STOURBRIDGE fireclay miners have not previously been recognised as exposed to a silica risk and hitherto silicosis has not been observed in such miners The investigations here recorded have established the diagnosis of silicosis in three of these workers

Clays are naturally occurring materials composed of silicates, chiefly of aluminium usually mixed with an indefinite amount of sand and other minerals The term "fireclay" is commonly applied to the more refractory clays found in the geological formations known as the Coal Measures Such clays are found as a rule beneath coal seams, so that workers in these collieries often work in both the coal and the fireclay seams In the Stourbridge area, where firebricks have been manufactured since 1780 or earlier, the fireclay is found in the "Old Mine" seams of the South Staffordshire coal measures Immediately above the fireclay in geological formation is a shale called Baxton; the rock below is a "mottled clay," a form of crude sandstone The Baxton has often to be removed to reach the fireclay. In dealing with the fireclay, the miners make their shot holes with machine drills either in the fireclay rock itself or in the mottled clay. When the shot has been fired, buckets of water are poured over the fireclay to allay the dust and moisten the clay before it is picked and collected In addition to fireclay mining, the workers in this colliery have worked in the coal seams on occasional shifts when required

The composition of fireclays varies in the same coalfield The basic constituents are shown in the following analyses which are extracted from Searle s "Refractory Materials"

	Stourbridge Old Mine	
	Best selected (%)	Ordinary (%)
Silica	76 5	56 6
Alumina	16 5	26 5
Iron oxides	0 8	2 3
Lime	0 1	0 2
Magnesia	trace	0 3
Potash and soda	0 7	1 7

Fireclay in which the contained silica is as above, in the form of silicates is "pure" fireclay, and as such does not constitute a free silica risk. The fireclay in which the three miners investigated have worked has hitherto been regarded as a pure fireclay. However, a sample of this fireclay was kindly examined under the petrological microscope for me by W R Jones, D Sc of the Imperial College of Science and Technology, and his report is as follows

> "The sections of the coarser and more coherent lumps of this fireclay show the presence of many grains of quartz, and, in parts, fibres of sericite are fairly numerous Dried fireclay of this kind could, in my opinion, give rise to harmful dust"

In addition, the following figures show the amounts of total and free silica in Baxton mottled clay, and samples of dust taken from the floors of the fireclay mine

	Total SiO_2	Free SiO_2
Baxton	42 6	7 2
Mottled clay	68 2	36 1
Dust from floors	49 6	16 2

The occupational aspect of the problem may require further investigation, but it is evident that the miners are exposed to dust from fireclay containing quartz grains, and that they are also working with a mottled clay which contains a substantial amount of free silica

CASE 1

The first patient has died and the autopsy report is included

First seen at the tuberculosis dispensary on May 23, 1934, when aged 47 Had been a coalminer for 5 years from 1906–11, and had then worked for 23 years as a "pure" fireclay miner in the same colliery, returning to work in the coal seams on occasional shifts when required Complained of chronic cough with sputum for years, dyspnœa on exertion for several months, and pains in right side of chest Previous attacks of right sided pleurisy in 1930 and 1931

Low standard of physique, general condition poor Chest expansion restricted particularly on right side Percussion slightly impaired over right apex Breath sounds poor generally, generalised rhonchi Clinically condition appeared to be due to chronic bronchitis and emphysema To eliminate possibility of pulmonary tuberculosis radiogram was taken March 29, but film revealed appearances consistent with early pneumoconiosis Decided to watch future course, radiological examinations being repeated at intervals Advised to give up colliery work Clinically remained much the same until February, 1936, when dyspnœa became worse, physical signs did not alter much apart from increasing impairment of percussion over both upper lobes Possibility of tuberculous infection was always borne in mind, but numerous sputum tests, as well as guineapig inoculation, always negative General condition gradually deteriorated, dyspnœa, aggravated by repeated attacks of acute bronchitis, being main symptom In February, 1941, seven years after ceasing work, he died suddenly

Radiological examinations—Serial films reveal a striking and progressive fibrosis, and appear to present three stages

Stage 1 In fig III*a* (plate), taken in 1934, configuration of chest is normal, heart and mediastinum normal, root shadows do not appear enlarged, well marked increase of striation with mottling throughout lower two-thirds of both lungs, most towards bases Dr A Meiklejohn, who kindly saw the film at the time, stated that "in many ways the picture is consistent with silicosis as seen in certain branches of the pottery industry There is one striking anomaly—the distribution is chiefly confined to the lower parts of the lungs as in asbestosis, whereas silicosis is usually almost identical in distribution with tubercle"

Stage 2 Fig III*b*, taken in 1935, reveals denser shadows becoming more confluent in mid-zones of both lungs and in right upper lobe Increasing translucency at bases, indicating emphysematous changes

Stage 3 Fig III*c*, taken in 1940, shows large dense opacities in mid zones and right upper lobe Basal appearances suggest "ballooning"

Despite cessation of exposure to dust, condition was progressive The evidence of emphysema appears to increase with density of shadows denoting fibrosis Later films appear to suggest infective type of silicosis, but tuberculosis was conspicuously absent as will be seen later in pathological report

Post mortem report (Dr W Stewart of Worcester)—Body rather emaciated and subcutaneous œdema present in lower limbs Left lung completely free from chest wall except for very few apical adhesions Right lung more densely adherent to pleura in upper and middle lobes, adhesions could only be broken down with difficulty No free fluid Pericardium normal but external surface showed considerable pigmentation with carbon, myocardium flabby and chambers dilated Myocardium showed increased fatty infiltration, coronary arteries affected by slight atheromatous changes No valvular lesion Liver showed well-marked nutmeg changes, other abdominal organs normal

Left lung weighed 800 g (normal 570), voluminous and deeply pigmented with carbon Upper lobe showed considerable thickening of pleura and much old scarring Large emphysematous bullæ present, largest being size of golf ball Scattered throughout lung tissue were small fibrous nodules but not so abundant as in typical silicosis Lower half of lobe coal black and composed of dense fibroid tissue containing very little air No discrete nodules of fibrosis made out in this mass, pleural thickening more pronounced over this area Fairly dense interlobar adhesions Lower lobe showed similar pleural thickening, emphysema, particularly on diaphragmatic surface, most pronounced, bullæ being size of small Jaffa orange Upper part of this lobe also showed fibrosed area with similar deep carbon pigmentation No evidence of tuberculosis Hilar glands enlarged to size of small beans

Right lung weighed 960 g (normal 625), appearance similar to left but pleura showed more thickening Upper lobe voluminous, most of lobe, except about lower third anteriorly, solid mass of old fibrous tissue and very deeply pigmented Scattered small fibrous nodules also present Middle lobe fairly densely fused to upper and lower lobes and completely fibrotic Lower lobe not quite so solid except at upper pole Emphysema very advanced In deeper substance of all lobes small bronchiectatic cavities slightly smaller than pea No macroscopic tuberculosis obvious

Bronchi showed chronic bronchitis with increased vascularity in walls

Histological examination—*Right lung* Upper lobe extremely heavy impregnation with dust particles obscured tissue appearances, considerable fibrosis of laminated whorled type enmeshing dust particles, lung alveoli having completely disappeared in fibrous mass, arterial walls considerably thickened Lower lobe patchy areas of deep pigmentation, lung alveoli distended and walls thinned, considerable engorgement of vessels, silicotic and anthracotic fibrosis present *Left lung* Upper lobe deep pigmentation, patchy in type and somewhat intensified around blood vessels, considerable pigment in lymphatic channels, silicotic fibrotic nodules present Lower lobe in solid portion appearances similar to those in other lobes, but silicotic fibrosis more definite

The pulmonary lesion is, therefore, one of chronic fibrosis, in the production of which both silica and coal dust appear to have played a part, it thus conforms to the type of pulmonary fibrosis described as silico anthracosis

Chemical analysis of portions of dried lung was made as a matter of interest

	Total SiO_2 (%)
Right upper lobe	4 9
Right lower lobe	3 9
Left upper lobe	2 2
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The silica content of normal lungs is up to 0 2% on the weight of dried lung The lungs therefore contained increased amount of silica in the tissues Stewart (1933), however, found that an abnormal silica content in lung tissue cannot be taken as corroborative evidence of silicosis King and Belt (1940) also found no evidence of a direct association between the concentration of silica and the degree of fibrosis, but pointed out that in silicotic lungs silica was always in excess of 0 2%

The two other cases to be described are still alive but very much incapacitated (See cases 2 and 3 on p 419)

LEGENDS TO ILLUSTRATIVE PLATE

DR CARNEGIE DICKSON AND CAPTAIN WILLIS

FIG I—Radiograms of soft tissues, showing calcified cysticerci, mostly in muscles (*a*) Near left elbow, (*b*) at upper and outer aspect of left thigh Natural size

FIG IV—Paraffin section through two adjacent specimens of the bladder worms of *Tænia solium*, the pork tapeworm, from the frontal cortex (see fig III) of Dr Worster Drought's case, a soldier home from India who died at the age of 28 after suffering from epileptiform fits and cysticercosis of the left eye for 6 years The upper specimen is a well preserved and "healthy" or "symbiotic" scolex, lying within the invagination of the wall of the little bladder which in turn has been derived from the main caudal vesicle or bladder from which the larva gets its name "cysticercus" The lower specimen in the figure is an example of a dead and disintegrating parasite showing accumulation of fluid in the cyst and an inflammatory reaction at its periphery—i e, the stage at which it becomes more irritative and dangerous to its host Mallory's connective tissue stain × 12

FIG V—Higher magnifications of the upper cyst illustrated in fig IV, showing details of the scolex and its caudal vesicle In the section of the anterior end of the scolex, passing obliquely through the muscular rostellum, the double circlet of hooklets and two of the four suckers are seen Mallory's connective tissue stain (*a*) × 20, (*b*) × 60

DR DEANER

FIG I—Case 2, showing lesion mainly in mid zone

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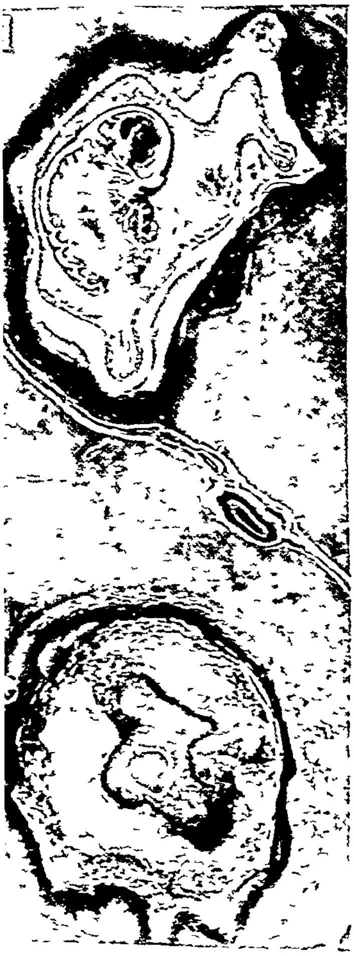
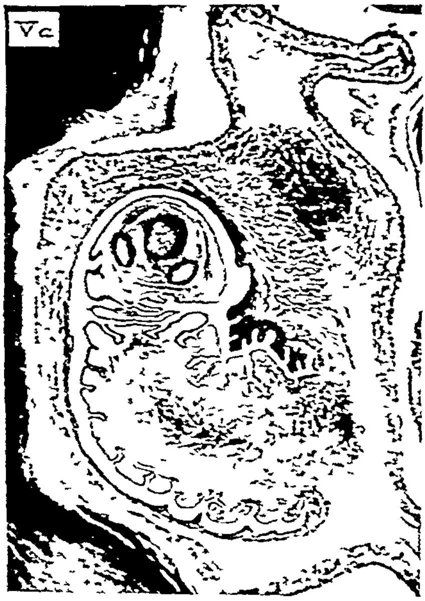
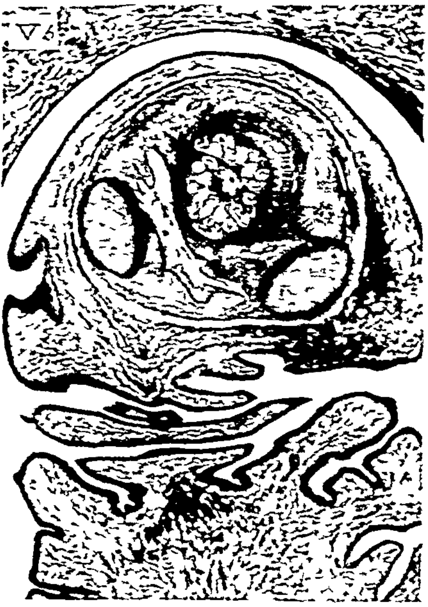
FIG III—Case 1, showing progressive fibrosis in mid zones and right upper zone (*a*) 1934, (*b*) 1935, (*c*) 1940

DR CARNEGIE DICKSON AND CAPTAIN WILLIS CYSTICERCOSIS OF THE BRAIN







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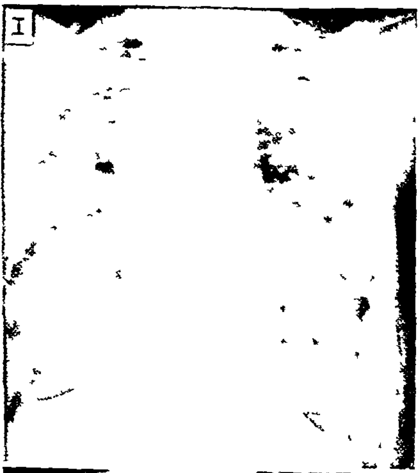
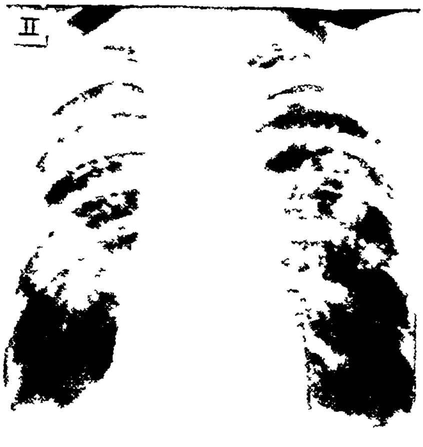
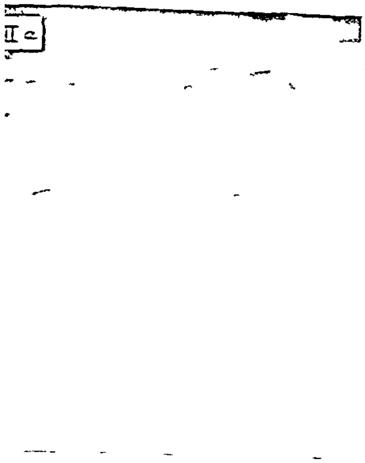
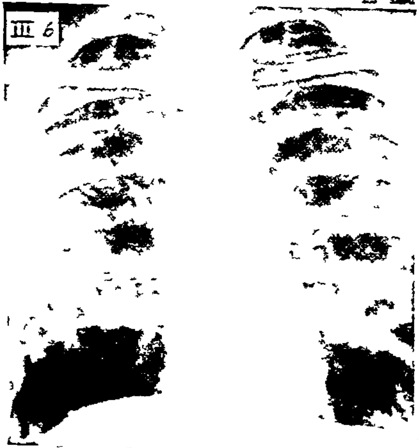
DR DEANER: SILICOSIS IN STOURBRIDGE









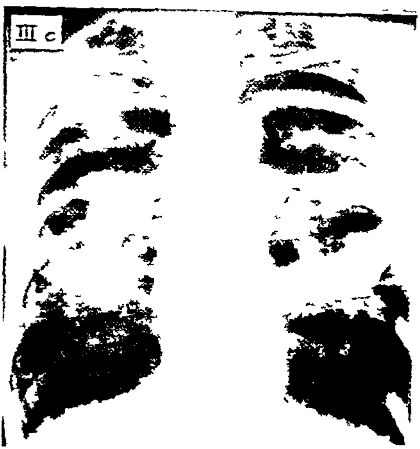


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FIG III—Case 1, showing progressive fibrosis in mid zones and right upper zone (*a*) 1934, (*b*) 1935, (*c*) 1940

CASE 2

Man of 56 who has been a clayminer, in same colliery as first case, for past 36 years. Has also been required to work at coal on occasional shifts. Chronic cough with sputum for some years. Attacks of dry pleurisy on right side of chest in 1937 and in January, 1939. Increasing dyspnœa on exertion for past 3 years, with gradual loss of weight during the past year. Gave up work on July 19, 1940.

Low standard of physique and general condition poor. Chest movement restricted, particularly on right side. Percussion note impaired over both apices, but very few adventitious sounds heard. Had been admitted to sanatorium as case of pulmonary tuberculosis. Sputum tests, culture, and guineapig inoculation all negative for tuberculosis.

Radiological examination (fig I) shows slight tracheal deviation to right. Heart normal. Root shadows not enlarged. Distribution of lesion definitely in mid zones. On right side dense irregular opacity, rather soft in appearance, tending to spread slightly into upper and lower zones; clear area near root suggests patch of emphysema rather than breaking down. On left small irregular opacities with mottling in mid zone, not so confluent as on right.

CASE 3

Man of 63, brother of case 2. Worked in same mine as two previous cases as clayminer for 45 years. Conditions of work similar. Cough with sputum for past 3–5 years, with increasing dyspnœa and loss of weight. Early in 1940 had been off work because of pleurisy in right side of chest. Ceased work finally on July 10, 1940 because of further pain on that side and extreme weakness.

Poor physique and general condition very poor. Restricted chest movement. Percussion note impaired over both upper lobes. Crepitations over both apices, right more than left; diminished air-entry at bases. So far, sputum tests negative for tubercle bacilli.

Radiological examination (fig II).—Ribs on right side more sloping than left. Tracheal deviation to right. Mediastinal shadow widened; right side of heart enlarged. Root shadows not enlarged. On right dense opacity in the upper zone and irregular opacity in mid zone; emphysematous changes at base. On left opacities in mid-zone, with mottling towards base.

Cases 2 and 3 have since applied to the Silicosis Medical Board and have received certificates of disablement by reason of silicosis.

DIAGNOSIS

The International Conference on Silicosis in 1938 defined the disease as “a pathological condition of the lungs due to the inhalation of silicon dioxide,” the silica being in a free or uncombined state. During life, the diagnosis depends essentially on

1. An occupational history revealing sufficient exposure to a silica risk.
2. Radiological findings.
3. Clinical examination.

In an industry presenting a well-established occupational silica risk, where in a large number of cases careful correlation has already been made between the radiological appearances and the pathological findings, the diagnosis in a given case is relatively easy when clinical and X-ray findings are suggestive. Where, however, a silica risk has yet to be proved, during life only a tentative diagnosis is possible even with extensive radiological experience of silicosis in other industries. This was the position when the first case in this series was seen in 1934. The autopsy and histological findings described above now establish the condition as silico-anthracosis, and it is therefore now possible to review the criteria of diagnosis in these cases.

Occupational history, and exposure to silica risk.—That the rock at which these men have worked can no longer be regarded as pure fireclay has been shown by the demonstration of the presence of quartz grains; the adjacent rocks also contain free silica. But it is difficult to account for the intense pigmentation with carbon as seen post mortem, for there does not seem to be sufficient exposure to coal dust. It has been suggested by Cummins and Sladden (1930) that anthracosis requires for its development preceding damage of the lung by silica. Had the men worked for an appreciable time in the coalmine it might be suggested that the primary risk causing silico-anthracosis lay there, but there appears no doubt that most of their time has been spent at the fireclay. This aspect of the occupational problem requires further investigation. Our main concern, however, has been to show that the men are exposed to a free silica risk, a criterion necessary for the diagnosis of silicosis.

2. *Radiological findings*.—The series of films in case 1 illustrate the progression from reticulo-mottling to coalescence and final dense fibrosis. The initial basal distribution is unusual: it suggests the predominance of interstitial fibrosis associated with silicosis due to mixed dusts as against the nodulation seen in pure silica inhalation. The films of the two other cases represent the advancing stages of coalescence; the appearances are not so well defined as in the first case, and the infective element strongly suggests itself. The distribution is, characteristically, mid-zone. It is to be noted that the root shadows are not abnormally enlarged.

3. *Clinical history and examination*.—Poor physique and cough with sputum were noted in each case, but dyspnœa on exertion was the main symptom. Pain was also a well-marked feature, probably associated with the formation of adhesions. The loss of weight in the last two cases may arise from an infective element, especially as they are brothers, although so far tubercle bacilli have not been found in the sputum. Physical signs in the first case suggested chronic bronchitis and emphysema; in the second case they were indefinite; in the third they were suggestive of tuberculosis. It will be seen, therefore, that the clinical history and examination is typical of silicosis, but the diagnosis cannot be based on clinical examination alone, although this is essential in assessing incapacity.

* * *

It seems reasonable to suggest that these clayminers should benefit from the provisions made for the compensation of silicosis. It is possible that they are already covered by the Various Industries (Silicosis) Scheme 1931.

LEGENDS TO ILLUSTRATIVE PLATE

DR O'REILLY AND DR GLOYNE

FIG I—Case 2, within 12 hours of injury. Heavy mottling of whole left lung field and right mid zone.

FIG. II—Case 3, about 48 hours after injury. Heavy mottling of both lung fields. Consolidation at right base.

FIG III—Case 4, about 30 hours after injury. Heavy mottling of left lung field; less on right.

FIG IV—Case 5, small pneumothorax at left base with mottling of left lung field.

FIG V—Case 6, 24 hours after injury. Characteristic mottling of both lung fields, but less than in previous cases.

FIG VI—Case 7, 54 hours after injury. Collapse of right base. Subsequent films showed re-expansion and resolution.

DR ALSTEAD

FIG III—Immediately after barium meal, showing penetrating ulcer on lesser curvature.

FIG IV—Taken 2 min. after gr 30 of bismuth carbonate. Pool in most dependent part of stomach; trace adhering to mucosa of body of stomach.

FIG V—Taken 27 min after meal of toast and milk and 2 min after taking gr 30 of bismuth carbonate. Showing dispersal of bismuth carbonate among stomach contents; bulk of salt still in middle of body of stomach.

FIG VI—Taken 1½ hours later. Stomach emptying; remaining bismuth carbonate has collected at most dependent part of stomach; none elsewhere.

FIG VII—Residue of bismuth carbonate after 28 hours. Previous barium meal had shown normal emptying time.

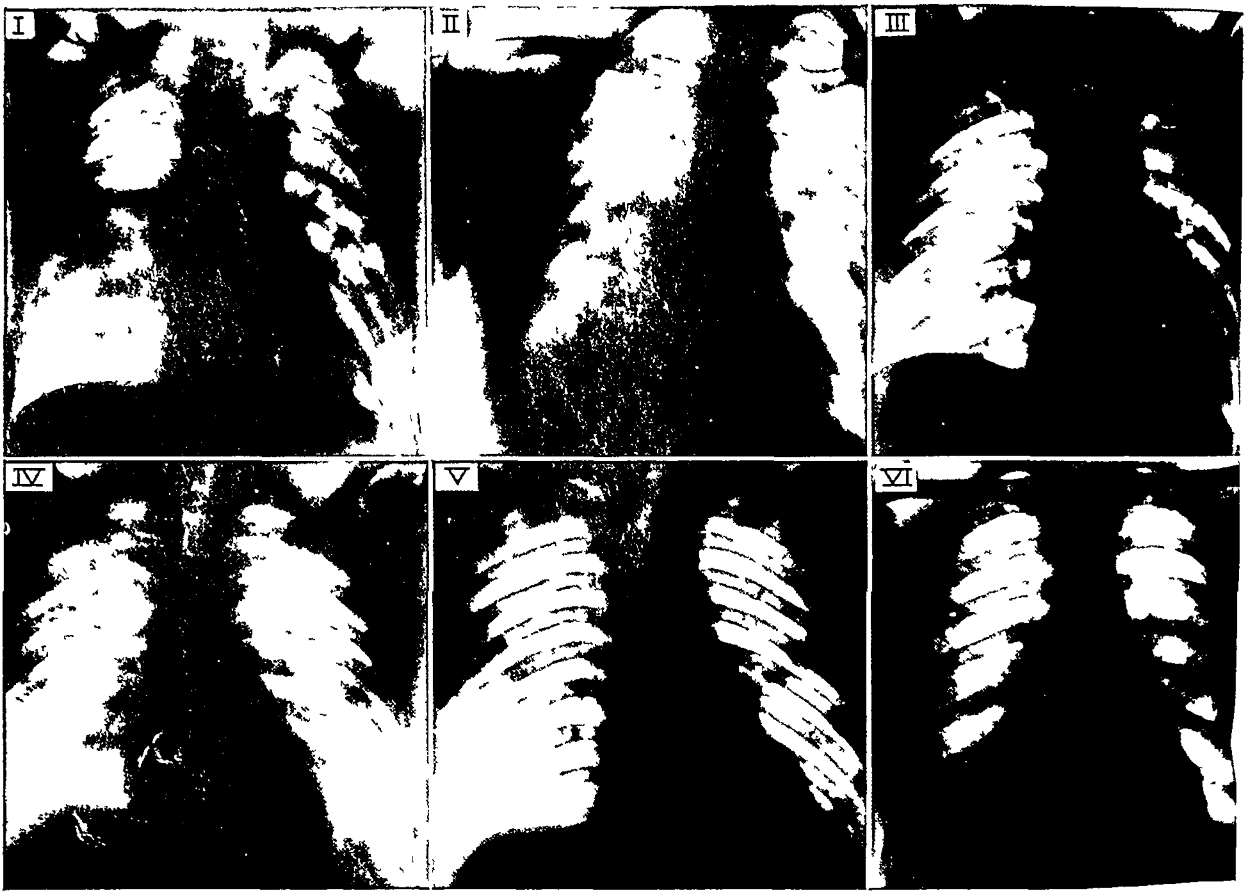
DR CLARK

FIG I—Radiogram on first attendance (March 2, 1939), showing large opaque area in left upper zone, with smaller opacity near root.

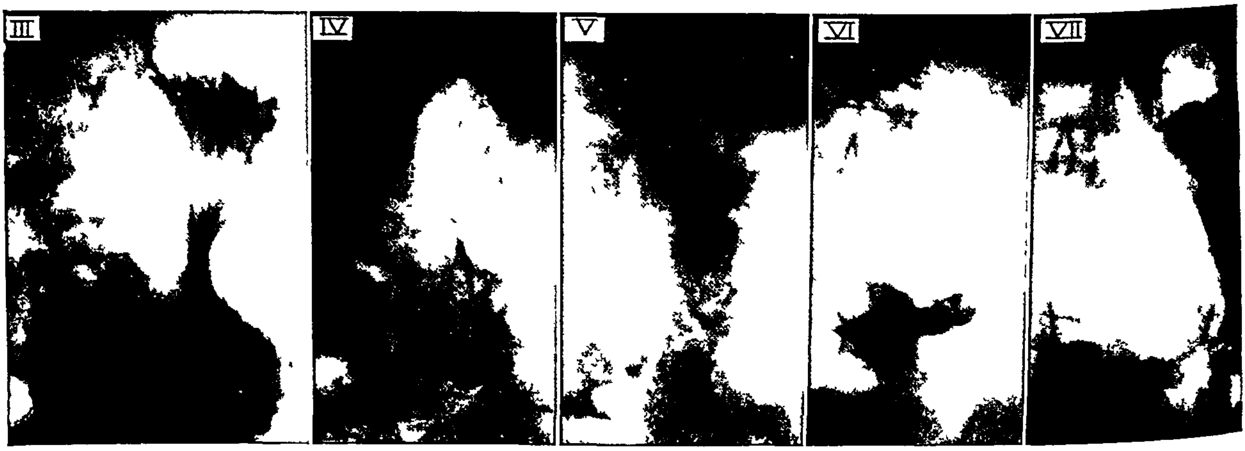
FIG II—Radiogram on April 20, 1939, showing considerable absorption of opacities.

FIG III—Radiogram on Jan 20, 1941, showing still further improvement.

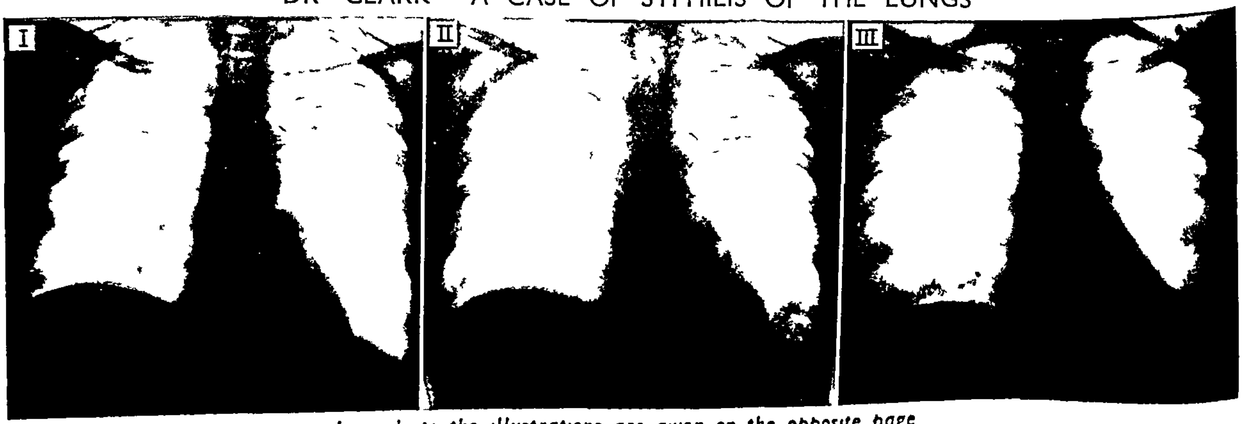
DR O'REILLY AND DR GLOYNE BLAST INJURY OF THE LUNGS



DR ALSTEAD BISMUTH CARBONATE IN GASTRIC DISEASE



DR CLARK A CASE OF SYPHILIS OF THE LUNGS



Legends to the illustrations are given on the opposite page lusting powder soothes an irritated skin Hurst (1929), nowever describing a series of radiological observations made by his collaborator Dr P J Briggs, states that "half an ounce of bismuth oxycarbonate taken in suspension on an empty stomach does not as a rule adhere to the ulcer crater surface of even a large gastric or duodenal ulcer" Bismuth carbonate is also reputed to have an astringent action on the stomach (Adams 1939), and to act as a weak antacid (Dilling 1940, Whitla 1933) The antacid value of bismuth carbonate has been carefully studied by Freezer, Gibson and Matthews (1928) They have shown that when 0 3% hydrochloric acid (pH 1) is mixed with an excess of bismuth carbonate the solution never attains neutrality, but remains persistently acid (pH 4), and no further reaction takes place after one minute They also tabulate their conclusions regarding the relative efficiency of the "alkalis" expressed as a comparison with sodium bicarbonate, which is assigned an arbitrary value of 100, the figures for magnesium oxide calcium carbonate and bismuth carbonate are 317, 20 and zero Again Clark (1940) points out that the acidity of the gastric juice secreted by a normal person in 24 hours corresponds to about 5 g of pure hydrochloric acid, and whereas this is neutralised by 3 g (gr 45) of magnesia, as much as 136 g (gr 2000) of bismuth carbonate would be required

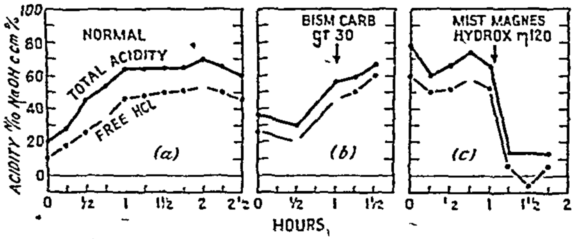


FIG I—Consecutive fractional test meals from one patient (a) Normal record (b) With bismuth carbonate 30 gr acidity continues to rise (c) With mist magnes hydrox ♏ 120 there is a large immediate fall in acidity

PRESENT INVESTIGATION

The object of this investigation was to determine the value of bismuth carbonate in relieving the pain of gastroduodenal disease, and to examine the views commonly accepted as to the fate of this salt in the stomach

Antacid action —The in-vitro experiments of Freezer, Gibson and Matthews referred to show that, although the addition of bismuth carbonate to weak hydrochloric acid raises the pH the reaction of the mixture never approaches neutrality My own observations were made using open test-tubes instead of the closed apparatus described by these workers, but the results were substantially the same A quantity of bismuth carbonate (B P) weighing 1 5 g was shaken up in a wide tube with 15 c cm of distilled water, and 15 c cm of N/10 hydrochloric acid (pH 1) was then added The mixture was filtered and the pH of the filtrate was found to be in the region of 3 3 The same result was obtained when similar mixtures had been allowed to stand for intervals ranging from 1 to 10 minutes Hydrogen-ion concentration was determined by means of chemical indicators and the Lovibond comparator and the figures are regarded as being only approximate These rough estimations of the neutralising power of bismuth carbonate on decinormal HCl were carried out merely as a preliminary to similar observations on gastric juice It was found that the addition of an excess of bismuth carbonate to gastric juice in vitro produced only slight changes in acidity, as is shown by the following example —

	Decinormal HCl c cm %		
	FreeHCl	Total acidity	pH
Before addition of bism carb	40	55	2
After excess bism carb	32	50	2 1

The feebleness of the antacid action on gastric juice is probably partly due to the buffering effect of mucoprotein

The third method of investigation consisted in making observations during fractional test-meals In any individual, however, day to day variations in fractional test-meal results are so considerable that experiments of this type necessarily lack controls that are completely satisfactory The nearest approach to obtaining adequate control readings consists in using the first three or four of a series prior to the administration of the drug under investigation Although this method is imperfect its value is increased when applied to a drug whose potentialities are already known from in-vitro experiments, and the negative results from bismuth carbonate are more convincing when compared with the effect of the powerful antacid magnesium hydroxide (fig I) In all, 9 patients were investigated by means of fractional test-meals, using half-drachm doses of bismuth carbonate It was found that the acidity was unchanged or continued to increase in 7 In 2 who had very low acidity (corresponding to 10 and 20 c cm N/10 NaOH% respectively) the curves fell to zero after the administration of the salt, that these falls were spontaneous rather than the effect of the bismuth carbonate is suggested by the fact that the addition of an excess of bismuth carbonate to gastric juice in vitro never reduced the acidity by more than 10 c cm N/10 HCl%

The effect of administering a single large dose of bismuth carbonate was also studied Two fractional test-meals were performed on a healthy medical student During the first he received an average dose (gr 15) It will be seen (fig IIa) that the fall in the gastric acidity was negligible, indeed the curves reveal that spontaneous alterations were greater than the change attributed to the action of the bismuth carbonate On another occasion he was persuaded to take a very large dose (gr 210) The effect on the gastric acidity was more impressive (fig IIb) but it lasted only half an hour My colleague Mr J B Pettigrew estimated the hydrogen-ion concentration of the samples electrometrically and found that the change was comparatively small (pH 1 67 to pH 2 16) The bismuth carbonate and bismuth oxychloride which were present in all the samples of gastric juice appeared to have caused the mucus to form curd-like masses

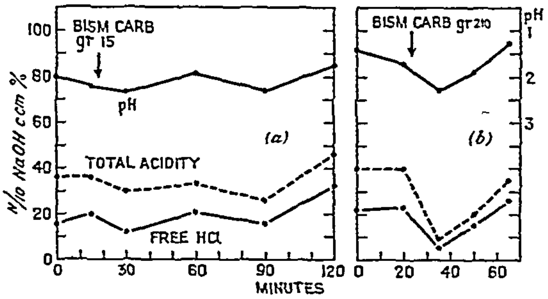


FIG II—Consecutive fractional test meals from one patient showing effect of (a) gr 15 and (b) gr 210 of bismuth carbonate on gastric acidity

Astringent action —Bismuth carbonate can act as an astringent in the stomach only if it is sufficiently soluble in the gastric juice Dissolved bismuth can be detected by adding to it a freshly prepared solution of stannous chloride in strong caustic soda, the bismuth salt is immediately reduced and is precipitated as metallic bismuth, which gives colours ranging from jet black to light brown according to the quantity of the metal present The test is sufficiently sensitive to detect 1 part of bismuth in 400 000 By this means it was found that after mixing 0 3% hydrochloric acid with an excess of bismuth carbonate the amount of bismuth in the filtrate was not more than 1 part in 160 000 To test the astringency of this concentration of bismuth, a sample of the filtrate was added to an aqueous solution of egg-albumin No coagulum was produced, indicating that the astringent effect of the dissolved bismuth was negligible The question arises as to whether bismuth carbonate is soluble in the organic acids of the gastric juice It has been shown that lactic acid is formed in the stomach only when free hydrochloric acid is absent or diminished—less than 20 c cm N/10% The solubility of bismuth carbonate in N/10 lactic acid was estimated It was found to be approximately 1 part in 300,000 Here again, no astringent action was perceptible when measured by the effect of the solution upon especially having regard to a decision in the House of Lords (1935) when workers breaking down shale, which though not silica rock in itself contained small lenticles of quartz, were considered to be in an occupation scheduled under that act

SUMMARY

Stourbridge clayminers are exposed to dust containing free silica

A case is described in which the autopsy reveals that the pathological condition is silico-anthracosis

Two other cases are described with similar occupational and medical histories and radiological appearances, these are therefore presumed to be suffering from the same pathological condition

These clayminers should be eligible for compensation under the provisions made for cases of silicosis

My thanks are due to Dr A Meiklejohn for standing godfather to this paper, to Dr W Stewart and Dr Leslie Bold for their cooperation, to Mr H E Monk F I C and Mr E R Nind, F I C, for their work on the chemical analysis, and the colliery authorities for their courtesy and help, finally, to Mr F Fitzhugh for his help in the preparation of this paper

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A CASE OF SYPHILIS OF THE LUNGS

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THE scarcity of recorded cases of syphilis of the lungs may partly be due to the infrequency with which it is recognised and the belief that antemortem diagnosis cannot be established[1] The object of publishing this case is to show that a diagnosis can be arrived at during the patient's life and to help in establishing clinical data on which a diagnosis can be made

A widow, aged 54, was asked to attend a clinic under the tuberculosis scheme because she had been notified as suffering from "tuberculous disease of the malar bone" Her occupation was domestic duties Apart from an intractable ulcer on her left leg in 1927 she had always been healthy until 1936, when she began to suffer from cough, with small amounts of sputum streaked from time to time, lassitude and dyspnœa Dyspnœa had only become pronounced during the previous few months, when her duties had become too much for her Has one grown up son No history of miscarriage Her husband died in 1919 at the age of 37 from "growth on the brain" First sought medical advice for a swelling over the left temporo frontal region which developed in 1937 and for which she received treatment from her doctor for 8 months The swelling was excised at the local hospital in January, 1938, but a chronic discharge persisted until December, 1938 About this time she developed a similar swelling over the left malar bone which was incised at the same hospital in November, 1938

At her first attendance at the clinic on March 2, 1939, the lower of the two incisions was weeping slightly while the upper had healed completely Weight 8 st 5½ lb, best known weight 10 st The chest was symmetrical Some restricted movement of the left upper half where the percussion note and air entry were impaired but no adventitious sounds were detected Apex beat in normal position Heart-sounds normal B P 145/95 mm Hg Pulse rate 70 per min, regular Mentality and memory good Pupils equal and reacted to light and accommodation No objective sensory changes Complained of pain over left femur not unlike tabetic pains No rombergism Tendon reflexes normal Healed ulcer with tissue paper appearance over upper end of left fibula No tubercle bacilli found in sputum (no further examinations made because cough had gone by next attendance) Blood Wassermann and Kahn reactions + + Radiogram of chest on March 2 (fig I, plate) arch of aorta slightly prominent and contains a calcified plaque, left upper zone contains a large opaque area irregular in outline from which radiate processes connecting it with a similar but smaller opacity in lower zone lying near root

For various reasons only ambulatory treatment could be undertaken Antisyphilitic treatment was instituted immediately the true cause of the lesion was suspected She attended a local treatment centre—and still continues to do so, for her Wassermann and Kahn reactions are still positive She was asked to attend for X-ray examination fortnightly but failed to do so, and her second attendance was not until April 20, 1939, when the film (fig II) already showed considerable absorption of the opacities originally noted Her symptoms, too, were much improved, she could do a day's work and walk upstairs without undue dyspnœa, her cough had disappeared, the sinus over her left malar bone had healed Further radiograms showed progressive improvement At her last attendance on Jan 20, 1941, she was in "better health than ever" (fig III) Despite "winter colds" there is no persistent cough Weight 8 st 10¼ lb

This appears to be a case of the gummatous form of lung syphilis[2] The criteria on which the diagnosis is based are

(1) Length of history
(2) Positive serological findings
(3) Absence of tubercle bacilli in sputum
(4) Prompt relief of symptoms and progressive, rapid and maintained improvement in X ray appearances following antisyphilitic treatment
(5) Presence of syphilitic lesions elsewhere

I should like to thank Dr T W Stallybrass, the county M O H, for permission to publish this case, and Dr T I Cooper, the county pathologist, for the laboratory investigations

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ACTION OF BISMUTH CARBONATE IN GASTRIC DISEASE

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THE gastric antacids and sedatives constitute an important group of therapeutic agents, and it is comparatively easy to confirm their effectiveness In certain kinds of gastroduodenal disease temporary relief of pain consistently follows the administration of an antacid in a high proportion of cases The action of these compounds on the pH of the gastric contents is also demonstrable by observations made in the course of fractional test-meals

Bismuth carbonate and bismuth subnitrate are included in this group of drugs The employment of these basic salts of bismuth dates from the use of the subnitrate by Odier in 1803 It is noteworthy, however, that he used this salt in doses of only one grain and always prescribed with it magnesia (gr 10) and sugar (gr 10)[*] Odier thought this compound powder an infallible remedy for gripe, and since then bismuth preparations have enjoyed a vogue in the treatment of gastroduodenal lesions MacKenna (1931), in a paper on the history of bismuth mentions that in 1852 Chambers in England, and Kussmaul in Germany, advocated bismuth salts in the treatment of gastric ulcer, Kussmaul recommended the subnitrate in doses of 10–20 grammes daily In recent years bismuth subnitrate has fallen into disrepute, after the publication of a number of cases of nitrite poisoning attributed to the reduction of the nitrate by intestinal bacteria Bismuth carbonate, on the other hand, is still widely used in the treatment of gastroduodenal disease especially in cases of peptic ulcer and gastritis According to standard works on pharmacology (Cushny 1941 Poulsson 1940 Dilling 1940) this insoluble salt acts mainly by coating the gastroduodenal mucosa, thus behaving as a protective in much the same way as a discovered and neither of them benefited from the magnesium hydroxide

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[1] Karshner R G and Karshner C F Syphilis of the Lung *Ann Med Hagerstown*, 1920, 1, 371

[2] Shanks, S C Kerley, P and Twining, E W Text book of X Ray Diagnosis London, 1938 Vol I p 269

[*] In the third edition of Odier's Manual published in 1821 the author is less conservative and recommends the 'white oxide of bismuth' in doses of gr 6–12 four times daily He also states that he discovered the remedy in 1786

These results were examined statistically by Dr Richard A Robb of the mathematics department in the University of Glasgow, and his findings may be summarised as follows

The effects of the inert powders (lactose and dried milk) is shown by contingency tables where the 21 patients are classified according as they have or have not disease, and according as they do or do not get relief from the powders As is to be expected, the classifications are independent, using the χ^2 test, that is to say, these inert powders gave as much relief to patients with disease as to those with disease not proved The same analysis when applied to the results obtained from bismuth carbonate again shows that the classifications are independent—the response of the patients was the same as when the inert powders were used

It was found possible to distinguish between the degrees of relief obtained from the treatment, so that further analyses of the data were made Again the figures indicate that there was no difference in the response of the patients to the three powders—bismuth carbonate lactose and dried milk If the 5 patients with no evidence of disease are excluded from the series and the analysis confined to those known to be suffering from gastro-duodenal disease, the results are the same

DISCUSSION

The investigations provide no evidence in favour of the view that bismuth carbonate in therapeutic doses is a reliable means of protecting the gastric mucosa After administration by mouth, the salt collects in the most dependent part of the stomach and there is a tendency for it to adhere to the mucous membrane in a relatively small area in the prepyloric region, but the ulcer-bearing area of the stomach is rarely affected

Bismuth carbonate may exert an astringent action on the empty stomach but the investigations show that even under favourable conditions this must be very slight, and in practice it must be rendered negligible by the combination of the minute amount of bismuth in solution with the mucoprotein of the gastric juice It is clear that when a gastric astringent is required other drugs offer a much more reliable method of treatment—e g tannic acid in the form of glycerin of tannic acid (B P)

Previous workers have shown that the chemical properties of bismuth carbonate make it an unsatisfactory antacid for clinical purposes and this conclusion is confirmed The antacid effect following therapeutic doses of bismuth carbonate is seen to be trivial or entirely absent Although very large doses produce appreciable changes in gastric acidity, even these are transient and the side effects of such large quantities especially constipation, cannot be disregarded There seems therefore to be little justification for the view that bismuth carbonate is a valuable adjuvant to powerful antacids such as magnesia The negative results obtained in test-meals are in keeping with the conclusions drawn from the therapeutic trials in patients suffering from gastro-duodenal disease when it was found that bismuth carbonate was no more valuable than powdered milk or lactose in relieving pain The findings as a whole support the view expressed by Hurst (1929) "It seems very improbable that the small dose of bismuth [carbonate] given with sodium bicarbonate in the usual alkaline mixtures, powders and tablets can exert an action of any kind in the stomach Its use should therefore be discouraged as it has the disadvantage of making the stools black so that the immediate recognition of slight melæna by the patient becomes impossible"

SUMMARY

The action of bismuth carbonate as an antacid was investigated in vitro and also by fractional test-meals in healthy and ulcer subjects Therapeutic doses were found to have only a negligible effect on gastric acidity

Hydrochloric acid or lactic acid of the strengths found in the stomach dissolve only a trace of bismuth carbonate Such solutions were found to have no astringent action on egg albumin

In 12 patients who were screened after taking doses of bismuth carbonate the drug formed a pool at the most dependent part of the stomach and showed no tendency to distribute itself over the lining of the stomach or to fill the crater of an ulcer when one was present

Three powders consisting of bismuth carbonate lactose and dried milk respectively were given to 21 patients complaining of abdominal pain thought to be due to abnormalities of the stomach or duodenum and they were asked to say which powder relieved their pain No significant difference was found in the pain-relieving effects of the three powders Six of the patients with demonstrable disease of the stomach were then given magnesium hydroxide all of them reported much greater relief than from any of the powders

It is concluded that in therapeutic doses bismuth carbonate has a negligible effect as an antacid or as an astringent dressing for the gastric mucosa, and that it is of no value for the relief of pain in gastroduodenal disease

I desire to thank Prof Noah Morris for his interest in this work, Mr David T Gibson, D Sc, of the chemistry department in the university, and Dr W D. C McCrone, assistant radiologist at Stobhill Hospital, for advice and criticism, and Sister H D Collins and Sister J E Rennie for their coöperation

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BLAST INJURY OF THE LUNGS

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MUCH attention has been given lately to the effects of the blast of high explosive on people in the immediate neighbourhood Apart from its scientific interest a careful study of the subject is of great importance in deciding correct treatment, and we are therefore recording our experiences in the treatment of a series of cases of men suffering from blast injuries of varying severity

On Nov 18, 1940 a high-explosive bomb dropped close to a wooden hut housing a number of soldiers The hut was demolished and almost all of the men within were affected to some extent Of those admitted to hospital 9 were dead on arrival or died within a few minutes The majority of these 9 had no external injury and had not been buried, no autopsy could be held on them because of pressure of work in looking after the living A number of other men were picked up dead but were taken straight to a mortuary they were examined by a medical officer who also reported little evidence of external injury Of the men who survived for an appreciable time after admission 8 were suffering from severe pulmonary blast, 2 others had severe blast injuries associated with injury to the chest wall, and 7 had lesser degrees of blast injury from which they made uninterrupted recoveries These 17 cases form the subject of this paper

The men were admitted within two hours of exposure to H E blast The circumstances have been reconstructed with some care and there is little doubt that with two exceptions, cases 9 and 10, these men suffered from the effects of blast only The men were billeted in wooden huts which formed part of a small pleasure fair ground There was a bright moon with a thin layer of cloud A sentry observed the descent of a parachute and ran to warn his sleeping comrades He did not succeed in rousing them before the bomb struck a wooden tower close to the huts The explosion was of such violence as seriously to shake the hospital over two miles away The huts were completely demolished Rescue work was begun immediately and many of the men were got out at once Others were buried under debris which was not of a heavy character None of the patients egg-albumin As a control, the same solution of egg-albumin was used to demonstrate the astringency of dilute solutions of tannic acid (B P) Coagulation of the protein was readily produced by a 0 05% solution of tannic acid

The solubility of bismuth carbonate in gastric juice was investigated Samples of juice were obtained from 4 patients, the total acidity ranged from 10 c cm to 56 c cm N/10% and the free hydrochloric acid from zero to 48 c cm N/10% The samples were mixed with an excess of bismuth carbonate and kept at body-temperature for two hours Some of the juice was then decanted and tested for dissolved bismuth The stannous-chloride test gave a negative result in all cases

The conclusion that only a minute trace of bismuth dissolves in weak hydrochloric acid is not incompatible with the observation that bismuth carbonate can increase the pH of the solution In the presence of hydrochloric acid bismuth carbonate forms bismuth oxychloride, and thus, within certain limits, it diminishes the hydrogen-ion concentration The following test was done to demonstrate this action

An excess of bismuth carbonate was added to about 50 c cm of hydrochloric acid which had a pH of 0 7 The mixture was shaken and set aside for a few minutes It was then filtered and the filtrate was found to have a pH of 1 1 The residue was washed with distilled water until free of hydrochloric acid—that is, until the washings failed to give a precipitate with silver nitrate—and it was then dissolved in nitric acid (B P) About 5 c cm of the nitric acid filtrate was tested for chloride by means of silver nitrate A heavy white precipitate formed, proving that abundant chloride was now present in solution As a " blank " bismuth carbonate was dissolved in strong nitric acid, this solution gave no precipitate with silver nitrate

Radiological findings—Seventeen observations were made on 12 patients, 2 of whom had large penetrating ulcers (about 1 5 cm in diameter) situated on the lesser curvature approximately 7 cm from the pylorus (fig III, plate) On screening while the patient was standing, the aqueous suspension of bismuth carbonate was seen to trickle in a narrow stream to the most dependent part of the stomach where it formed a shallow pool (fig IV) A small proportion remained in the track between the cardia and the lowest part of the greater curvature There appeared to be no tendency for the drug to distribute itself over the whole lining of the stomach, and no evidence was obtained for Cushny's (1941) statement that bismuth carbonate " is later distributed evenly over the surface and forms a continuous sheet over any ulceration " Even after appropriate manual palpation and alteration of the patient's posture the distribution of the bismuth carbonate was not permanently altered, with the resumption of the erect posture the pool immediately reappeared in the original position Repeated efforts to fill the large ulcer craters failed even after giving gr 90 of the drug

Nine of the patients were investigated to discover the effect of taking a meal about half an hour after a dose of bismuth carbonate They received 2 g (gr 30) of the salt about half an hour before breakfast and a radiological examination was made 2 hours later In 5 of this series there was no sign of the drug, apparently it had mixed with the foodstuff and was carried through the pylorus during the early stages of emptying of the stomach In the remaining 4 patients a variable amount of the drug had been retained at 2 hours, it was invariably confined to the prepyloric region of the greater curvature as in fig VI Complete disappearance of the salt was accelerated by the taking of more food In one patient, however, it persisted for at least 28 hours although five meals had been taken during this time (fig VII) When there was food in the stomach at the time of administration of the drug, the suspension of bismuth carbonate was seen to follow the usual course, but the stream was soon broken up into several smaller ones by the food masses, and the bulk of the salt accumulated about the middle of the body of the stomach Thereafter the drug gradually dispersed and became intimately mixed with the gastric contents (fig V)

Therapeutic tests—Observations were made on 21 male patients admitted to a medical ward of Stobhill Hospital on account of abdominal pain thought to be associated with abnormalities of the stomach or duodenum After the usual clinical examination the patients were investigated radiographically, a fractional test-meal was done, and the stools were tested for occult blood The patients were given the ordinary ward diet Each patient was then presented with a batch of 18 powders, 6 of these contained bismuth carbonate gr 30, coloured pink with a trace of azorubrum (B P C) 6 were composed of lactose, the quantity (gr 40) having a similar bulk to the bismuth carbonate powders, and these were tinted with methylene-blue, 6 were made of dried milk, which had a natural light yellow colour

The choice of substances that can be used as controls is very limited Many compounds which are inert when applied externally act as adsorbent antacids in the stomach Lactose appears to be the only substance, easily obtainable, which is entirely satisfactory Milk is an antacid, neutralising its own volume of gastric juice (Freezer et al 1928), and powdered milk must be regarded as an antacid when adequate quantities are used In doses of about gr 30, however, this effect is hardly likely to be appreciable This view is supported by the results of the present investigation, and milk powder in small doses was regarded as an inert substance and was accordingly used as an additional control

The patient was directed to take the powders in any order and to decide in the course of a week or ten days which of them, if any, gave relief from pain It was emphasised that he must not take a powder unless he had pain, and in the event of a powder failing to give relief he was to wait for half an hour before trying one of the others Effects other than the action on pain were ignored The composition of the powders was not disclosed to the patients, or to the nursing staff with the exception of the ward-sister, the powders were referred to only by colour The group of patients was not selected except in so far as it was found necessary to abandon the investigation in a few patients who were not sufficiently intelligent to cooperate satisfactorily No precautions were taken to prevent conversation between patients who were receiving treatment with the powders at the same time The patients' descriptions of the effects of the powders were roughly classified as (*a*) no relief, (*b*) doubtful, (*c*) definite relief, (*d*) pronounced relief The last two were considered to be significant In 16 patients there was objective evidence of disease duodenal ulcer or scarring 10, gastric ulcer 2, gastritis 1, gastric spasm 1, simple hyperchlorhydria 2 In 5 patients no signs of disease were discovered The answers are summarised in the following table, several of the patients reported relief from more than one powder, and therefore the number of answers exceeds the number of patients

EFFECT ON GASTRODUODENAL PAIN OF BISMUTH CARBONATE AND CONTROL POWDERS

—	Whole series	Disease proved	Disease not proved
Relief from—			
Pink powder (bism carb)	6	6	0
Blue powder (lactose)	8	6	2
Yellow powder (dried milk)	6	5	1
Unrelieved by any of powders	5	3	2

Among the 6 patients who appeared to get relief from the bismuth carbonate, 4 were also relieved by taking lactose or dried milk, and 2 experienced no relief from either of these pharmacologically inert powders None of the patients said that the three powders gave equal relief

Eight of the patients, after completing the course of treatment with the coloured powders, were given a similar opportunity to express an opinion on the effectiveness of a " white powder " which was magnesium oxide given in doses of gr 6 (Mist magnes hydrox ℳ 120) The object of using this substance was to determine whether the pains were amenable to treatment by a drug which is known to have a powerful antacid action Six of these reported immediate relief from pain, and the benefit far exceeded any that had been obtained from the coloured powders It is noteworthy that lesions of the stomach or duodenum had been demonstrated in all of these 6 patients in the other 2 patients no disease had been

The cause of the recurrent hæmorrhages and their relation to the accentuated pulmonary second sound are obscure

Case 5 —Severe shock, complained of pain in chest Dyspnœa but no gross cyanosis Highly resonant percussion note and much diminished air-entry at left base Elsewhere percussion note normal Scattered râles over rest of both lung fields Pneumothorax on left side diagnosed and confirmed radiologically (fig IV) Next day breath sounds at left base tubular paravertebrally and absent in axillary line Few crepitations still audible elsewhere, notably at right base

Very gradual improvement in physical signs until on Jan 7, 1941, chest appeared normal General condition improved rapidly after first few days and patient made no complaints

Case 6 —Moderately severe shock, considerable dyspnœa and cyanosis Complained of pain in chest and within an hour had brisk hæmoptysis of 5 oz which relieved his pain Rhonchi all over chest and was wheezing like an asthmatic It was thought that condition might be due to inhaled dust, but no evidence of this either then or later Resuscitation by oxygen and warmth, T 99 6° F Next morning much better, still cyanosed but breathing more easily Radiogram (fig V) showed characteristic mottling in both lungs Still rather wheezy By evening, 36 hours after the incident, temperature 101° F, clinical signs of consolidation at left base Nov 20 signs of consolidation at left base more definite and some râles audible, right base also congested, rhonchi over rest of lung fields had diminished, T 104° F, dyspnœic, cyanosed and delirious Nov 21 general condition much improved, left base still consolidated and crepitations audible at right base, T 101° F Nov 22 very much improved, left base clearing, basal crepitations on both sides, still a little wheezy

Thereafter the patient made a good recovery though air-entry remained weak at the bases for several weeks The final radiogram showed complete resolution

Case 7 —Severe shock, pallor, cyanosis and dyspnœa Complained of pain in chest and abdomen Resuscitation measures warmth and oxygen and plasma transfusion Air-entry poor and râles present all over both lungs Most striking clinical feature was completely rigid and painful abdomen Laparotomy decided on, nothing found except few small subserous hæmorrhages, abdomen closed Nov 19 air-entry into right base diminished and percussion note impaired, spitting up small quantities of dark blood, T 104° F, P 142, later in day tubular breathing became audible at right base Nov 20 very ill, right base dull to percussion and tubular breathing still a feature, T 105° F, complained of diplopia and had a convulsive movement of frontalis muscle, apparently a tic Nov 21 dull in right axilla and base, breath sounds weak with some râles few rhonchi at the left base, where breath sounds also weak. Nov 22 signs as before, radiogram (fig VI) shows collapse of right lower lobe, T 102° F. Nov 28 general improvement, breath-sounds still weak in right axilla and at base, tic still present, diplopia remains, but only on lateral deviation of more than 45°, no obvious weakness of oculomotor muscles Nov 29 T 103° F, abdominal wound slightly septic, tubular breathing at right base with some rales, breath sounds weak in axilla, normal over middle lobe, mucopurulent sputum Thereafter patient made gradual recovery with re expansion of the collapsed lobe

The diplopia is difficult to explain It may have been due to a cerebral contusion Eventually it disappeared completely

Case 8 —Some shock, bruising and pain in chest, particularly on right Breath-sounds weak at both bases, no added sounds Nov 21 some cough and pain, mucopurulent sputum, no blood, no dyspnœa Nov 23 still coughing, mucopurulent sputum, no added sounds Some pain X ray showed no abnormality Nov 27 pain in region of right base and axilla, breath sounds weak, percussion note normal, no added sounds, pain in side on deep breathing T up to 100° F and has not settled since Nov 24 general malaise, pain on breathing, no definite signs except weak breath sounds at right base Nov 29 no change, T 102° F Nov 30 T 101° F pain in chest still, impaired note at right base with weak tubular breathing and few râles, sputum purulent Dec 1 much improved, less pain, breath-sounds very weak, no added sounds Thereafter there was gradual resolution, still incomplete 6 weeks later

CASES WITH DAMAGE TO CHEST WALL

Both cases 9 and 10 had injuries to the chest wall Their clinical appearance, however, was that of blast injury to the lungs Case 9 had all the characteristics of severe pulmonary injury and damage to the chest wall was discovered only at autopsy.

Case 9 —Severe shock, dyspnœa and cyanosis Pain retrosternally and on both sides of chest, particularly on deep breathing Complained continually of severe pain in abdomen Normal percussion note with poor air-entry all over chest particularly at bases Coarse râles all over both lungs Abdomen rigid and tender, no shifting dullness After resuscitation improved slightly but remained dyspnœic and cyanosed Pulse rapid and of poor volume Patient died 14 hours after explosion

Autopsy —Well covered No external evidence of injury Simple transverse fracture of sternum and fracture of pelvis Massive hæmorrhages in posterior mediastinum in loose tissue behind and around great vessels, apparently due to rupture of small veins, for no damage to large vessels could be detected Hæmorrhages also found in extrapleural tissues of intercostal spaces, so that inside of thorax appeared black between white bands of ribs No evidence of visceral injury in abdomen Gross hæmorrhages in psoas sheaths on both sides Visceral pleuræ showed large irregular blotches of dark red hæmorrhage and areas of ecchymoses Lungs much congested with here and there large irregular hæmorrhages similar to those in pleura Standing out clearly by contrast on congested background were many pin point yellowish white areas of early bronchopneumonia Right apex and anterior free border of lung emphysematous, at base of lower lobe on this side was small collection of dilated bronchi suggesting developmental bronchiectasis, unrelated to injury Sections of bronchial wall showed intense infiltration of mucosa and submucosal layers with blood corpuscles and blood pigment Histological appearances resembled those of case 1, but rupture of elastic fibres less definite Numerous areas of very early bronchopneumonia, containing short chains of streptococci

Case 10 —Moderate shock Complained of pain in chest especially on right Breath-sounds weak all over but especially at right base Crepitus audible and palpable, diagnosis of fractured ribs made Radiologically 8th and 9th right ribs seen to be fractured, small hæmothorax Areas of mottling in both zones Pain and poor air entry continued for some days but patient made uninterrupted recovery X-ray appearances cleared up in a few days

SLIGHT CASES

The remaining cases are not recorded in detail, since on account of pressure of work no other investigations were carried out They are none the less to be considered as mild cases of blast injury

Cases 11–17 —These 7 men were obviously less ill than any of foregoing Came in somewhat shocked and dyspnœic with some cyanosis and pain in chest and back Breath sounds distant, no added sounds Percussion note normal Symptoms disappeared in a few days and recovery was smooth

CLINICAL FEATURES

The features of the cases which impressed the clinical observer were as follows

Shock was profound in the 5 more serious cases Blood-pressures were not taken, but pallor, cyanosis and rapidity and poor volume of the pulse were noted The other 5 patients described in detail were severely shocked, though less so than the foregoing. The remaining cases were definitely though not dangerously shocked

Dyspnœa was a constant feature of all the patients The difficulty of respiration was due in part to pain and in part to extreme bulging of the chest, which appeared to be in the position of almost full inspiration This bulging has also been noted by Dean, Thomas and Allison (1940) Dyspnœa continued till death in fatal cases, it remitted to some extent after 24 hours in cases 5, 6 and 7, and became noticeable again as the signs of pneumonia developed, in cases 4 and 8 it disappeared within 24 hours

Cyanosis was obvious in the most severe cases and present in all the others In cases 1, 2, 3 and 9 it remained till death In cases 5 6 and 7 it disappeared within 24 hours Thereafter the picture was confused by the administration of sulphapyridine The other cases had cyanosis on admission but lost it after 24 hours.

included in this paper were buried so far as could be ascertained Other patients, who were known to have been pinned under beams have not been included , some of these had injuries requiring surgical treatment, but one of the striking things about this incident was the absence of severe crushed or lacerated wounds The men were in bed on the ground floor, and the complicating factors of trauma due either to falling debris or to being blown against walls were absent except in cases 9 and 10 The circumstances of the injury comply with the criteria set up by Zuckerman (1940) in his experimental work as nearly as is likely to be found in human cases

SEVERE CASES

CASE 1 —Severely shocked and dyspnœic , complained of great pain in chest and abdomen Very restless in spite of morphia gr ½ Great diminution of air-entry with numerous coarse râles over whole chest , percussion unimpaired except at right base Abdomen rigid and painful, and these signs dominated the picture After resuscitation with warmth, oxygen and a plasma transfusion (1 pint) was taken to theatre and laparotomy performed Few small subserous hæmorrhages found but no gross trauma Patient collapsed and died on table about 4 hours after original injury

Autopsy —Well covered No sign of injury except superficial abrasion about 4 in by 2½ in over right shin Clean laparotomy wound *Neck* Carotid sheath and great vessels surrounded with partially clotted blood No tear discovered in vessels Thymus persistent, but appeared healthy and contained no hæmorrhages *Thorax* Each pleural sac contained about 2 pints fluid blood, but no ruptured vessels found No adhesions Hæmorrhage had occurred outside parietal pleura, most obvious along line of ribs Irregularly shaped bright red hæmorrhages also seen beneath visceral pleura , most extensive posteriorly Mediastinum filled with blood mostly fluid *Trachea and main bronchi* exhibited intense congestion of mucous membrane with numerous small hæmorrhages *Lungs* on section were bright red, resembling congestive stage of extensive early lobar pneumonia Congestion best seen in peripheral portions, where elongated bands of dark red hæmorrhage were running parallel with pleura and about ½ in beneath it Numerous small rounded hæmorrhages in other parts of lungs On the whole, these appearances more definite in lower than upper lobes, and more in posterior than anterior portions Nothing to suggest disease prior to injury *Pericardium* showed no free blood, but small hæmorrhages beneath visceral layer *Heart* healthy but contained fluid blood in all chambers *Abdomen* Peritoneum contained no free blood Some small hæmorrhages beneath serous coat over cæcum and appendix and beneath peritoneum over psoas muscle on right side Few subperitoneal hæmorrhages in left hypochondrium, and beneath serous coat of small intestine, but bowel contained no blood and showed no ulceration Small subcapsular hæmorrhages in spleen, kidneys and liver, but these organs otherwise healthy No lesions in suprarenals Gall bladder healthy , no hæmorrhages Head of pancreas contained hæmorrhages Bladder healthy and contained clear urine No fractures noted *Central nervous system* Brain congested with some small submeningeal hæmorrhages over vertex and base A little free blood in ventricles No lesions in substance of brain

Histology —Lesions in lungs patchy In places structure was little, if at all, altered , in others intense outpouring of erythrocytes completely obscured structure Between these two extremes were areas, whose air spaces were still clearly outlined with intact capillary loops, and were filled with erythrocytes Fibrin and free blood pigment also present in small amounts, and scattered throughout the air spaces were numerous polymorphonuclear leucocytes and macrophages Latter contained considerable amount of blood-pigment, and were morphologically identical with heart-failure cell seen in passive congestion Most of capillaries bounding air spaces contained only a few red cells , some loops contained none at all Elastic fibres ruptured in several places Some areas showed nothing but masses of erythrocytes with isolated fragments of ruptured elastic tissue masking alveolar structure Many respiratory bronchioles in these areas also filled with erythrocytes and fibrin, while small bronchi mostly showed desquamation of epithelium with collections of leucocytes filling lumen In sections of peripheral portions of lung, deep layer of pleura contained masses of erythrocytes lying between collagenous fibres , in places, this outpouring of red cells had separated pleura from lung beneath Few streptococci seen, but no areas of bronchopneumonia

CASE 2 —Grossly shocked, dyspnœic and cyanotic, complaining of pain in chest retrosternally and in both flank Rather restless Given usual resuscitation treatment of warmth, morphia and oxygen , on account of condition not moved from resuscitation ward for sixteen hours, when temperature was 100° F and he had recovered sufficiently to justify moving Diminished air entry and coarse râles all over chest, without alteration of percussion note Radiogram (fig I, plate) showed heavy mottling in whole left lung field and a right mid-zone Abdomen rigid and tender During next 12 hours was kept warm and recovered to some extent Vomited several times coffee ground vomitus, not examined for blood Next day considered well enough for transfer to Chest Unit under care of Prof R V Christie, to whom we are indebted for subsequent history On arrival was restless and ill with high colour and some cyanosis , dyspnœic , drank greedily but still vomiting large amounts of thin brownish fluid which gave faintly positive guaiacum reaction Diminished movement on left side of chest and many râles and rhonchi audible, especially in left axilla During next few hours improved, though still irritable, dyspnœic and rather more " bubbly " Venesection attempted twice, second time successfully, with a great relief of restlessness and dyspnœa Vomiting also ceased Few hours later (48 hr after incident), became restless and delirious No râles then audible Soon afterwards collapsed and died in spite of attempted blood transfusion

Autopsy (Professor Hadfield) —No gross injury Some hæmorrhages between parietal pleura and thoracic wall At least two thirds of left lung and half of right lung consolidated Extensive dark subpleural hæmorrhages, continuous with deeply seated hæmorrhages Consolidated parts colour of dark venous blood clot, but " their ill defined edges were bright red, fading off gradually into normally coloured lung Throughout this dark coloured consolidated lung there were many scattered areas, ashen grey in colour and sharply demarcated from the surrounding tissues "

Histology —Appearances bore striking resemblance to those found in hæmorrhagic infarct Little evidence of widespread alveolar rupture and Hadfield took the view that bleeding was due to diapedesis In the grey areas each alveolus "contained a precisely staining close marked film network in the meshes of which considerable numbers of wandering cells and partially hæmolysed red cells were lying The general appearance bore a rather striking superficial resemblance to that of lobar pneumonia in the stage of red hepatisation" Wandering cells predominantly monocytic

CASE 3 —Severe shock, pallor, dyspnœa and cyanosis, with great pain in chest and back Distant breath sounds, with coarse râles all over both lung fields Morphia and oxygen given and some degree of recovery (T 104° F) Next day appeared somewhat better, but still very ill (T 102° F) On 20th, 48 hours after injury, was again much worse Impaired percussion note and tubular breathing at right base—i e , clinically a lobar pneumonia Scattered râles still audible over rest of both lungs Radiogram (fig II) showed heavy mottling over both lung fields with consolidation at right base Became worse and died about 55 hours after incident

Autopsy —Massive hæmorrhages into substance of lung tissue on both sides, with evidence of consolidation at right base Mediastinal and extrapleural hæmorrhages present Unfortunately no portions of lungs preserved for section No evidence of other injury

CASE 4 —Shocked, though less so than previous cases, some dyspnœa and cyanosis Diminished air entry at both bases and scattered râles over both lung fields, Percussion note normal Complained of some pains in chest and abdomen, but these grew less severe after a time (T 101.2° F) Next day much better Still diminished air entry at lung bases and scattered crepitations over whole of both lungs Radiogram (fig III) showed heavy mottling in left lung, less in right Transferred to care of Professor Christie who has provided subsequent history On arrival no dyspnœa or cyanosis Nothing abnormal heard on auscultation anteriorly Nov 21 bruising of right chest wall , diminished movement on left , pulmonary second sounds (P 2) accentuated , B P 140/88 mm Hg Nov 23 vital capacity 2500 c cm Dec 2 vital capacity 3800 c cm ; X ray clear , P 2 less accentuated Dec 9 P 2 more accentuated , ½ oz bright blood coughed up , X ray normal , no abnormal physical signs Dec 15 coughed up dark red blood , P 2 still very loud Jan 5, 1941 bright red blood intimately mixed with mucus coughed up , P 2 + +

and radiologically demonstrable pneumothorax Case 6 developed pneumonia at the left base 36 hours after the blast He had a temperature of 101° rising to 104° F and had some hours of delirium Case 7 had clinical signs of pneumonia 24 hours after the blast This was confirmed radiologically, though it was shown shortly afterwards that he had collapse of the right lower lobe Case 8 was peculiar in that his lungs were clear for 8 days after the explosion, though he had some pain, cough with sputum and an irregular temperature He then complained of sharp pain in his right side, worse on inspiration, and after a further 36 hours had typical clinical and radiological pneumonia of the right lower lobe All the cases were treated with sulphapyridine and the duration of the pneumonia was short, with the exception of case 7 who was seriously ill for some days Pathological examination of case 9 showed, however, that the inflammatory condition was a bronchopneumonia The correct explanation seems to be that the physical signs are largely due to the effusion of blood which corresponds roughly to the stage of red hepatisation of lobar pneumonia and may be expected to give rise to the same physical signs

The less severely blasted cases 11–17 showed no definite physical signs except the bulging of the chest wall with its associated limitation of movement and respiratory excursion The condition became normal in 7–10 days

Radiograms of the chest were taken within 72 hours in cases 2, 3, 4, 5, 6, 7 and 10 Cases 1 and 9 were too ill to disturb The severe cases 2, 3 and 4 all show similar pictures (figs I, II and III) There is heavy mottling over large areas of the lung fields In case 2 it extends through the whole of the left lung field The right middle lobe is seriously affected and to a lesser extent the upper and lower lobes The picture reproduced in fig I was taken within 12 hours of injury

The radiogram of case 3, taken about 48 hours after the injury (fig II) shows the mottling scattered through both lung fields The dense shadow seen at the right base corresponds with an area of pseudo-pneumonic consolidation which was evident clinically and was found at autopsy

Case 4 was X rayed about 30 hours after injury Fig III shows the mottling scattered throughout the left lung and less densely through the right lung Next day the condition had cleared considerably except at the left base, where the shadowing was denser and more homogeneous Five days later the lung had largely cleared and subsequent radiograms showed no abnormality This heavy mottling must be taken as the characteristic radiological appearance after severe blast injury It is due to the interstitial and alveolar hæmorrhage and varies in density and extent with the clinical and pathological findings In severe non-fatal cases it clears rapidly pari-passu with the clinical signs, translucency of the lung being normal within 7 days A rather less severe case (case 6) shows similar mottling of both lung fields 24 hours after injury (fig V) These were still present four days after injury when the radiological appearances of a right basal pneumonia confirmed the physical signs, 10 days after the injury the mottling had disappeared though the lung striation was rather heavy

Case 5 showed a small spontaneous pneumothorax at the left base together with some mottling in the left mid-zone (fig IV) Both cleared up in the course of a few days

A radiogram of case 7 taken about 54 hours after blasting showed heavy mottling in the left mid-zone and collapse and consolidation of the right lower lobe (fig VI) After treatment the mottling cleared up in the course of 10 days while the collapsed lobe gradually re-expanded completely

Case 8 had no radiological lesions when first X rayed a week after the explosion, 4 days later he had some consolidation at the right base which resolved very slowly Case 10 showed similar mottling in the early stages, but cleared rapidly

PATHOLOGICAL FINDINGS

The most striking feature in the autopsies was the effusion of blood This varied from capillary oozing to large hæmorrhages in one case filling both pleural sacs and the tissues of the neck around the carotid sheath For the most part this blood remained fluid

Histologically the chief characteristics were (*a*) an extensive outpouring of erythrocytes, in places accompanied by fibrin formation and the accumulation of blood pigment, though these were not constant, (*b*) rupture of elastic tissue and capillaries in the most affected parts, and (*c*) secondary infection with streptococci and bronchopneumonia The function of the lungs must obviously have been impaired by the filling of respiratory bronchioles and air-spaces of large areas with blood, and by the rupture of the elastic tissue and capillaries If the initial period of shock could have been overcome, the blood corpuscles would presumably have been removed from the air-spaces by the tissue defences as they are in pneumonia, but ruptured elastic fibres and capillaries would not be likely to undergo repair Blast lung, therefore, may suffer both a temporary and permanent impairment of function, varying with the extent of the initial hæmorrhages

The presence of streptococci and bronchopneumonia is noteworthy Probably very few lungs are completely free from organisms even in health, and the risk of secondary infection in blast lung is not negligible

These investigations were made before Robb-Smith's paper (1941) on fat-embolism was published Subsequent investigation of the material with frozen sections did not show any emboli No pictures of the post-mortem specimens or slides can be reproduced owing to the destruction by enemy action of all the pathological material with the exception of one rather unsatisfactory specimen

TREATMENT

Shock —All cases of shock were treated by standard resuscitation methods—heat and morphia Heat was applied to the most serious cases by means of electric cradles, to others by hot bottles Morphia was given to control restlessness The initial dosage was gr $\frac{1}{3}$ This kept the majority of cases fairly quiet Cases 1 and 2 however were violently restless and complained of very great pain, and further doses of morphia gr $\frac{1}{6}$ had to be given It has been argued that morphia in shock has its dangers, particularly when there is damage to the lungs It seems likely, however, that the restlessness and distress of the patient are far more dangerous, and morphia is the only drug which will control them

Oxygen —Cases 2, 3, 4, 5, 6, 7 and 9 were given continuous oxygen Nasal catheters and spectacles were used as B L B mask were not supplied until later Some difficulties were experienced on account of the restlessness of the patients, but the relief afforded by oxygen was obvious Later, when B L B masks were available, they were used, particularly in the treatment of the pneumonias

Transfusions were given to cases 1, 2, 3, 7 and 9 The transfusion fluid was plasma for cases 1, 2 and 3, and blood for case 9, while case 7 received both plasma and blood None of the patients received more than 2 pints and the immediate transfusion of large quantities of plasma as recommended by Whitby and his co-workers (1941) was not undertaken It seems doubtful whether blood should be given unless there is concomitant hæmorrhage Christie observed that there was dilatation of the veins of the neck in one of the cases transferred to him (case 2) This man was much relieved both of his restlessness and the congestion of his lungs by venesection Christie further noted that prior to venesection, the hæmoglobin was 125% The indication is for plasma and not blood These conclusions are confirmed by the pathological findings It is difficult to see how a lung containing large areas of effused blood, often with rupture of the elastic tissue and capillaries, can benefit by blood-transfusion

Sulphapyridine was given prophylactically to cases 3, 5, 6 and 7 The dose was two tablets 4-hourly Case 8 received three tablets followed by one tablet 4-hourly This dosage appeared to have no effect in preventing the development of pneumonia When the pneumonia developed the dosage was increased to two tablets 3-hourly The temperature dropped to normal within 48 hours in cases 5 and 6 Case 7 had pyrexia lasting 6 days and settled down gradually Case 8 was treated for 48 hours, and then as the temperature had more or less settled, the sulphapyridine was stopped, it was started again when he developed signs of pneumonia 9 days later

Pain in the chest —Great pain was complained of by cases 2, 3 and 9, all of whom died The pain was of two distinguishable types—a central deep constant pain which was especially severe in cases 2 and 9 and a less severe pain felt more laterally and made worse by deep breathing The other patients complained of pain of both types, but it was noticeable that the less severely injured made little complaint of the central pain while complaining that the lateral pain was preventing them from breathing The central pain disappeared in the recovering cases after a few days, while the other pain remained for at least a week The cause of the pain in the chest is not clear The deep central pain may be related to the mediastinal hæmorrhages The innervation of the loose tissues of the mediastinum does not seem to have been well worked out, nor is it clear what is the effective pain stimulus The pain felt in the sides may have been due to contusion of the intercostal muscles, since at autopsy hæmorrhages into the spaces extrapleurally was a constant finding These hæmorrhages may also account for the bulging of the chest wall Contusion of the muscle might well result in spasm and contraction of the intercostal muscles causing the chest to assume the inspiratory position

Pain in the abdomen was an important feature of this series This was particularly striking in cases 1, 2, 3, 7 and 9 Cases 1 and 7 presented the appearance of acute abdominal disaster, having great pain and tenderness and rigid abdominal walls It was decided that laparotomy was necessary but nothing abnormal was found except a few small subserous hæmorrhages The abdomens were closed at once Case 1 died on the operating table It was then decided that the other cases who were not less like acute abdomens should be left Case 2 vomited at intervals during the first 24 hours, at times bringing up a brown vomit He was transferred to the care of Professor Christie, who noted the condition but decided to await events Cases 3 and 9 retained their abdominal tenderness and rigidity till death, but the signs ceased to dominate the clinical picture as they had done in the early stages Autopsies were carried out on cases 1 2, 3 and 9 In each of these hæmorrhages were found extrapleurally when the viscera were removed from the thorax, the intercostal spaces appearing black in contrast to the white bands of the ribs It seems possible that these hæmorrhages caused irritation of the intercostal nerves with consequent rigidity of the abdominal wall Zuckerman (1940) reports that this finding is also present in some experimental animals and finds the hæmorrhages continuous with those in the sheaths of the intercostal nerves He agrees that this may be the cause of the abdominal signs Another possible cause of the rigidity is that the abdominal muscles have themselves been damaged No investigation of this point was made Stress is laid on the clinical findings pointing to acute abdominal injury because of the logical course of treatment which they suggest The two laparotomies were undertaken in men whose lungs were known to be damaged and the negative findings were an unpleasant surprise At autopsy in case 1 lesions were found which made it unlikely that he would have lived Case 7 survived after a stormy period

Hæmoptysis —Free hæmoptysis was observed in cases 4 and 6 The amounts of blood were about 4–5 oz Both men were seriously affected by the blast, but neither at any time gave cause for grave anxiety Both men were undisturbed mentally by the hæmoptysis and both seemed somewhat easier after it The blood was noticed about an hour after the blasting and the duration of the free hæmoptysis was about 15 min Thereafter only small amounts of stained sputum were brought up Case 1 was noticed to have brightly stained froth in his air-passages while under the anæsthetic for his laparotomy Case 7 brought up a little dark-stained sputum during the day after the incident A few of the other men brought up dark blood in the sputum after 24–48 hours, but no other cases had free hæmoptysis Some of the men brought in dead or dying had blood staining in the nose and mouth without visible injury This accords with the more detailed observations made by Hadfield in his autopsies Other men who were operated on for lacerations and other injuries and are not included here were found to have blood-stained secretion in the trachea These patients were certainly suffering from blast Apart, however, from the 2 cases mentioned hæmoptysis was not a prominent symptom

Cough and sputum —None of the men were noticed to be coughing during the first twenty-four hours after blasting After this a number had coughs, some of which were troublesome The sputum was moderately thick, muco-purulent, and in several cases stained with dark blood for 24–48 hours In uncomplicated cases the cough and sputum disappeared in ten days, they persisted in the cases with severe late effects or complications

Restlessness was extreme in some cases Case 1 was quite uncontrollable even after repeated doses of morphia At autopsy some subarachnoid hæmorrhage was present in the vertical region There was no evidence of cranial injury Case 2 was restless during the first few hours but gradually became quieter After transfer to the Chest Unit he was again restless and continued so most of the time until his death Case 3 was exceedingly restless and controlled only by repeated doses of morphia Case 9, although in severe pain, was less restless than the foregoing He too had some subarachnoid hæmorrhage without obvious cranial injury The other cases were restless in proportion to the degree of injury but they were *all controlled by morphia*

Restlessness is therefore a constant symptom of blast injury and bears a direct relation to the severity of the damage The pathological findings suggest that it is not due to the pain but rather to an irritative lesion within the cranium This is supported by the observation that other victims of this incident whose principal injuries were caused by violence (e g , falling debris) were restless out of all proportion to the severity of their injuries The most extreme case was that of a man with a fractured femur who was almost maniacal for a week after the injury There was no gross evidence of cranial injury or pulmonary damage and the femur was successfully reduced a few hours after injury Certain other men with cranial and facial injuries gave no special trouble and one lad with extensive and painful burns was kept quiet without difficulty It seems justifiable to conclude that extreme restlessness is a result of blast injury to the head

Ruptured ear-drums were found in 25 men Some of these developed purulent otorrhœa which in a few cases proved very resistant to treatment

PHYSICAL AND RADIOLOGICAL SIGNS

The physical signs in the chest varied with the severity of the condition, but some were common to all patients in this series The chest was held about three-quarters expanded Respiratory movement was, therefore, much reduced, but was generally equal on the two sides Attempts at deep inspiration were limited by the expansion of the chest and the fact that the movement was painful Palpation gave no additional information The percussion note was resonant at all areas in the early stages On auscultation, the breath-sounds were notably weak especially at the bases Coarse rales were audible over the whole of the lung fields, numerous in the fatal cases 1, 2, 3 and 9 and less numerous in the other severe cases 4, 5 and 7 Case 6 was peculiar in that the added sounds were rhonchi The man was wheezing like an elderly bronchitic, though he had had no bronchitis previously The less severe cases, 8 and 10–17 inclusive, had no added sounds The rales persisted until death in cases 2, 3 and 9, where observations were made, though they became less numerous in the period of partial recovery which each patient showed Case 1 died without further observation on this point In cases 4, 5 and 7 the generalised rales became less numerous and disappeared in the course of a few days They appeared to persist longest at the lung bases

A striking feature was the development of the clinical appearance of lobar pneumonia at one lung base This was heralded by a more or less sharp rise of temperature Case 3 had a temperature of 104° F 12 hours after the blast After 48 hours the percussion note at the left base was much impaired with tubular breathing , this clinical finding was confirmed by X ray , he died a few hours later Case 5 showed a similar condition at the left base paravertebrally 30 hours after the blast, though here the picture was complicated by a small clinically

THE LANCET

LONDON SATURDAY, OCTOBER 11, 1941

BIPP AND ITS FRIENDS

TOWARDS the end of 1915 RUTHERFORD MORISON[1] first introduced bipp cream, consisting of one part of bismuth subnitrate and two parts of iodoform made into a paste with liquid paraffin, for the treatment of war wounds At the time he was stationed in England, and most of his cases being late he merely enlarged the wound or abscess cavity and after complete hæmostasis dried the cavity with spirit and applied a small quantity of this paste to the walls He then sutured the wound He was astonishingly successful although, as he admitted, he had acted contrary to the canons of surgical teaching A little more than a year later intermittent irrigation with Dakin's solution, as introduced by CARREL, became the popular method of wound treatment To keep the wound under observation and see the pus washed away made a strong appeal, and, as THOMAS once wrote of other things, it is difficult to cure that " hankering to interfere " But bipp continued to be used by many surgeons although its effectiveness remained a puzzle The bacteriologists have pointed out that in broth streptococci can actually be grown on the paste MORISON was of course aware of this and he repeatedly referred to the fact that the wound discharges contained numerous organisms A full bacteriological investigation of bipped wounds by CHAMBERS and GOLDSMITH[2] at that time showed that aerobic and anaerobic organisms could invariably be recovered but that there was no free proliferation Yet these wounds healed as if they were surgically clean—there was no redness, no induration, and the granulations were vascular and firm Similar observations on the healing of wounds despite a multiplicity of apparently virulent organisms have been made in this war by ORR-EWING, SCOTT and GARDINER,[3] in their bacteriological investigations on wounds treated in plaster

Lately GURD and MCKIM[4] have recorded their successful experiences in the use of bipp for 25 years They explain its action on a physical basis rather than from any special antiseptic rôle of iodoform or liberated iodine They describe it as " curtain drainage " If on a smooth surface such as glass water is poured it will fill the area and stay But if oil is poured on the glass first, water then applied will immediately float off Thus on the walls of the abscess cavity or incised wound oiled with bipp the lymph will not adhere and clot but will continue to flow and there will be a continuous discharge of fresh leucocytes and antibacterial products It is like the paraffined syringe of old for blood-transfusion, where the blood would flow without clotting MORISON and others who use bipp have all commented on the free flow of leucocytic discharge This lymph lavage—a " lymph leech " to prevent any stanching of the lymph outflow—was ALMROTH WRIGHT'S[5] concept of the physiological approach required for wound treatment The drying of the wound with spirit, the use of only a small quantity of bipp to coat the walls (MORISON recommended that no more than two drachms should be used)—these are the rules that must be observed GURD and MCKIM do not agree with the principle of wound suture They make certain by further incisions that the wound tissues are relaxed—especially the fasciæ—and after being lined with bipp the cavity is firmly packed with gauze soaked in liquid paraffin and containing a little more bipp If it is a limb that is wounded it is either splinted or encased in plaster A remarkable feature has been the absence of sinuses and the rarity of sequestrum formation in the compound fractures SAINT[6] has also remarked that little or no sequestration followed in his cases of osteitis thus treated DOUBLEDAY[7] has recently advocated the use of bipp in injuries and abscesses of the jaw In this war there has as yet been no report on the late results of the closed-plaster treatment of compound fractures, but when closed plaster was used in Spain D'HARCOURT[8] and others reported that sinuses and sequestra were definite late problems which still required an answer

There has always been one bogy dangling before the users of bipp—poisoning Tachycardia, delirium or mental aberration, emaciation and signs of bismuth metallism, such as gingivitis, stomatitis and diarrhœa, have been the main symptoms recorded in cases where bipp poisoning was suspected Neither MORISON nor GURD and MCKIM, out of thousands of cases, had any deaths that could possibly be attributed to it It was the misuse of bipp that was responsible for the rare intoxication The latter record seeing knee-joints packed with bipp, and an empyema cavity filled with 6 ounces of the paste With bipp properly used the danger of poisoning is remote, but most surgeons urge special care in children The poisoning symptoms seem nearly always to be due to the bismuth, and gingivitis or stomatitis long precedes any others Washing out the wound with hydrogen peroxide and giving alkalis, GORDON WATSON[9] points out, ensures an ample margin of safety Ten years ago CONNELL and BUCHANAN substituted zinc oxide for the bismuth subnitrate and CONNELL[10] claims that in his ' zipp " the action of bipp has been retained with no risk of toxic symptoms He has employed zipp extensively in the tropics and finds that the problems of maggots and smell in wounds treated in plaster are thus overcome When wounds are plugged with soft paraffin maggots will almost certainly appear in abundance inside the plaster, and although they do no harm (and even good) yet patients justifiably protest Zipp is now being employed in East Africa and further reports will be of special interest HOFFMAN[11] has gone further and sought to add an antiseptic punch to the paste by substituting zinc peroxide for bismuth and adding sulphanilamide powder This he calls " zisp ' He claims that zinc peroxide liberates oxygen and thus deals with the

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DIAGNOSIS

The diagnosis of blast injury of the lung is not difficult in the most severe cases Gross shock, out of proportion to the degree of injury, pain in the chest, restlessness, dyspnœa and cyanosis are the main symptoms Blood-stained sputum or free hæmoptysis may be present Bulging of the chest wall, poor respiratory excursion, normal percussion note with perhaps impairment in one locality, distant breath-sounds in all zones and numerous coarse rales or sometimes rhonchi are the main physical signs In milder cases the degree of the symptoms is less, and restlessness and cyanosis may be absent The physical signs are similarly less prominent and added sounds are few or absent X-ray appearances are characteristic They resemble in some measure a patchy pneumonic consolidation to which they are histologically very similar In favourable cases resolution is very rapid, the lung clearing in 4–7 days

The principal difficulties arise in cases where there are gross other injuries, particularly injuries to the chest wall Fractures of the sternum and ribs may confuse the picture Hæmothorax gives a similar picture to blast injury but produces dullness on percussion Pneumothorax similarly may give rise to difficulty, but the hyper-resonant percussion note will point to the diagnosis *Hæmothorax and pneumothorax may both be due to* blast injury Most blast injuries occur in cases which have also contusions or crush injuries of the chest Osborn (1941) contends that since they are so often found together they should be described together But since blast injuries and crush injuries can be studied separately in animals it seems desirable that they should be kept separate as far as possible in human material also, at least until it can be shown that the pathology and treatment are the same

No confirmation is supplied by this series of cases of Osborn's view that blast injury is best marked in the phrenico-costal sinus The severe cases had contusions in the deep parts of the lungs and at the edges The less severe cases had lesions in the thicker parts of the lungs, and showed no lesions in the sinuses With regard to Osborn's "attempt to show that the same lesion may result from a sudden diffuse compression by bombs and mechanical means," it is perhaps a little premature to regard the distinction as only academic

The importance of making a diagnosis of blast injury is great, since rest is of prime importance, and anæsthetics are contra-indicated

SUMMARY

Eight severe cases of blast injury to the lungs without external injury and 2 associated with injury to the chest wall are described in detail, seven less severe cases are also recorded The main symptoms were grave shock, prostration and restlessness, respiratory difficulty and pain in the chest The principal physical signs were bulging of the chest wall, congestion and consolidation of the lungs Bronchopneumonia was a common sequel The radiological appearances are characteristic The treatment consists of heat, morphia, oxygen and plasma-transfusion Blood is only indicated if there is anæmia Chemotherapy should be started as soon as the patient has recovered a little

Five cases showed severe abdominal signs, and two were explored Operation is contra-indicated unless the signs point to a specific lesion A general anæsthetic should be postponed as long as possible The patients should not be moved more than is absolutely necessary

Pathologically, there was gross effusion of blood into the mediastinum due to rupture of capillaries Naked eye, the lungs exhibited patches of intense congestion resembling early lobar pneumonia Histologically, there was (*a*) extensive outpouring of erythrocytes, (*b*) rupture of elastic tissue and capillaries, and (*c*) secondary infection with streptococci causing bronchopneumonia No evidence of fat-embolism was seen

We are indebted to Dr W A Bullough, county medical officer, for permission to publish these cases

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Reviews of Books

Bone Graft Surgery in Disease, Injury and Deformi

FRED H ALBEE, M D, F A C S, president of the Int national College of Surgeons London D Applet Century Co Pp 403 35*s*

THE wide use which is now made of the bone graft the surgery of disease, injury and deformity is so mu taken for granted that one is apt to forget the del owing to Albee for his pioneer work Albee's name associated with a fusion operation for spinal tuberculo and he still claims that this method of treatment su plants conservative measures, a view which has nev been shared by British surgeons who find the chief val of the bone graft rather in the prevention and treatmen of ununited fractures and in the ankylosis of joint In this book Albee makes it clear that the success of an graft depends on the perfection of its fit Inaccurac spells failure The ingenuity with which he has devise means of accurately fitting grafts deserves the highe praise and to the young surgeon who wishes to lear bone grafting surgery this book is indispensable Th author has drawn on a lifetime of experience and th methods described cover the widest range As a account of the technique of bone graft surgery the book is supreme It is attractively written and well illustrated

Medical Diseases of War

(2nd ed) SIR ARTHUR HURST, D M, F R C P London Edward Arnold and Co Pp 427 18*s*

THE experience gained in this war since the first edition in January, 1940, has increased this volume by 100 pages Additions include a full account of meningo coccal fever, with the importance of the non menin gitic type stressed; a clear and well-illustrated section on malaria, an addition to the skin section on impetigo, the return of the chapter on amœbic dysentery from the parent volume of 1918, and a review of the "gastric" situation, probably the most important medical problem of this war This is the only existing book on the purely medical aspects of war, and the appearance of a new edition to cover the altered situation is welcome It i to be hoped that future editions will continue to cater for new aspects with further inclusions, even if some omis sions have to be made to keep the work of serviceable compactness For example, shock, resuscitation methods and blast injuries might displace subjects which have not been prominent in this war, such as trench fever and the dramatic type of hysteria We would be sorry to see these last pages go on account of their interest and originality, but economy and price are important points in such a book, which has been invaluable in past war years and should continue to be so

The Medico-Legal Post-Mortem in India

(2nd ed) D P LAMBERT, M D, D T M & H, major I M S London J and A Churchill Pp 113 5*s*

THE previous edition of this little book has evidently achieved the end which the author had in view when it was written, for a second edition now appears with but the slightest alteration in the general matter or arrange ment of the text We previously remarked on the valu of Major Lambert's personal observations on the practica aspects of his subject The book remains an excellent aid to the performance of medicolegal autopsies in India

Plant Science Formulæ

R C MCLEAN, D Sc Camb, F L S, professor of botany University College, Cardiff, and W R IVIMEY COOK, Ph D Lond, F L S, lecturer in the department London Macmillan and Co Pp 203 7*s* 6*d*

THIS is, as stated in the subtitle, a reference book intended for the use of plant science laboratories, inclu ding bacteriology It contains a collection of formul which the authors have selected on the basis of thei experience and that of others as of proved value I addition to those concerned with the fixing, preservatio and staining of material, formulæ for the preparation o the more customary reagents, nutrient media, photo graphic requirements and other laboratory needs ar included Whilst there will naturally be diversity o opinion as to what ought to be *included or omitted* fro such a selection the work should prove a useful additio to the laboratory bookshelf ines and doing work of good quality, are financially very profitable About seventy large firms provide dental services for their employees It is significant of the present low standard of public education in the care of the teeth that a relatively small number avail themselves of N H I facilities

The 15,000 dental practitioners in the United Kingdom vary greatly in the training they have received The committee sent out questionnaires to 11 English dental schools and received 8 replies These showed that the average training in modern prosthetic techniques, orthodontics, radiography, anæsthetics, minor oral surgery and conservative dentistry for children is barely sufficient for the demands of good dental practice, and that the standard demanded of the student varies widely. Thus the numbers of dentures which students were required to complete ranged from 6 to 25 in different schools, and the hours spent weekly in conservation work varied between no fixed number of hours, 20 hours enforced, and 27 hours not enforced In many hospitals there was lack of modern equipment, shortage of tutors and demonstrators, tendency to neglect backward students, and insufficient supervision In addition the status and training facilities for dental mechanics are said to be poor, and the help that dental students receive from these skilled craftsmen is often inadequate The committee promises to publish later a final section on planning for post-war dentistry A remark in their last chapter deserves the attention of our medical planners "The education of medical students in dental matters is deplorably neglected"

COOLING DRUGS AND COOLING CENTRES

In the region of the hypothalamus there are centres which exert such a profound influence on temperature regulation that they have been designated the temperature centres Their identification has stimulated a great deal of research on the physiology of thermal equilibrium and has provided a foundation for hypotheses purporting to explain pyrexia and the mode of action of antipyretics The centres appear to act as a thermostat which in the human subject is set at about 98 4° F but permits of a diurnal fluctuation of approximately 1° F They are themselves sensitive to thermal variations in the fluid that bathes them—if the blood in the carotid artery is made excessively hot the skin reacts as it would to a sharp rise of external temperature Mechanical irritation of the heat centres in experimental animals also causes a rise of temperature, the thermostat readjusts itself to operate at a higher level This curious phenomenon made possible the classical experiments of GOTTLIEB on the pharmacology of the antipyretics He showed that quinine and drugs of the phenazone group abolished this artificial pyrexia, but whereas quinine achieved its effect by depressing tissue metabolism (letting the fire burn low) the newer antipyretics struck at the heat-balancing mechanism, he also showed that these drugs shared with morphine and chloral hydrate a narcotic action on the thermogenic centres, which so upset equilibrium that thermolysis became urgently necessary in order to restore the balance The loss of heat from the skin under these conditions is so brisk that cooling may be compared [illegible] s The hypotheses of early workers receive corroboration from the fact that direct application of antipyretics to the hypothalamus is even more effective than intravenous administration *It is noteworthy that the antipyretic* action of the phenazone group of drugs is seen only when the temperature is raised, they have no action on the normal subject Such was the rage for antipyretics which prevailed in the closing decades of last century that attention was focused almost exclusively on drugs that produced dramatic effects which could be represented by precipitous curves on temperature charts Pharmacologists of the time were slow to elaborate the conception of hypothalamic *centres governing temperature regulation*, but in 1901 HARNACK and his associates showed that picrotoxin, aconitine, veratrine and santonin lowered body temperature in apyrexial animals and they suggested that the action was probably due to stimulation of a cooling centre The discovery that section of the cervical cord abolished the action of these drugs suggested an anatomical relationship to the other temperature-controlling centres, and it was found that a rise or a fall of temperature could be produced by electrical stimulation of various parts of the hypothalamus Localisation was carried a step further by the discovery that lesions of the hypothalamus behind the corpora mamillaria produced a fall of temperature The fact that the cooling action is diminished by hypnotics suggests that the centre responsible shares certain physiological properties with the thermogenic centres The *cooling action is accompanied* by a decrease in oxygen consumption and a fall in the metabolic rate Thus there is a resemblance between the action of quinine in non-malarial pyrexia and the effect of the picrotoxin group of drugs on the normal animal Whether the resemblance amounts to anything more than a superficial likeness it is difficult to say, but perhaps it would be worth while to investigate the antipyretic action of quinine again from this point of view, using the new technique based on the thermocouple and the string galvanometer for measuring skin temperatures

Lately ROSENTHAL,[1] working on rabbits, has confirmed that picrotoxin and aconitine, injected into the infundibular region, have a cooling effect on the animal, the fall of temperature amounted to 4 1° C after 1 μg of picrotoxin and 5 6° C after 0 03 μg of aconitine The cooling effect of the two drugs injected simultaneously was greater than the algebraic sum of the effect of each Arguing from observation of the side-effects of aconitine on the heart rhythm and on the electrocardiogram, ROSENTHAL suggested that the simultaneous disturbances of cardiac action are almost certainly due to stimulation of hypothalamic centres, and therefore that the cooling effect of the drug is also attributable to central stimulation rather than paralysis The grounds for this hypothesis are hardly satisfactory He mentions the side-effects on the heart as evidence suggesting the site of action of the drug, and anticipates the criticism that even the fall in temperature may be due to a toxic action on the cardiovascular system by stating that even when "no cardiac changes" occurred the body temperature fell considerably It should be remembered, however, that normal electrocardiograms may be obtained even when cardiac efficiency has anaerobic organisms, but a fair proportion of his cases nevertheless developed gas-gangrene

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[1] Rosenthal F E *J Pharmacol* April, 1941 p 305

The curtain drainage action of bipp depends on the paraffin being liquid paraffinum molle must not be used since this will not adhere to the wound walls This fact should be borne in mind in preparing other applications for packing wounds Moreover, LOCATELLI and BOWDEN[12] say that sulphanilamide in an ointment base is inert but in liquid paraffin its full bacteriostatic action is sustained Now that local sulphanilamide is being extensively used it seems therefore that liquid paraffin, or some oil of like consistency, is the rational packing required so as to obtain both the bacteriostatic action of the sulphanilamide and the curtain drainage

CARE OF THE TEETH

DENTAL students, like medical ones, are inspecting their world with a view to alteration and redecoration throughout They have set about it in a mature and workmanlike manner which might be taken as a model for students of all professions, for their Memorandum on the Nation's Dental Services[13] is packed, not with ungrounded enthusiasms or pious hopes, but with solid information obtained by careful inquiry The committee represents five London dental schools (Guy s, London and King's College and both the special dental hospitals) and is working in cooperation with some dental schools in the provinces The memo reviews prewar and present conditions in dental education and in dentistry as a public service and as a career Medical officers of health and school doctors are often enthusiastic about teeth, but otherwise the medical profession has remained curiously apathetic towards public dental services, here shown to be full of serious defects Nor are the public properly educated in the care of the teeth, those attending dental clinics know quite a lot about fillings, but unfortunately public conservative dentistry in the past fell short of the best standards Fillings have so often failed that people have become sceptical, and have in many cases reverted to the view that the dentist only exists to extract teeth Thus the profession is faced with the difficult task of regaining their confidence and re-educating them Some headway is evidently being made, for the numbers of insured people seeking conservative treatment are beginning to rise The cost of conservative treatment, however, is often beyond the means of the uninsured, and it is useless, as the committee points out, to train the public to demand good dental treatment unless the dental services are adequate The care of the teeth should begin before birth with the diet of the expectant mother, it is important that she should be taught this, but it is at least equally important that she should be introduced to the advantages of conservative dentistry before the child is born In some L C C hospitals all antenatal patients are seen by the dental surgeon and invited to have any necessary treatment, and the Eastman Dental Clinic has a staff of women dental surgeons who treat expectant mothers attending the Royal Free Hospital These are exceptions, however, in most antenatal clinics there is no routine inspection by a dental surgeon

The child, before he goes to school, gets little dental supervision beyond that given by the welfare doctor though at a few welfare centres various degrees of dental treatment have been arranged At school he is under the care of the school dental service In 1939, it seems, 69% of the children inspected required treatment, but only two-thirds of these actually received it In most cases dental inspection is only made once a year, and treatment can only be carried out if the parent consents and brings the child to keep the appointment Local authorities usually employ only one full-time dental surgeon for 4000-6000 children The provision is made for the number of children ordinarily accepting treatment, thus in a school population of 5000 only about 2300 children might be expected to accept Good simple treatment can be given by one dentist to about 1450 children yearly, if that number is increased the standard of work suffers proportionately This has been responsible for much of the unpopularity of conservative work in school dentistry, the parents can scarcely be blamed for refusing it in such circumstances, and that it often is refused is evident from the school reports In Kent it has been noticed that many parents, though unable to afford private dental treatment for their children, are yet unwilling to take advantage of the clinics, in Holland, Lincolnshire, caries of the temporary teeth is increasing, and one Nottingham mother who had agreed to send her child overseas withdrew him when she was told that dental treatment was essential Such incidents could have been avoided, perhaps, if the dental profession had resisted from the start any attempt to burden them with more work than they can do with credit Some local authorities, however, are aware of the inadequacies of their services, and are doing their best to improve them On leaving school at 14 the child can get no more dental benefit until he becomes eligible under National Health Insurance at 16 Much ill health and unnecessary loss of teeth result from this gap in treatment at a period of life when dental caries is most rife, and a large part of the work of the school dental service is wasted There is a scheme for dental inspection and treatment of adolescents at Cambridge—apparently the only one in England Coupled with their fine school service this has an opportunity to do invaluable work

As things are, 13 million of our people get N H I dental benefit and 5-6 million children and infants are covered by the school and infant-welfare services; this leaves 24 million for whom there is no regular provision of dental treatment by the state Only a comparatively small proportion of these can afford to pay the full dental fees, yet most dental surgeons serve only this group The dental register has remained stationary at 14,000-15,000 practitioners for the past fifteen years The committee estimate that probably about 34½ million people need regular dental treatment, and that even if each of them visited their dentist only once a year, every dentist in the country would have to see at least eight patients a day There are dental clinics, so called commercial practices, which cater for the poorer sections of the community, these, run on efficient and economical his number includes about 50 medical men and women During the war the society will hold meetings for the discussion of specific topics at various research institutes and the first meeting is to be held at Cambridge on Oct 18, when the subject for discussion will be ' The Evaluation of Nutritional Status ' The meeting starts at 11 A M with an introductory address by Sir Gowland Hopkins This is followed by Drs Harris, Sinclair John Yudkin and G W Robertson on ' Assessment of the level of nutrition in man " , Dr Platt, Dr R H Dobbs and Mr W C W Nixon on " Clinical signs of dietary deficiency ' Drs C Crowther, Green and Hammond on " Nutrition of farm animals " , and then an open discussion

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[12] Locatelli, A M and Bowden, S *Pharmaceut J* June 7, 1911, p 25

[13] Issued by the Joint Planning Committee of Dental Students Obtainable from the secretary of the committee, Royal Dental Hospital 1s

It has been difficult in the past for the clinician to keep in touch with the advances made by the biochemist, and the agriculturist planning production has rarely been in direct contact with the dietitian who knows the community s needs This new society will bring them together in the same room

ELECTROLYTIC SODIUM HYPOCHLORITE

In the treatment of wounds and burns by the envelope method, Bunyan[1] used sodium hypochlorite prepared by the electrolysis of brine in preference to Dakin's solution or eusol Carey[2] has described a simple apparatus by which the dispensaries of the smallest hospitals could prepare the solution A platinum wire and a carbon rod serve as electrodes The electrolyte is cooled by passing a stream of cold water through a piece of glass tubing suitably bent Failure to prevent the solution heating leads to formation of sodium chlorate The solution used is 18% sodium chloride in water Electrolysis sets free chlorine at the anode and sodium at the cathode The sodium reacts with water immediately to form sodium hydroxide which in turn reacts with the chlorine liberated at the anode forming sodium hypochlorite and sodium chloride The process is continued until about 1% sodium hypochlorite is present If the solution is then diluted twenty times an isotonic fluid results Continuous current must be used , Carey used a trickle charger giving a potential of 12 volts and a maximum output of 1 ampere but this was rather slow The yield depends on the amperage, and the reaction can be speeded up by using a higher voltage The only limit is that set by the heating of the solution, which is also proportional to the amperage

THE RICKETTSIASES

ANYONE who tries to classify and describe the many diseases now known to be caused by rickettsias must face the fact that there are still gaps in our knowledge of their ætiology, pathology and immunology, though on the clinical side there is a fairly broad basis of substantial fact An attempt to summarise the present position has been made by Blumer[3] The rickettsias are a widely distributed group of organisms primarily occurring in insects , possibly they may represent bacteria modified by generations of existence in insects, although it must be remembered that insects are also parasitised by true bacteria which show no similarity to the rickettsias Some include the agents of psittacosis, trachoma, inclusion conjunctivitis lymphogranuloma venereum and conjunctivitis in cattle, sheep, pigs and pigeons among the rickettsias, but at present it seems better to regard these organisms as viruses, for though they have certain morphological and tinctorial similarities to rickettsias there is no evidence that they are in any way associated with insects Some of the rickettsias are pathogenic to man, to their insect hosts and to susceptible animals, while others are apparently harmless symbionts Blumer points out that there are many similarities between the rickettsiases seen in man and animals Thus all rickettsial infections are transmitted through vectors—lice, ticks larval mites or fleas A given rickettsia, however, may be transmitted by more than one genus of vectors or by different vectors of the same genus In some rickettsiases there is a primary lesion at the point of inoculation , this is true of fievre boutonneuse, South African tick-bite fever and Japanese river fever or tsutsugamushi disease but not of others All the rickettsiases tend to present clinical resemblances in a sudden and often severe onset, a tendency to terminate by crisis, sometimes skin eruptions of a hæmorrhagic type and often involvement of the central nervous system Recent observations suggest that many rickettsial infections involve the lungs setting up a pneumonitis or interstitial pneumonia The essential pathological feature common to all rickettsiases is an involvement of endothelial cells In the blood-vessels this involvement causes proliferative and degenerative changes that are chiefly responsible for the skin eruptions and hæmorrhages as well as for the changes in the central nervous system. It is curious that despite the frequency of typhus epidemics there is still no agreement as to the leucocyte changes in this disease, though there is evidence to show that a polymorphonuclear leucocytosis is more common than in any virus infection In one important point exanthematic typhus shows a similarity to many virus diseases—in the occurrence of inapparent infections In a Belgrade epidemic it was found that the serum of 13% of a group of apparently healthy people gave a positive Weil-Felix reaction in dilutions ranging from 1 100 to 1 800, and only one of the group had previously suffered from clinical typhus fever The blood of some of them was still infectious for guineapigs

OSTEOMYELITIS OF THE SPINE

Lannelongue[1] first described a case of osteomyelitis of the spine in 1879 but the difficulties of diagnosis and treatment have yet to be overcome Three main clinical types have been described according to the degree of virulence of the disease process In the fulminating cases the picture of septicæmia is uppermost, local signs being masked by the severity of the general symptoms Blood-culture is almost always positive, and few reported cases have recovered The subacute type is marked by early abscess formation in addition to the general signs of infection, and symptoms referable to the affected vertebræ are usually evident Symptoms suggestive of an infection of the urinary tract are constantly seen when the dorso-lumbar region is affected, and may give rise to errors in diagnosis Bony changes on X-ray examination are not seen until the third week, although radiography may be of value in disclosing deeply lying abscesses as early as the seventh day of the disease The chronic type is more rare, but is of particular importance owing to the danger of confusion with Pott's disease. In differentiation age, rate of progress and the radiological appearances will help Osteomyelitis mainly affects adults, tuberculous caries mainly children , even in the chronic type osteomyelitis progresses more rapidly than tuberculosis , radiologically, osteomyelitis destroys the intervertebral disc earlier and spreads more quickly to the adjacent vertebræ Regeneration of bone is seen during the healing stage of tuberculosis, but this is more definite in osteomyelitis and usually goes on to new bone formation and even bony union The three types of osteomyelitis were clearly differentiated by Butler, Blusger and Perry,[2] who described a case which was unaffected by sulphapyridine but steadily improved on sulphathiazole Holmberg[3] has described seven cases,

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Bunyan J *Brit med J* 1941 2 1

Carey J *Pharmaceut J* Aug 23 1941 p 68

Blumer G Nelson Loose-leaf Medicine, New York 1941 Vol I Renewal pages 191 to 202B

[1] Lannelongue O M Acute Osteomyelitis during the Period of Growth Paris 1879

[2] Butler E C B Blusger I N and Perry, K. *Lancet* 1941, I 480

[3] Holmberg L *Acta chir scand* 1941, 84 479

diminished to the point of circulatory collapse Furthermore, the rapid onset of hyperglycæmia which ROSENTHAL shows as an accompaniment to the fall of temperature after aconitine suggests a sympatheticomimetic action rather than vagal overactivity, indeed, a fair interpretation of this phenomenon is that the sharp fall of temperature stimulated the adrenal to staunch the flow of radiant heat by means of vaso-constriction, and that the accompanying hyperglycæmia reinforced this mechanism, which aimed at restoring thermal equilibrium The well-known antagonism between picrotoxin and the barbiturates is illustrated by ROSENTHAL's experiments, the cooling action of picrotoxin was practically abolished by the simultaneous injection of phenobarbitone The fact that these two drugs cancel one another out in the pharmacological sense rather than by chemical union is confirmed by the observation that either of them alone is capable of producing a fall of temperature Moreover, the masking effect of the phenobarbitone on the picrotoxin cooling phenomenon proves that this cooling action must be the result of stimulation of a separate centre and not merely the consequence of paralysis of heat-production centres One of the dangers of being under the influence of narcotics is that these drugs produce increased susceptibility to changes in temperature in one's surroundings HERRMANN[2] has shown that sub-hypnotic doses of depressants to the central nervous system, including morphine, pentobarbital and paraldehyde, cause loss of control over temperature regulation, and the toxicity of these drugs was found to be increased by low environmental temperatures These results, obtained in animals, may have some therapeutic application in the management of patients who are allowed to go about while receiving hypnotic drugs—epileptics, for example, who are taking several grains of phenobarbitone daily Furthermore, a few years ago we were assured by "the trade" that every sailor knows that rum keeps the cold out, and pharmacologists were bewildered by this contradiction to their own teaching Certainly if HERMANN's results are applicable to the methane series of narcotics generally rum is more likely to let the cold in, though the sailor with rum inside him may not care either way

So far the drugs which have been shown to possess this cooling action are also noteworthy for their high toxicity Picrotoxin is finding its way back into therapeutics merely as an alternative to strychnine in the treatment of barbitone poisoning, but even here the drug is rightly classified among the desperate remedies Aconitine once enjoyed a considerable reputation as a diaphoretic and antipyretic, but a well-founded prejudice against cold sweats and increasing recognition of its harmful effects led to its abandonment by the physician In any case, such a drug could hardly be expected to hold its own when aspirin was made available Perhaps the main value of the recent precise work on cooling drugs is that it justifies a search for new substances—possibly synthetic products—with a pharmacological action on the hypothalamus comparable to that of the picrotoxin group of drugs, and yet having that margin of safety which POULSSON used to call ' latitude of therapeutic action "

Annotations

RADIOLOGY AS A CAREER

THE events of the last two years have shifted many medical careers into other channels and have raised doubts about the prospects after the war of this or that branch of medicine There is however little doubt that there will be a shortage of radiologists unless newly qualified men turn their thoughts now in that direction The Ministry of Health is prepared to enrol in the Emergency Medical Service radiology house surgeons at selected hospitals in London and the provinces Applicants must satisfy the deans of their medical faculties or schools that they intend to take up radiology and are prepared to enter for a diploma in medical radiology at the termination of their course of study The selected hospitals will be so situated that attendance at course of instruction will be practicable, and successful applicants will be required to undergo the appropriate course of instruction, paying the necessary fees Applicants must have held a house appointment at a hospital for at least six months, and preference will be given to those with longer clinical experience The salary will be at the rate of £200 a year with an additional £100 for board and lodging if the officer is required to live outside the hospital Applications should be made (through the deans or group officers) to the Director of Establishments, Ministry of Health, Caxton House, London, S W 1

FOUNDATION OF THE NUTRITION SOCIETY

NUTRITION, more than almost any other subject, concerns scientists of widely different training and outlook The clinician has always been concerned with dietetics, and in the last 25 years he has come to recognise more and more diseases caused by nutritional deficiencies The study of the digestion, assimilation and metabolism of foodstuffs occupies many physiologists, and biochemists are engaged more on nutritional problems than on any other single branch of their science Economists, sociologists, public-health officials, agriculturists and chemists too are all deeply concerned with the science of nutrition, but there has hitherto been no common meeting ground for discussion Even the Biochemical and Physiological Societies and the nutrition panel of the Society of Chemical Industry include only a minority of those who are interested in nutrition Before this war workers engaged on nutritional research had often discussed the desirability of founding a scientific society that would embrace all who had a genuine interest in the various branches of the subject A year ago an informal group composed of about twenty representatives of the main laboratories working on nutrition started to meet about once a month But it soon became apparent that even in war time it was desirable to have meetings that were more formal and had a much larger attendance Representatives of the institutes interested therefore met at the Royal Institution and decided to form the Nutrition Society, with the following provisional committee Sir John Orr, M D, F R S, Rowett Research Institute (chairman), John Hammond, F R S, School of Agriculture, Cambridge (vice chairman), Leslie Harris, D Sc, Nutritional Laboratory, Cambridge (hon secretary), A L Bacharach, Glaxo Ltd (hon treasurer), Harriette Chick, D Sc, Lister Institute, Ethel M Cruickshank, Ph D, School of Agriculture, Cambridge, H H Green, D Sc, Veterinary Laboratory, Weybridge, Prof H P Himsworth, M D, University College Hospital, Prof A St G Huggett, M B, St Mary's Hospital, Franklin Kidd, D Sc, Food Investigation Board, S K Kon, D Sc, National Institute for Research in Dairying, B S Platt, M B, Medical Research Council, H M Sinclair, D M, Department of Biochemistry, Oxford About 230 scientists who are or have been working on nutrition have been invited to become original members,

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2 Herrmann, J B *Ibid*, June, 1941, p 130

In England Now

Running Commentary by Peripatetic Correspondents

HERE must be quite a number of people who move in les far higher than I have ever had hopes or wishes of aining who get a lot of quiet fun out of the present glo-Soviet accord Some of us humbler ones have many years tried to persuade our fellows that the abitants of the U S S R were not barbarians We tried to disillusion those of our colleagues who clung the belief that savages with whiskers, blouses and -boots, bloody in deeds and crude in ideals, were the ers of the real U S S R We had tried to tell our low-workers in science and medicine that we did ill vice to our calling in closing our minds to the remarkle contributions to knowledge made by the workers in Soviet Republics Now, I and those others who ve striven to obtain some recognition for the Russian ntributions to science, to medicine, to art and literature ve the laugh of our fellows It is almost pathetic to low the painful efforts of our journals to fall into line an inglorious unanimity for praising Russian scientific hievements But to one who has striven in the days that stupid blindness of British orthodox outlook wards these things, the whole business seems pitiful yond the last dreams of cynicism It is not a laugh at one gets from these reflections—it is a heart-wrung ar and a soul-felt prayer Are we all so small that, cause some of us by background, traditions, possessions privileges disliked the Russian political regime, we ncied we could despise the scientific advances made by ese people ? Surely the world has been disillusioned now That the military organisation of the U S S R is surprised our wretched Blimps by its efficiency in arfare is a small thing To surprise a Blimp is a trivial tainment But that science, in the person of thousands British scientific workers should be surprised, now at it has come to realise the advances made in the viet Union, is surely a matter for regret It is a pitiful tisfaction to indulge in that lowest form of asserting e's justification by saying " I told you so " but at mes it is difficult to avoid doing it

* * *

Cecil Houses—only three now instead of five—have eld by their bargain women still find there tea and read-and-butter night and morning, a clean bed, a hot ath, facilities for washing clothes and the use of a warm ay sitting-room, for a shilling a night with no questions sked But for the first time since the original house as opened in 1927 the trust has ended up the year with a alance on the wrong side Once the foundation costs re paid the houses are normally self-supporting , but owadays rates, gas, light, fuel and provisions have all isen in cost , blackout materials have been a recurrent xpense as blast and broken glass take their toll of them The show house in Boswell Street was an air-raid casualty nd has had to be closed until reconditioning is possible The Kensal Road house is not easily reached in the lackout , the women hesitated to cross the dark canal ridge, and the reduction in numbers made running costs too heavy to keep open It has been rented to the Ministry of Pensions during the war The remaining three houses, though knocked about, have been able to carry on in spite of adventures in which they lacked gas, water and light, or contended with broken windows No-one was hurt in these raids, but first-aid repairs to the houses have been costly

Yet the houses are needed more urgently than ever They provide for many women their only security, and in the circumstances it has become impossible to restrict the time each one stays Some have settled in as permanent guests, ensuring their lodging for 7*s* a week , others are temporary guests seeking lodgings between jobs, or women staying in London to catch sight of relations or friends in the forces as they pass through , others are themselves on leave from the Services Nearly all are in work , they come back in the evening to cook their meals in the communal kitchen and exchange gossip of the day's doings before adjourning to share the sitting-room fire or —the younger ones—to enjoy dancing and music in a downstairs room Before the war the houses were shut during the day, but now this regulation is relaxed , the houses are open in daytime, and those on leave can rest or read there A fund is kept for those who cannot afford to pay the shilling but it is rarely drawn upon , and there is a wardrobe for fitting out those who need them with clothing, hats and shoes Women can bring their young children, paying 3*d* for a cot beside the bed , mothers and children occupy a separate dormitory, so that a crying child will not disturb the other guests

To prevent the danger of spread of vermin or disease the beds are inspected every morning , if vermin or traces suggesting disease are found, bed and bedding are sent to a disinfecting station The occupant of the bed, next time she comes, is taken aside and asked in the first case, whether she is willing to go to a cleansing station, and in the second whether she will attend a doctor free of charge She rarely declines but if she does it is explained to her that she cannot be admitted because of the danger to other lodgers

* * *

The worst thing about Army doctoring is the little medicine in it The work of an R M O is invaluable and it couldn't be done by anyone else , but professionally it's unstimulating routine and clinically it hardly exists Men must be kept healthy if they misbehave by becoming sick off they go to hospital In civil life the " diagnosis, ill , treatment, hospital " sort of practice was exceptional In the Army, and for the best of military reasons, it is the rule Now, the prevention of disease and promotion of health is a fine philosophy, and one to which I fully subscribe Until the Golden Age arrives, however, it will still be useful for doctors to know quite a lot of medicine Many of us in the Army, it seems to me, are in danger of disuse atrophy, of becoming stale and rusty, of forgetting the little that was acquired at such great pain, of finding ourselves on demobilisation with a necessary job done but worse doctors than we were on enlistment This is a problem that wants tackling, and not by cosy planning but straightaway Postgraduate education has never been a highlight of British medicine , it was never so badly needed as now The answer seems obvious In this country the hospital is the centre of medical education Although this is strictly speaking not a military responsibility at all, the military hospital could take over this function for the military doctors and district it serves Clinical meetings are already fairly common though there is plenty of room for expansion Much more to the point, one hospital I know of organises regular week-end schools The specialists do their stuff and the local M O s at the least enjoy it Half lecture, half clinical, the two days are packed with streptococcal fevers, resuscitation, eyes, feet, vitamins, Vincent's angina, effort intolerance, mental deficiency, gas, oxygen, running ears, scabies, and so on There's not much time for digestion in this rather Stakhanovite sort of effort but that happens afterwards, it is hoped Schools like this, and on a larger scale, would be a great help

The Army Medical Department itself issues excellent bulletins and leaflets from time to time, and courses are organised on many military subjects Why not on just ordinary medicine and surgery ? And run perhaps by the universities on the lines of the " intensive " weeks at Hammersmith ? Of course everyone concerned is terribly busy Probably the most useful measures of all would be a wider sharing of G D O appointments at the hospitals and part-time attachments to the hospitals But these involve all sorts of issues on which I haven't the knowledge to speak

* * *

Twice I have decided that this war really has gone on long enough—once on the awful morning when there was no marmalade for breakfast, and again at the week-end when the family joint was beef and there was no mustard Being bombed in one's hospital or being called out as a member of a mobile unit to attend to air-raid casualties was all in the day's work and somehow rather impersonal , but these other matters brought the war very near home Fortunately neither crisis lasted long , marmalade reappeared next morning and the mustard shortage was definitely overcompensated, since within a week our maid had produced a small tin, my grateful grocer patient a large tin and my sister turned up on leave with yet another large one

This " grateful patient " of mine rather worries me I had not seen him since well before the war, indeed I one of which he suggests was influenzal He maintains that the rarity of osteomyelitis in the vertebræ when compared with the long bones is due to a local immunity of the vertebral red bone marrow - He points out that a focus of infection is often present and mentions that Fraenkel demonstrated bacteria in some patients who had died from infections although there had been no local symptoms during life Apart from chemotherapy, whose value in this condition has yet to be confirmed, treatment consists of immobilisation in a plaster bed or jacket in the later stages, with drainage of abscesses and (rarely) with removal of free sequestra

GROWTH OF THE OVARIAN FOLLICLE

As follicles grow they first sink into the ovary, and as they increase in size and develop thecæ and an antrum they move again to the surface According to Strassman,[1] who has published a full account of his laborious research on follicular growth, the downward growth of the small follicle is due to the lesser resistance of the interior of the ovary as compared with the ovarian cortex On the other hand the return of the follicle to the surface is due to eccentric growth of the theca interna, which develops a thick growing cone, overlaid by a thin and non-resistant layer of theca externa, towards the surface of the ovary On the opposite pole of the follicle the theca interna is thinner but is overlaid by a thicker theca externa The theca interna cone has a definite tropism to the nearest point of the ovarian surface, the granulosa cells can push their way more easily among the soft cortical cells than they can towards the deeper parts of the ovary This conception of the way in which the follicle moves is different from older views which related the return of the follicle to the ovarian surface purely to mechanical growth It will be interesting to discover whether the theca interna also plays an active rôle in ovulation, rather than the passive one which is generally ascribed to it

PLANTAR RESPONSE IN HEALTHY INFANTS

THERE are said to be seventy articles in eight languages on the plantar response in infants, but Dr Myrtle McGraw[2] of New York has usefully made the number seventy-one in a study of 75 normal children ranging from the newborn to the five-year-old Repeated examinations were made at monthly or longer intervals and records of 1011 observations were obtained, of which 74 were on motion-picture film and 937 were written protocols The stimulus consisted of a light stroke with a toothpick along the lateral aspect of the sole and across the metatarsal arch to a point proximal to the great toe Notes were made of the reactions observed, including movements of the leg as well as flexion and extension of the toes The types of response elicited could be broadly divided into three groups In the younger children, and characteristic of the first four months of life, was the mass-reflex Here dorsiflexion of the toes is accompanied by movements of the entire leg—contraction of the flexor muscles at the hip, knee and ankle as well as dorsiflexion of the toes The most consistent part of the response is a sudden, total withdrawal of the whole extremity Next comes the transition phase the speed of withdrawal is diminished and consists principally of an abductor response of the leg Plantar flexion of the toes is more common, although there is considerable variation in the movement of the toes and the great toe This transition phase develops slowly and is predominant by the end of the first year The third phase, termed the "segmental reflex phase," was common to all the children after the age of two and a half years The response to plantar stimulation becomes increasingly restricted until it consists of movements of the ankle and toes only Ankle movements are flexion, inversion eversion, and the common response of the toes is pl flexion, movements being much slower than t characteristic of the mass reflex In a few childre type of plantar response was correlated with the de ment of erect locomotion, and in 26 out of 33 the of the third phase, the segmental reflex phase, c about the time of deliberate walking Althoug most children this third phase had been reache three and a half years, dorsiflexion of the toes elicited occasionally as late as four or five years these later age groups, however, such extensor were not accompanied by the mass withdrawal rea characteristic of the newborn infant

SYPHILIS OF THE LUNG

THE clinical diagnosis of acquired pulmonary syp is never easily made This is due partly to the propen of syphilis to mimic other conditions and partly to rarity with which treponemata can be demonstra before and after death Pulmonary manifestations unusual in the secondary stage When they do oc they resemble, in the bronchial mucous membrane, lesions found higher in the respiratory tract, a lo pneumonic form has also been described at this sta It is, however, in the tertiary stage that the parenchy of the lung is most often involved and the standa works on respiratory medicine portray distinct path logical guises in which the infection appears Pneumon (sometimes with a lobal distribution), an indurative fibrotic form, and gummata either large or miliary a all recognised Pearson and De Navasquez,[1] from pe sonal observations and a study of the literature, ha lately sought to harmonise these multiple manifestatio into the changing sequence of a single process Th regard an acute interstitial pneumonia as the startin point, this may organise to produce a diffuse sclero or may undergo necrosis with gumma formation T differences encountered, therefore, become one of degr and of time rather than of a fundamental type of reactio They view the whole process of parenchymatous pu monary syphilis as dependent on a disease in the media tinum, and of all the organs that can act as a pivot po the aorta takes pride of place Thus Carrera[2] fou syphilitic infection in the heart and aorta of all the cases of lung syphilis that he studied and the same w true of the case reported by Pearson and De Navasqu The association is too constant to be solely due to chan even when allowance is made for the high incidence aortitis in syphilis, and it is now becoming axiomatic t the diagnosis of pulmonary syphilis, either during or after death, is open to question unless there is fou in addition, reasonable evidence of specific aortitis of aneurysm The criteria for the successful clin recognition of parenchymatous pulmonary manife tions of acquired tertiary syphilis can be summar thus (1) an anomalous history of pulmonary di that may be brief or may be measured in months or e years, (2) the exclusion, by recognised methods, of ot causes for the lesion, especially tuberculosis, (3) presence of syphilis in other organs or the stigmata past infection, (4) positive serological findings, (ready response to antisyphilitic treatment particul when revealed by serial radiograms, and (6) evide of mediastinal disease, especially aortitis and aneury Appraisal of all the evidence in the light of these po will do much to prevent the diagnosis of lung syph from resting on an insecure foundation, convers Dr Clark's case reported in this issue comes as reminder of how sometimes the spirochaetal origin an obscure pulmonary illness can confidently inferred invoked to cover up Ministerial deficiencies by unintelligent uniformity Major LLOYD GEORGE heartened the House by his sympathetic and cheering reply From Nov. 17 he said, the domestic fat ration will be increased temporarily from 8 oz to 10 oz per week and the sugar ration from 8 oz to 12 oz He hoped the dried fruit position would be much better He wanted to encourage the provision of canteens for heavy workers and to allocate to them substantially increased quantities of some food Catering establishments for essential workers would be treated in the same way. In the heavy industry canteens it was hoped to double the meat ration and to treble the sugar allocation In trades where the work was not so heavy meat allocation would be increased by a half and the sugar allocation doubled He hoped also to make available increased supplies of bacon and ham cooking fats, processed eggs, and cheese

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[1] Strassman E *Amer J Obstet Gynec* March, 1941, p 363

[2] *Amer J Dis Child* June, 1941, p 1215

[1] Pearson, R S B and De Navasquez S *Guy's Hosp Rep* 1 88, 1

[2] Carrera, J L *Amer J Syph* 1920, 4, 1

Sir E GRAHAM-LITTLE said the diet of the heavy worker was better a hundred years ago when he had eaten wholemeal bread, milk and green vegetables instead of meat and white bread He could not understand why the Government did not make our national wholemeal loaf compulsory Today it is not even in general supply Dr EDITH SUMMERSKILL thought it was unfortunate that malnutrition was not accompanied by a rash and reminded the Minister of Food of the increase in tuberculosis among young women She pointed out that the expectant mother is expected to sustain two lives on one ration

Plans for Tomorrow

Speaking in the debate on the war situation Dr HADEN GUEST said that the problems of the future were already reaching back to us in the present One tremendous problem would be health in Europe and in this country. So far our health had been good but the report on public health in Scotland and other information showed that war conditions had caused an increase in tuberculosis Our rationing and living and working conditions were good yet in Glasgow there was an increase of 10% in tuberculosis due to the strain of war which would be multiplied in Europe and in the Soviet Union Dr Guest acclaimed the plans made at the conference of allied nations to send help and food to Europe as soon as hostilities stopped but felt that Parliament might in principle go a little further It would give heart to all people of good feeling if we began now to make plans on a world-wide scale to deal with the world health at the end of the war

Wives without Children

On Sept 30 Captain C C POOLE asked the Secretary of State for War whether he was aware of the poverty and hardship suffered by many wives and children of members of the Forces, and why these dependants were placed in a less favourable position than the dependants of those who remain in industry Sir ROBERT GOWER also asked him if he was aware that experienced social workers reported that numbers of families of serving men find it impossible to manage on the present scale Captain MARGESSON referred both members to the PRIME MINISTER's reply to another question when he said that, while the recent revision of family allowances of junior officers was the first general improvement in the emoluments of officers since before the war, the family allowances of other ranks had been improved several times since that date and the pay of all N C O s and men increased last year by 6*d* a day war pay But he was examining the suggestion that some of the families of other ranks are experiencing hardship and difficulty and he would make a further statement as soon as possible

In this parliamentary backchat the emphasis is rightly laid on the family, for it is the soldier's wife with a brood of children who is having the hardest time today Even with schools and day-nurseries it is difficult for her to get really remunerative work, and yet give her children the care and attention they need But the wife without children can supplement her allowance with a well-paid job—indeed the Government is anxious that she shall volunteer to help build a spitfire or a tank Or she may join one of the women s services where she not only gets her board, lodging and pay but also receives an allowance, contributed jointly by her husband and the Government With plenty of work for everyone and not enough money to give as much as we would like to the soldier s children should we not think again about the distribution of our pennies and consider making motherhood and not marriage the qualification for an allowance ?

QUESTION TIME

Medical Advisory Committees

In answer to a question from Sir ERNEST GRAHAM LITTLE the Minister of Health said that none of the members of his medical advisory committees receives remuneration for their services Their membership is as follows —

Central Medical War Committee—H S Souttar F R C S (chairman) H Guy Dain M B , J W Bone M B H W Pooler, M B Colonel A H Proctor, M D Prof P M F Picken M B W E Thomas L R.C P E , E A Gregg L R C P I D G Greenfield, F R C S P Macdonald, M D , J C Matthews M D Prof A H Burgess F R C S J A Brown M D ; G E Elkington F R C S F W Grant L R C P E F Gray, M.B , J M Johnstone, M B , Sir Kaye Le Fleming M D S A Winstanley M B , Charles Newman M D , Sir Charles Wilson P R.C P Sir Girling Ball F R C S Sir Alfred Webb-Johnson P R C S Prof W Fletcher Shaw, P R.C O G T G H Shore M D Russell J Reynolds M B D Embleton M B J D M. Cardell F R C S , A A W Petrie M D , C B Heald M.D Prof Harry Platt, M S G Lilico M B Janet Aitken M D , Sir Francis Fremantle, M D Z Mennell M B P N Panton M B , J Alison Glover M D Sir Hubert Bond M D R W Craig, M D Prof Sydney Smith, M D , and F M B Allen M D

Emergency Hospital Medical Service Committee—Sir Robert Hutchison, M D (chairman) Colonel H Letheby Tidy M D Sir Hugh Lett F R.C S Sir Alfred Webb Johnson Prof W Fletcher Shaw J P Hedley F R C O G H S Souttar, F Gray M.B Charles Newman Prof. Picken Sir Girling Ball H E A Boldero D M , Sir Charles Wilson Prof Burgess K W Monsarrat M B , Prof L G Parsons M D W Allen Daley, M.D Sir Maurice Cassidy M D R M Vick, F R C S R. St L Brockman F R.C S , F W Grant and T H G Shore M D

Committee on Physical Medicine—Sir Robert Stanton Woods M D (chairman) C W Buckley M D Sir Henry Gauvain, F R.C S F S Cooksey M.D E J Crisp M B , J Cowan, M B , and J G Johnstone M B

Committee on Rehabilitation—Prof F R Fraser M D (chairman) R I Stirling F R C S J F E Prideaux M.R.C S H A T Fairbank F R C S , Sir Robert Stanton Woods, G Riddoch F R C P H E Griffiths M S J Rhaiadr Jones Lord Dawson M D , Bernard Hart M D , Gordon Holmes M D , and Prof G Jefferson F R C S

Committee on Tuberculosis—Sir Percival Hartley, M D (chairman) J H Harley Williams M D J B McDougall M D D A Powell M D G T Hebert M D N Lloyd Rusby B M J Ferguson M B W Allen Daley, and Norman F Smith M D

Shelter Health Committee—Lord Horder (chairman) Miss Creswick Atkinson R.R C Sir Wyndham Deedes R C Cox M Inst C E and Colonel P G Stock F R C P

C.M W C and Home Guard

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Parliament

FOOD PRODUCTION AND DISTRIBUTIO

CONVERSATIONS everywhere in England now turn of
and eagerly to food Our legislators also take at least
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The debate in the House of Commons on Oct 2 d
with the distribution of our food and Mr J
GRIFFITHS made a strong plea for extra food rations
miners, quarrymen, railwaymen, and for women enter
factory life for the first time He spoke for the work
and said, " Give us the food and we will do the jo
Prof A V HILL gave scientific support and empha
that vitamins could not replace energy in the diet
heavy workers The science of nutrition must not

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[1] See *Lancet* Sept 27 1941, p 373

ivoked to cover up Ministerial deficiencies by unintelli-ent uniformity. Major LLOYD GEORGE heartened the House by his sympathetic and cheering reply From Nov 17, he said the domestic fat ration will be increased emporarily from 8 oz to 10 oz per week and the sugar ation from 8 oz to 12 oz He hoped the dried fruit position would be much better He wanted to encourage the provision of canteens for heavy workers and to allocate to them substantially increased quantities of some food Catering establishments for essential workers would be treated in the same way In the heavy industry canteens it was hoped to double the meat ration and to treble the sugar allocation In trades where the work was not so heavy meat allocation would be increased by a half and the sugar allocation doubled He hoped also to make available increased supplies of bacon and ham, cooking fats, processed eggs, and cheese

Sir E GRAHAM-LITTLE said the diet of the heavy worker was better a hundred years ago when he had eaten wholemeal bread milk and green vegetables instead of meat and white bread. He could not understand why the Government did not make our national wholemeal loaf compulsory Today it is not even in general supply Dr EDITH SUMMERSKILL thought it was unfortunate that malnutrition was not accompanied by a rash and reminded the Minister of Food of the increase in tuberculosis among young women She pointed out that the expectant mother is expected to sustain two lives on one ration

Plans for Tomorrow

Speaking in the debate on the war situation Dr HADEN GUEST said that the problems of the future were already reaching back to us in the present One tremendous problem would be health in Europe and in this country. So far our health had been good but the report on public health in Scotland and other information showed that war conditions had caused an increase in tuberculosis Our rationing and living and working conditions were good yet in Glasgow there was an increase of 10% in tuberculosis due to the strain of war which would be multiplied in Europe and in the Soviet Union Dr Guest acclaimed the plans made at the conference of allied nations to send help and food to Europe as soon as hostilities stopped but felt that Parliament might in principle go a little further It would give heart to all people of good feeling if we began now to make plans on a world-wide scale to deal with the world health at the end of the war

Wives without Children

On Sept 30 Captain C C POOLE asked the Secretary of State for War whether he was aware of the poverty and hardship suffered by many wives and children of members of the Forces, and why these dependants were placed in a less favourable position than the dependants of those who remain in industry Sir ROBERT GOWER also asked him if he was aware that experienced social workers reported that numbers of families of serving men find it impossible to manage on the present scale Captain MARGESSON referred both members to the PRIME MINISTER's reply to another question when he said that, while the recent revision of family allowances of junior officers was the first general improvement in the emoluments of officers since before the war, the family allowances of other ranks had been improved several times since that date and the pay of all N C O s and men increased last year by 6*d* a day war pay But he was examining the suggestion that some of the families of other ranks are experiencing hardship and difficulty and he would make a further statement as soon as possible

In this parliamentary backchat the emphasis is rightly laid on the family for it is the soldier's wife with a brood of children who is having the hardest time today Even with schools and day-nurseries it is difficult for her to get really remunerative work, and yet give her children the care and attention they need But the wife without children can supplement her allowance with a well-paid job—indeed the Government is anxious that she shall volunteer to help build a spitfire or a tank Or she may join one of the women's services where she not only gets her board lodging, and pay but also receives an allowance, contributed jointly by her husband and the Government With plenty of work for everyone and not enough money to give as much as we would like to the soldier s children should we not think again about the distribution of our pennies and consider making motherhood and not marriage the qualification for an allowance ?

QUESTION TIME

Medical Advisory Committees

In answer to a question from Sir ERNEST GRAHAM-LITTLE the Minister of Health said that none of the members of his medical advisory committees receives remuneration for their services Their membership is as follows —

Central Medical War Committee—H S Souttar F R C S (chairman) H Guy Dain M B J W Bone M B H W Pooler, M B Colonel A H Proctor, M D Prof P M F Picken M B W E Thomas L R.C P E E A Gregg L R C P I D G Greenfield F P C S , P Macdonald M.D J C Matthews M D Prof A H Burgess F R C S J A Brown M D , G E Elkington F R C S F W Grant, L R.C P E F Gray, M B J M Johnstone, M B , Sir Kaye Le Fleming M D S A Winstanley M B , Charles Newman, M D , Sir Charles Wilson P R.C P Sir Girling Ball F R C S Sir Alfred Webb-Johnson P R.C S Prof W Fletcher Shaw, P P C O G T G H Shore M D Russell J Reynolds M B , D Embleton M B J D M Cardell F R C S A A W Petrie M D , C B Heald M D Prof Harry Platt, M S G Lilico M B Janet Aitken M D , Sir Francis Fremantle, M D Z Mennell M B P N Panton M B , J Alison Glover M D Sir Hubert Bond, M D R W. Craig M D , Prof Sydney Smith, M D and F M B Allen M D

Emergency Hospital Medical Service Committee—Sir Robert Hutchison, M D (chairman) Colonel H Letheby Tidy M D Sir Hugh Lett F R C S Sir Alfred Webb Johnson , Prof W Fletcher Shaw J P Hedley F R.C O G H S Souttar F Gray M B Charles Newman Prof. Picken Sir Girling Ball H E A Boldero D M Sir Charles Wilson Prof Burgess K W Monsarrat M B Prof L G Parsons M D W Allen Daley, M.D Sir Maurice Cassidy M D R. M Vick F R.C.S R. St L Brockman F R.C S , F W Grant , and T H G Shore M.D

Committee on Physical Medicine.—Sir Robert Stanton Woods M.D (chairman) C W Buckley M.D Sir Henry Gauvain, F P C S F S Cooksey M.D , E J Crisp M.B ; J Cowan, M.B , and J G Johnstone M.B

Committee on Rehabilitation—Prof F P Fraser M D (chairman) R I Stirling F R.C S J F E Prideaux, M.R.C S H A T Fairbank F R.C S Sir Robert Stanton Woods G Piddoch F P C P H E Griffiths M.S J Rhaiadr Jones Lord Dawson M D ; Bernard Hart, M.D , Gordon Holmes M D , and Prof G Jefferson, F R.C S

Committee on Tuberculosis—Sir Percival Hartley, M D (chairman) J H Harley Williams M.D J B McDougall M.D D A Powell M D , G T Hebert M.D N Lloyd Rusby B M. J Ferguson M B , W Allen Daley and Norman F Smith M D

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[1] See *Lancet* Sept 27 1941 p 373

There is no scarcity of articles on boxing , the value f most of these articles however is limited At the resent stage of development of this new branch of edicine efforts must be concentrated on presenting ell-studied case-histories The " critical " and " systeatic ' publications of other more established branches f medicine are simply not available Case-histories are n fact the medical equivalent of the measurement of uantities in the pure sciences

Some medical writers (Winterstein 1937/38 Knoll 938), more especially those who are extensively quoted n the lay press, abound in general statements about the edical implications of boxing but fail altogether to atisfy the above demand Winterstein, for example, nstead of presenting evidence, gives highly speculative psychological interpretations of incidents in the ring On the other hand, experienced research workers like Parker, Guttmann, Bowman and Blau, Carr and Moody, and the Director-General of Health of New Zealand (Dr Watt), have presented admirable case analyses In evaluating the evidence I have laid emphasis upon this latter category Every good case description was carefully considered and if deemed advisable, included in my book I did not hesitate to describe in detail Guttmann's excellent history of a case of paralysis of the right anterior serratus muscle in a boxer, while rejecting unsupported and medically valueless statements on punch-drunkenness With regard to the latter condition, my own observations as well as a critical review of the few case-histories available in the literature showed me that we are not dealing with a clinical or pathological entity but with a multitude of conditions which still await an analytical neurological study This is in agreement with the view expressed, for the first time, by E Guttmann and myself in 1933 I therefore confined myself in my book to the presentation of original evidence never before collected, without drawing premature conclusions on its pathological significance I abstained from discussing topics of which I have no personal experience , that is why the manifold ophthalmological problems of boxing are not treated in my book

Finally, I asked myself whether the evidence at my disposal allows the drawing of definite *practical* conclusions In the past the reluctance of research workers to apply conclusive scientific evidence to practical issues has been to the disadvantage of medicine Notwithstanding that our knowledge of the medical aspect of boxing is as yet incomplete—knowledge is never complete —it is my considered opinion that the collected evidence warrants the demand that *boxing be eliminated* from all educational institutions and from the armed forces

ERNST JOKL

Witwatersrand Technical College, Johannesburg

Crowther J G British Scientist of the Nineteenth Century, Penguin 1940 Winterstein, C E *Lancet*, 1937, 2 719 *Med World Lond* 1938, 11, 427 Knoll W G *Med Klin* 1938 34 1125 Parker H L *J Neurol Psychopath* 1934, 15 20 Guttmann L *Deut Z Nervenheilk* 1937 114 83 Bowman K M and Blau A in Brock s Injuries of the Skull Brain and Spinal Cord Baltimore, 1940 Carr J L and Moody, A M *Calif West Med* 1939 51 227 Watt M S personal communication Jokl E and Guttmann E *Münch med Wschr* 1933, 80, 560

EXCLUSION OF NEUROTICS FROM THE FORCES

SIR —May I endorse Dr Minski's letter of Sept 27 ? It is by now becoming obvious to those of us who work in the field of psychiatry that the psychotic and psychoneurotic are unsuitable persons for active service in the Forces I believe this view to be shared by combatant officers I admit that such a generalisation is capable of modification in individual cases Dr Minski's suggestion that a psychiatric examination should be available at the time of medical examination appears entirely reasonab[illegible] nd not too difficult of arrangement That medical [illegible]ination boards should have all specialist services at their call is surely desirable

To the story of the epileptic who had enlisted five times I would add that within an hour of reading Dr Minski's letter I heard that a youth whom I had examined in 1939 when he was a schoolboy, and whom I considered to be a schizophrenic with a bad prognosis, had just been " discharged from the Army "

Taunton R SESSIONS HODGE

HOME GUARD PROBLEMS

SIR,—Mr Abel seems to have been singularly unfortunate in his relations with the Red Cross In my case, far from proving " so exsanguinated by red tape as to be almost invisible on its white background," the Red Cross has proved an exceptionally full-blooded friend in need to the Home Guard Not only has the Red Cross Society accepted the responsibility of completing the equipment of casualty collection posts to a rather more exacting standard than that laid down by Mr Abel but they have also relieved at least one Home Guard medical officer of a great amount of the office work involved in the setting up of these posts Whilst a thinly populated rural district does not call for the establishment of a C C P at intervals of not more than one mile it does demand a sufficiently high standard of equipment and staff to enable casualties to be cared for at posts over a period of possibly many days, and it is solely due to the energy and freedom from red tape complexes shown by the British Red Cross Society that this has been accomplished in my area

H MARCUS BIRD.

SIR,—Your correspondents agree that in case of invasion casualties are most likely to occur in isolated country districts where there are few facilities for coping with them, and that Home Guard M O s should equip casualty collecting posts wherever they may be needed May I endorse Dr Sinclair-Loutit's suggestion that they will find competent assistants in the local district nurses —women who by training and experience are equipped to cope with any emergency, to assume responsibility in the absence of a doctor, and to improvise when orthodox material and methods are not available ? The district nurse knows the neighbourhood, the buildings the people She can advise on the choice of a post, and organise her own local team of helpers Most important of all, she can be left, under instructions, to deal with the casualties while the sorely pressed M O goes to other places more urgently needing him The doctor could have no more reliable deputy

J ELISE GORDON

London, S.E 1 Editor, *Nursing Mirror*

CORROSIVE STRICTURE OF THE STOMACH

SIR,—The interesting account given by Mr C A R Schulenburg in your issue of Sept 27 reminds me that I have been remiss in not reporting a case of this nature which occurred at the Royal Free Hospital in 1938.

Man aged 32 Admitted under Dr Lee Lander June 3, 1938, having swallowed " considerable quantity ' of strong HCl Usual remedies applied at once June 6, began to vomit By the 16th, when he had a hæmatemesis, vomited practically everything he took Hæmoglobin, 54% five days after hæmatemesis, rose slowly to 60% on Campolon and ferrous salts

July 8 test meal showed complete achlorhydria Blood present on this and other occasions June 28 barium meal revealed normal œsophagus but advanced atresia of pyloric end of stomach, little evidence of barium passing through July 8 barium meal showed more gastric dilatation, no barium was passed through in 24 hr July 15 . I carried out a partial gastrectomy for almost complete stenosis extending from pyloric ring proximally for nearly 2 in Mucosa of this portion of the stomach completely replaced by vascular granulation tissue, proximal to which was abrupt transition from inflamed part to normal gastric wall

Aug 4 patient left hospital in excellent condition having gained 5 lb following operation

As in Mr Schulenburg's case the onset of stenosis was rapid, indeed it appears to have been nearly complete at the time of the first barium meal I have not had the time to search the literature but as partial gastrectomy is not mentioned in Mr Schulenburg s article presumably it has not been adopted before, yet it appears to me to have advantages over mere short-circuiting operation since it extirpates a segment of the stomach that is extensively damaged and the site of changes which may well develop into chronic ulcer of a peptic or even malignant nature In my own case there were no special technical difficulties to overcome and the light percaine spinal anæsthetic with which I am accustomed to work was well borne

Harley Street, W 1 CECIL A JOLL

the number of public elementary school children in England and Wales receiving milk under the scheme was 2,700,000 compared with approximately 2,100,000 in March, 1940 Including schools other than public elementary schools it is estimated that in May, 1941, nearly 3,000,000 children were taking milk in school under the scheme

Milk for the R A F and Others

Replying to Flight Lieut Ralph Etherton, who asked whether it was proposed to modify the present nil issue of fresh milk to R A.F units, Major Lloyd George said that the present demand for milk is considerably greater than the estimated production during the winter months and to ensure adequate supplies for mothers, infants, children and invalids, a scheme of controlled distribution will be introduced on Oct 12 on the lines indicated in his reply of Aug 6 Adult consumers will receive part of their supplies in the form of condensed milk which will be available in much greater quantities than last winter, and it has been arranged that, save in special circumstances, the supply of milk to the Services shall be in this form

Medical Prisoners of War

Mr D Sandys, financial secretary to the War Office, stated that some 500 medical personnel and chaplains are entitled to repatriation under the International Convention of 1929

Increase in Tuberculosis

Replying to Dr E Summerskill Mr Brown said that he had arranged for a special inquiry to be made, with the assistance of the Medical Research Council, into the causes of the war time increase in tuberculosis The latest information available shows that on June 30 there were 1763 persons in England and Wales who had been on local authority waiting lists for institutional treatment for upwards of 10 days Arrangements were being made to release some E M S beds, but it was not merely a question of beds, but of nurses

Answering a further question, from Sir E Graham Little, Mr Brown gave the following table of female death rates (per million) from tuberculosis in England and Wales

—	Respiratory		Other forms	
	Ages 15–20	Ages 20–25	Ages 15–20	Ages 20–25
1936	670	1039	129	97
1937	652	1029	130	116
1938	605	931	132	93
1939	601	955	137	90
1940*	692	1103	146	132

* Provisional, based on the 1939 population

Medical Aid for China

Mr A Eden announced that the Government have agreed to make a grant in aid of £50,000 to the British Fund for the Relief of Distress in China

Annual Reports

Replying to Sir F Fremantle, the Minister of Health stated that the regular series of reports of his department and of his chief medical officer will be suspended till after the war, but a summarised report will probably be ready within the next two months The President of the Board of Education proposes to defer the annual reports of his chief medical officer until after the war The Minister of Labour hopes to issue the report of the chief inspector of factories for 1940 within the next three or four weeks

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Hospital Survey in Bristol and District —The new Bristol Hospitals Commission is sitting at the Council House, Bristol, Oct 6–9 to initiate a survey of hospitals, voluntary and municipal, and of teaching services in the area with a view to meeting current needs and the expansion and reconstruction desirable after the war is over The Lord Mayor has invited local contributory schemes to submit observations to help solve the financial problem of the voluntary hospitals The commission consists of Sir Farquhar Buzzard, Sir George Martin, Prof G E Gask, Dr M T Morgan, Dr John Buchan, Dr J P Candler, Dr A Q Wells, Alderman W Hyde and Mr S Clayton Fryers

Letters to the Editor

MEDICAL ASPECTS OF BOXING

Sir,—In an excellent book J G Crowther (194 maintains that one of the outstanding scientists of t last century was Sir Humphry Davy Davy was t first scholar who "sold science to the industrialist who applied to a practical purpose a mass of exp information, making available to the people the fru of a hitherto exclusively academic field of learning T present state of physical education reminds me of th of British science in the time of Davy, Faraday a Joule Physical education is one of the younge children of science, unknown in its scope not only the general public but to the majority of educat people There are few whose concept of its medical implications enables them to apply our present knowledge Physical education and sport are today still based on empiricism, not on scientific information, and many years must elapse before a rational attitude determines our policy

Of all important branches of physical education, boxing is the only one in which injuries are not accidental events but form the essential aim of the sport Every boxer tries to disable his adversary by hurting him, preferably through inflicting a head injury of such an intensity as to produce a state of unconsciousness The fact that the various ring injuries have been dignified by popular terms such as "knock-out," "groggy," "punchdrunk" and others can, of course, not obscure the true picture This was the essential point I endeavoured to bring out in a book which you have critically reviewed (*Lancet*, June 14, pp 756, 759) without even mentioning my main argument In my book I laid stress upon the unavoidability of head injuries being produced in amateur as well as professional boxing fights conducted under "regulation conditions" Ample evidence was presented to the effect that blows to the head, even if they do not lead to the immediate collapse of the fighter, very commonly are followed by serious after-effects, that the chin knock-out is a concussion of the brain notwithstanding the fact that it is caused by a specific traumatic mechanism and that its clinical sequelæ distinguish it in some respects from other forms of concussion

Surely, Sir, all this is "incontrovertible medical evidence" which, incidentally, has been accepted by leading neurologists, among them Fulton and Hassin, who have expressed their agreement with my views At a recent Air Force boxing tournament five bouts ended through knock-outs Three of the unfortunate victims hit the floor with their occiputs while falling to the ground in an unconscious state I am at a loss to understand how "repeated neuropsychiatric examinations" should be able to make such routine injuries impossible I challenge any flight surgeon who wishes to tell me that the above mentioned Air Force boxers would not be severely handicapped in the course of their duties during the days following the knock-outs No logically thinking physician can fail to see the difference between athletic accidents in general which are accepted as unavoidable accompaniments of every manly sport, and the deliberate infliction in the ring of brain injuries many implications of which we have only recently learned to understand Against this danger of head injuries other boxing injuries play a much less significant rôle, as my survey has revealed for the first time The conclusion at which I arrived was clearly stated thus "The dangers of boxing can only be eliminated by the total abolition of this sport" More especially, I felt it my duty to press for the immediate removal of boxing from the recreational programme of the armed forces

The evidence on which I base my thesis that boxing must go divides itself into several categories Primarily I rely on personal experiences and observations as well as the results of experimental and clinical investigation over twelve years Taking a rather unorthodox view with regard to the extent to which medical information should be applied to practical issues, I have not hesitated to make use of descriptions given by boxers and other non-medical persons While the quality of such contributions, naturally, varies within wide limits, I agree with Brend (1938) that whenever we deal with a social *eaths* —In 126 great towns there were no deaths n measles, 3 (1) from enteric fever, 1 (0) from scarlet r 15 (1) from whooping-cough, 28 (1) from diphtheria. 2) from diarrhœa and enteritis under 2 years and) from influenza The figures in parentheses are those London itself

eater London, Watford and Blackburn each reported a death n enteric fever There were 4 fatal cases of diphtheria and 3 of oping-cough at Liverpool

number of stillbirths notified during the week was (corresponding to a rate of 32 per thousand total ths), including 14 in London

Medical News

yal College of Surgeons of England

The following demonstrations, which are open to advanced dents and medical practitioners, will be delivered at the lege in Lincoln s Inn Fields, London W C 2, during tober at 2 30 P M. Oct 13 Dr A. J E Cave, constitution the skull, 14 Mr L E C Norbury, benign neoplasms of rectum, 15 Dr Cave, vascular arrangements of the ad and neck, 16 Mr Norbury, malignant neoplasms of e rectum. 17 Dr Cave, lymphatics of the head and ck, 20 Dr Cave, surgical anatomy of the nasal fossa, Mr R Davies Colley, diseases of the testicle, 22 Dr ve, surgical anatomy of the mouth and jaws, 23 Mr E Shattock, tumours of the kidneys; 24 Dr Cave, rgical anatomy of the pharynx and larynx, 27 Dr Cave, rgical anatomy of the liver and bile ducts, 28 Mr avies Colley, tumours of the intestines, 29 Dr Cave, surgical atomy of the kidney and ureter, 30 Mr Shattock, tumours bone, and 31 Dr Cave, surgical anatomy of certain nerves

niversity of Birmingham

Dr Stanley Barnes has retired from the office of dean of the edical faculty which he has held for ten years In accepting s resignation the council passed the following resolution

> For nearly 40 years in addition to being actively associated with e local hospitals, Dr Barnes held a pre eminent position as a nsultant He sacrificed a lucrative practice to enable him to sist with the planning and building of the Hospitals Centre and the ew buildings of the Medical School at Edgbaston He always set r himself and others a high ideal of learning and scholarship and aff and students for many years have owed much to him for the bility and unflagging zeal he has showed in promoting the interests f the Faculty with which he has been so closely associated He as given liberally to the building funds of the Medical School nd the excellence of the building and equipment, generally cknowledged to be unsurpassed elsewhere, reflect in many directions e effect of his constant supervisory care

Prof Leonard Parsons, who has been deputy to Dr Barnes r some years, has now been appointed dean Dr Parsons ill continue his work as physician to the United and the hildren's Hospital and regional officer for the Midlands to the inistry of Health

Prof Lancelot Hogben, F R S, who has held the chair of atural history in the University of Aberdeen since 1937, as been appointed to the chair of zoology at Birmingham in ccession to Prof H. Munro Fox

S M M G Salaries

The Chartered Society of Massage and Medical Gymnastics as recommended the following scale of salaries It has een approved by the Ministry of Health for members of M S hospitals qualified in massage, medical gymnastics, edical electricity, and light therapy

	Resident	Non-Resident
hartered masseuse or masseur	£85–£10–£115*	£210–£10–£240*
Where only one masseuse or masseur is employed	£115–£10–£145	£240–£10–£270
harge masseuse or masseur—		
Where two masseuses or masseurs are employed	£145–£15–£175	£270–£15–£300
uperintendent masseuse or masseur—		
Where three to ten masseuses or masseurs are employed	£175–£15–£205	£300–£15–£330
Where more than ten masseuses or masseurs are employed	£205–£15–£235	£330–£15–£360
ermanent part time appointments (21 hours work per week)		£130 per annum
essions of 3 hours or less		*10s 6d*

After 5 years service with same authority, and if recommended 3 further annual increments of £10

Members required to hold the additional certificate in ydrotherapy should be allowed a further £5 per annum, and hose required to hold qualifications of other organisations uch as S R N M S R, a further £20 per annum Length of ervice and experience should be taken into consideration and where no superannuation scheme is in operation the salaries given above should be increased. Where cost of living additions are granted the special bonuses should be in addition to the minimum figures given on this scale

Naval Honours

The R N V R officers' decoration has been awarded to Surgeon Commander George McCoull, M.D Durh., and to Acting Surgeon Commander G F S Parker, M.R.C S

Medical Casualty

Surgeon Lieut -Commander C D D de Labilliere M R C S R N, has been reported missing presumed killed, after the sinking of H.M.S *Fiji* off Crete in May

Medical Society of London

A meeting of this society will be held at 11, Chandos Street, London, W 1, on Monday, Oct 13, at 4 P M. After the presentation of the Fothergillian medal there will be a pathological meeting

Shaftesbury Military Hospital Medical Society

A meeting of this society will take place at the hospital on Tuesday, Oct 14, at 3 P M., when Colonel J M Weddell consulting surgeon to the Army, will survey the present position of surgery in the army

Royal Medical Society of Edinburgh

Sir William Wheeler will open the new session of this society on Friday, Oct 17, at 8 P M when he will give an address on what society has gained by the progress of surgery During the session addresses will be given by Colonel F A E Crew, Prof G B Fleming, Prof A. T Jurasz, Dr J Trueta and Prof Samson Wright The annual dinner will not be held this year

Births, Marriages and Deaths

BIRTHS

ALCOCK.—On Oct 1 at Oxford the wife of Squadron Leader N S Alcock M.R.C P —a daughter

BURDEN —On Sept 29 at Alverstoke, Hants, the wife of Surgeon Commander A. J Burden, M.B, R.N —a daughter

CAMPBELL.—On Oct 1 at Cambridge, the wife of Captain E C Campbell, M R C S, R.A.M.C —a daughter

HENDERSON —On Oct 1, at Pitlochry, the wife of Captain Walter Henderson M D R.A.M C —a daughter

HIGHAM —On Sept 29, at Didsbury Manchester, the wife of Major A R C Higham, F R.C S, R.A.M C —a son

INGLIS —On Sept 28 in Glasgow, the wife of Dr W Elder Inglis, a son

MARRIAGES

BOWEN-JONES—CORBETT —On Sept 14 at Liverpool John Anthony Bowen Jones M B surgeon lieutenant, R.N V R to Eileen Anne Corbett

MANSON—MILLER.—On Oct 1 at Streatham, London Malcolm Manson M.D to Margaret Miller M B

MOLE—BROOK FOX.—On Oct. 2 at Halberton Richard H Burnell Mole, M.R C S, to Catherine Rosemary Brook Fox

DEATHS

CROSSE —On Oct 5, at Brundall, Herbert William Crosse M D Edin, barrister at-law

KERR —On Oct. 5 at Edinburgh, James Kerr, M A, M.D Camb, D P H sometime school medical officer of London

KERR RUSSELL.—On Oct 5, William Kerr Russell, M.D Durh, Ross-on Wye late of Harley Street W 1

WOOD —On Sept. 27 Leonard Wood, M.R.C S colonel late R.A.M C of Westbury, Wilts aged 67

YOUNG —On Sept. 26 at Leeds, George Young, M.B Glasg, late of Cockermouth Cumberland

Appointments

BARKER KATHLEEN M R C S R.M.O at Ilford maternity home

BRASS J C M R.C S R S O at Poplar Hospital

COOKE R C H M.B Dubl R.M O at Bromsgrove Hospital

DUNSMUIR ALAN, M.B Glasg temp asst M O H and asst school M O for Blyth

ELDER, C L M.B Glasg, D.P H deputy M O H for Middlesbrough

FIRMIN DOREEN M B Camb M P C P D P M temp deputy medical superintendent at Caterham Hospital (L C C)

LANDER C L M B Lond examining factory surgeon for Maiden Newton Dorset

PARIS WILLIAM L R.C P E, examining factory surgeon for Alyth Perthshire

PETRIE BERYL G M B Aberd, D P H temp M O (maternity and child welfare) for Blackpool

STEWART M A., M B N Z, D M R asst M O at Sheffield radium centre

SWITZER S LE R M A Camb M P C S, D P M first asst M O at Tooting Bec Hospital (L C C)

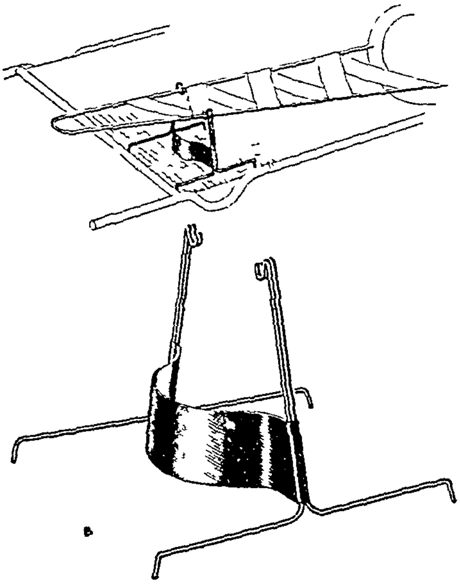
TIFFETT G O M B Lond, F R C S surgical registrar at the National Temperance Hospital London

WILSON A C M R.C S consulting psychotherapist to the State Criminal Lunatic Asylum Broadmoor

WRIDE, FANNY, M B Lond., D P M temp asst M O for Holborn

STRETCHER SUPPORT FOR THOMAS SPLINT

SIR,—Mr W G Morden of the Beckenham civil defence service, has designed the simple piece of apparatus here illustrated for the use of stretcher parties transporting a patient wearing a Thomas splint The cost of material is negligible and the fitting can be made by any handy man within an hour The fitment is intended for use with the standard pattern A R P wire stretcher It eliminates the need for the regulation suspension bar and requires no delicate adjustment Made from ¼ in iron rod and a piece of sheet tin it can be instantly adjusted to give support at any point along the length of the splint by a simple flexion movement It measures 10 in by 10 in by 9 in high



Beckenham, Kent T PHILIPS COLE

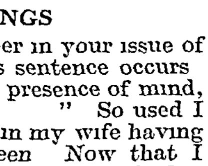
WASP AND BEE STINGS

SIR,—In Dr Dyke's interesting paper in your issue of Sept 13, in the report of case 2, this sentence occurs " One of the girls, with commendable presence of mind, put ammonia on the site of the sting " So used I to do, and the last time this resulted in my wife having the worst wasp-sting I have ever seen Now that I know better I put vinegar on and have never had a moment's anxiety since adopting this method, even with what I should once have considered serious stings of the lips, tongue or fauces As far as I know the necessity for using dilute acids for wasp-stings and dilute alkalis for bee-stings was first pointed out by Mr Edward R Speyer in a letter to the *Times* of Aug 20, 1919, which was commented on in the *Lancet* for Sept 6, 1919 (p 445) An interesting correspondence on this subject ran in the *Times* from Aug 20 to Sept 9, 1938

Guildford OSMOND H BROWN

INGROWING TOENAIL

SIR,—Mr Nuttall's article of July 26 and Mr Bonnin's letter the following week renewed an interest in ingrowing toenail which I have long felt With Mr Bonnin I consider that Mr Nuttall's summary of the ætiology—" tight shoes "—does not cover all the cases Like Mr Bonnin I have noticed a decidedly familial tendency and cannot believe this is due to tight shoes Choyce's " System of Surgery " states that it generally occurs in young adults, in men more often than women My own experience accords with this view both as regards the age and sex of the majority of these patients If the ætiology is solely tight shoes would it not be reasonable to expect that the cases would be much more numerous among women and that many cases would be found in later life ? Both the occurrence in several members of one family, parents and siblings, and the shape of the nail lead me to believe that a certain proportion of cases are congenital defects or rather variations from what we consider normal It does not seem accurate to say that " there is no ingrowth of the toenail" in this group of cases Although many ingrowing toenails are flat and cannot be said to be ingrown a certain proportion are definitely curved in the horizontal plane and this variation seems to run in families The free border of the nail, as viewed from beyond the tip of the toe is not merely slightly curved but forms almost half an ellipse as shown in the drawing The abnormality commonly occurs in children This curvature of the nail must produce an exceptionally deep lateral nail fold which would surely not increase the pressure on the skin f the edge of the nail if the shoes are tight but rather decrease it, since now the nail border is parallel to the lateral nail fold and the lateral pressure would appear to be less likely to cause ulceration by pressure on the nail edge A case I have recently seen caused me to query the effect of tight shoes A lad of twenty had been in bed in this hospital suffering from rheumatic carditis, and of course had worn no shoes of any kind, immediately before this illness he had been in the R A F for fifteen months After fourteen months in bed he developed " ingrowing toenail " with severe sepsis on both sides of both big toenails He had deep creases on either side of the nails which were exceptionally curved, and he denies ever wearing tight shoes, we know that this is true for at least 2½ years before his toes began to cause trouble Can medical officers with wide colonial or other native experience tell us whether the condition we call ingrowing toenail is found in races who do not wear shoes ?



Horton Emergency Hospital E J RADLEY SMITH

Obituary

CHARLES LEONARD DIGBY ROBERTS

M B EDIN, D T M & H

Dr Charles Roberts, who remained in Guernsey to look after the civilian sick during the German occupation, died in St Peter Port on April 12 soon after undergoing a major operation He was born in Exmouth in 1882 and graduated from Edinburgh University in 1908 He came to Bart's to study for the English fellowship, and passed the primary examination But he became interested in tropical medicine and went out to India, where he spent the greater part of his professional life For some years he was medical officer at the Charteris Hospital in Kalimpong, a remote outpost which was the railhead for many Mount Everest expeditions At the outbreak of the last war he joined the Indian Medical Service, and saw service in the Waziristan and Persian Gulf campaigns After the war he practised for a short time in Darjeeling before he went to Assam, where he was medical officer to the Mariana Tea Association for many years When he retired from India he went to practise in Guernsey, where he had hoped to enjoy a well earned rest

Roberts's chief hobby was the study of natural history, and in India he amassed a fine collection of butterflies Some of his specimens were new discoveries and are preserved in the Natural History Museums in South Kensington and Bombay His knowledge of the flora of the Channel Isles delighted those who accompanied him on his energetic walks along the cliffs and country lanes

Dr Roberts is survived by his wife, daughter and three sons The sympathy of all will go out to Mrs Roberts in her lonely exile

Infectious Disease in England and Wales

WEEK ENDED SEPT 27

Notifications —The following cases of infectious disease were notified during the week smallpox 0, scarlet fever, 1258, whooping-cough, 2247, diphtheria, 1066, paratyphoid, 100, typhoid, 32, measles (excluding rubella), 745, pneumonia (primary or influenzal), 185, puerperal pyrexia, 123, cerebrospinal fever, 94, poliomyelitis, 38, polio-encephalitis, 3, encephalitis lethargica, 6, dysentery, 89, ophthalmia neonatorum, 98 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospital of the London County Council on Sept 24 was 1246, including scarlet fever 137 diphtheria 272 measles 23 whooping cough 534, enteritis 24 chicken pox 29 erysipelas 24 mumps 7 poliomyelitis 3, dysentery 13 cerebrospinal fever, 15, puerperal sepsis 9, enteric fevers 42 malaria 1 polio encephalitis, 2, other diseases (non infectious) 35, not yet diagnosed, 76

ORIGINAL ARTICLES

HÆMOGLOBIN METABOLISM

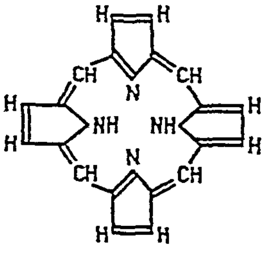
M C G Israëls MD MSC MANC, MRCP
ASSISTANT DIRECTOR OF THE DEPARTMENT OF CLINICAL INVESTIGATION AND RESEARCH, UNIVERSITY AND ROYAL INFIRMARY, MANCHESTER

When Hans Fischer began the study of the pigments excreted in the rare condition of congenital porphyria. it could hardly have been foreseen that the extension of this work would lead to a more thorough understanding of the metabolism of respiratory pigments in general, including hæmoglobin Such investigations are difficult, and although Fischer and his co-workers synthesised hæmin in 1929 much further chemical groundwork has been needed before the results could be applied to the clinical problems of blood-diseases

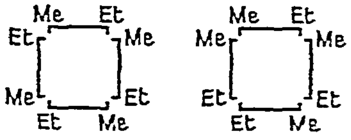
Hæmoglobin is formed by linking together a protein—globin—with an iron-containing pigment "protohæm" This protohæm is a combination of ferrous iron with a substance "protoporphyrin" which is closely allied to the pigments excreted in congenital porphyria. Fischer and his school have shown that all the naturally occurring porphyrins are variations on one theme—the "porphin" nucleus which is made up of four pyrrol rings joined by methene bridges (formula A) When the eight H atoms on the bases of the pyrrol rings are replaced by four methyl (Me) and four ethyl (Et) groups an artificial compound called "ætioporphyrin" is obtained There are four possible isomeric ætioporphyrins, but the naturally occurring porphyrins all correspond to series I (formula B) or series III (formula C) There is no simple chemical way whereby series I compounds can derive from series III or vice versa, breakdown of the porphin nucleus and resynthesis would be needed and this is thought to be a very unlikely occurrence The different porphyrins have different side-chains replacing the eight H atoms in porphin Thus protoporphyrin has four—one CH_3, two $CH=CH_2$, and two CH_2-CH_2-COOH groups Coproporphyrin, the normal excretion form has four CH_3 and four CH_2-CH_2-COOH groups, uroporphyrin, with four CH_2-COOH and four CH_2-CH_2-COOH groups appears only in the porphyrias Now the protoporphyrin of hæmoglobin belongs to series III, and Watson[1] showed that the free protoporphyrin in reticulocytes is also series III. Normal people excrete small amounts of coproporphyrin, about two-thirds in the fæces and a third in the urine: but all the fæcal and at least half the urinary coproporphyrin is series I and cannot therefore have been derived from the breakdown of hæmoglobin Patients with hæmolytic anæmia known to be destroying large numbers of erythrocytes excrete relatively large quantities of coproporphyrin, but surprisingly this again is all series I This unexpected finding that the excreted porphyrin is a different isomer and is therefore not derivable from the hæmoglobin porphyrin was called by Fischer the "dualism of the porphyrins" and has to be taken into account in any study of porphyrin excretion designed to throw light on hæmoglobin metabolism It is not sufficient to know how much porphyrin is excreted—we must know to which series it belongs and indeed Watson thinks it more important to know which than how much Unfortunately the determination of the isomeric type is far from simple, it demands[2] the separation of the porphyrins, the preparation of their methyl esters and the determination of melting-points; and since the amounts excreted daily are measured in microgrammes, or only occasionally in milligrammes, skilled chemical technique is essential For these reasons little data is at present available, but what there is is important

In pernicious anæmia[3] there is greatly increased excretion of coproporphyrin I When specific liver treatment is given the porphyrin excretion continues raised until after the reticulocyte peak is passed, then it slowly falls to normal Coproporphyrin I is also excreted in large amounts in hæmolytic anæmia and in the period of blood-regeneration after hæmorrhage[2] In aplastic anæmia[4] on the other hand, from a fifth to a tenth of the excreted coproporphyrin is series III, and coproporphyrin III has also been found in poisoning by lead,[2] sulphanilamide[5] and other substances Hence the excretion of coproporphyrin I seems to be linked with unusual erythropoietic activity, including the megaloblastic erythropoiesis of pernicious anæmia, but excretion of coproporphyrin III seems linked with depressed erythropoiesis In the first group there is always evidence of excessive destruction of red cells, but as already pointed out the coproporphyrin I cannot have come from the red cells Is the coproporphyrin III of the second group derived from hæmoglobin? Apparently not. Lemberg's[6] studies of hæmoglobin breakdown have revealed that porphyrins are not formed; the porphin nucleus opens while still attached to globin and iron and thereafter is converted into biliverdin and bilirubin; the excretion forms of bilirubin urobilin and urobilinogen, are therefore used as indicators of hæmoglobin destruction.

Ingenious explanations of these contradictions have been suggested by Rimington[7] Dobriner and Rhoads,[2] and Turner[8] They all suppose that from a pyrrolic precursor porphyrins of series I and III are formed simultaneously, normally much more III than I, but if the production of III is increased I is increased proportionately. The series III porphyrin is protoporphyrin and is used in the formation of hæmoglobin, but the series I porphyrin is apparently useless—it is converted into coproporphyrin and excreted Hence if there is unusually rapid formation of red cells more porphyrin III is needed for hæmoglobin and a correspondingly increased amount of porphyrin I is formed and excreted But in aplastic and toxic anæmias, owing either to the absence of erythroblasts or to toxic interference with hæmoglobin synthesis, the porphyrin III still being formed is unused and is excreted as coproporphyrin III The changes in congenital and acute porphyrias are attributed to disturbance of this orderly synthesis There is no real evidence in support of this theory but it fits the facts partly at least Rimington and Hemmings[9] have shown that toxic drugs like sulphanilamide which cause methæmoglobin formation also cause increased porphyrin excretion and this is coproporphyrin III Hence they suggest that this may represent an alternative method of hæmoglobin breakdown, but occurring only when methæmoglobin is a phase in the cycle



Formula A



Formulæ B and C

Clearly there is still room for much more evidence before confident interpretations are possible but the type of problem these results can be applied to is illustrated by Vaughan and Saifi's[10] investigation into the cause of anæmia in chronic infection The porphyrins excreted by their patients were estimated by Rimington who reported a rise in the excretion of both series I and III. Since there was no evidence of increased hæmoglobin breakdown it was concluded that a disturbance of hæmoglobin synthesis was responsible In a previous paper,[11] by correlating cytological examination of the bone-marrow with clinical findings I was able to divide erythropoietic disturbances into broad groups Further subdivision of these groups may well come from biochemical studies of hæmoglobin metabolism which can detect the conditions in which hæmoglobin is insufficiently available for normal marrow cells The difficulty of the biochemical methods involved still stands in the way of really systematic investigation of the anæmias from this point of view As Watson has said what we need is a differential method permitting estimation of the amount of each isomer present without recourse to actual isolation. Until this happy day comes we must proceed, where we can, with the determination of the porphyrin isomers appearing in the various anæmias so

Notes, Comments and Abstracts

HOME GUARD MEDICAL ARRANGEMENTS

Brigadier E M COWELL F R C S

SOME notes on Home Guard medical arrangements from the Corps point of view, prepared for the course recently held at St John's College Cambridge, may perhaps be found useful for a wider circle

Regimental Medical Officer —The Home Guard medical officers appointment is not a sinecure He has an immense amount of work to do in the next few weeks Instruction of the battalion, company and platoon officers in field hygiene sanitation and first-aid is his first task Secondly, he must train his medical orderlies and regimental stretcher-bearers, the establishment of which is authorised He must see that he has the equipment to which he is entitled and that it is tactically distributed Company and platoon aid posts may possibly be required in addition to the aid posts and points of the Civil Defence Services

Administration and Organisation —In each zone the appointment of a medical adviser is now officially recognised In many areas it is agreed that this officer should be a member of the public health service, either a senior M O H who has made the civil medical arrangements himself, or his deputy or junior who is familiar with the existing arrangements By coopting the Civil Defence into the Home Guard many difficulties will be overcome These zone advisers must work in close contact with the A D M S area, who will do everything to help This officer is responsible to the D D M S corps for all details

Invasion Committees —An excellent plan has been initiated in East Anglia, whereby invasion committees have been established in counties, boroughs urban and rural districts with smaller committees in every parish These committees are completely representative and all invasion plans are prepared including defence, fire, food and medical Those counties and authorities who have not yet established these committees are urged to do so without delay Medical representation is essential

First Aid Posts —Keep the terminology simple The Army Medical Services recognise R A Ps , C A Ps and possibly platoon aid posts The Civil Defence Services have F A Ps which are posts or points All these posts are " collecting " , the term C C P is confusing, redundant and unnecessary A small " medical packet " containing the bare minimum of supplies should be sealed and kept in safe custody where it will be required

Conclusions —The task is urgent and consists not so much in providing and establishing new organisations as in coordinating and " buttoning up " existing arrangements which belong, for the most part, to the Civil Defence Services Provision of medical supplies is adequate , wise distribution must be carried out

THE TOOTH OF THE DANE

THE shaming partnership between civilisation and bad teeth has been freshly illustrated by Christophersen's study of 316 skulls in the National and Anatomical Museums of Denmark [1] The owners lived in the bronze and stone ages and champed away at the tough and simple diet which their essays in hunting and agriculture brought to the table—or possibly the floor They had teeth which in occlusion, alveolar shape and position resembled those of their descendants , but their molars were stout and strong, their incisors were up to their work, and the older the eater the better his teeth Caries was found in only 1 6% of 3612 permanent teeth examined, and only 15% of 274 adults had any caries at all Among children caries was present in only 7%, but was found in 2 4% of 168 milk teeth A coarse diet evidently did its work in cleansing and strengthening the teeth and in smoothing away those irregularities, fissures and cavities which favour the development of caries These rude forefathers make a fine contrast to their posterity, whether in Denmark or elsewhere Frandsen,[2] who made a study of 1200 contemporary Danish children found only 4 with completely sound dentitions dental care, it seems, falls to the lot only of childre well-to-do parents The bad state of children's t being used as an argument for establishing an o national dental service in Denmark and for arrang the systematic treatment of school children

SCIENCE AND ETHICS

THE conference last month at the Royal Instr was evidence of the tremendous urge to find the place of science in this disordered world A symp in *Nature* (Sept 6) was directed towards d the relations between science and ethics Mr C Waddington, Sc D , points out that increasing scie knowledge, notably in the fields of anthropology, s logy and psychology (if this last is yet worthy t called a science) has done much to destroy traditi ethical conceptions Science is, however, in a pos to make, and indeed cannot avoid making, a contribu to the new ethics since ethics are based upon facts of kind with which science deals So far few would w to dispute with him, but he goes on to say that beca a thing works it must be right and good Thus, ' must accept the direction of evolution as good, sim because it is good according to any realist definition that concept " But some of his critics join issue wi him here Julian Huxley reminds him that the majori of evolutionary trends are irrelevant to progressiv change and that evolutionary progress is a rare phen menom This being so it would surely be wiser to accep evolutionary changes as a series of phenomena *outsid* the scope of ethical judgment Dr Waddington is convinced that ethics cannot be avoided since they are part of the large system of compulsions and prohibitions which begins to develop in infancy Here, he thinks, lies the practical difficulty The young child may be taught that an aggressive attitude towards others must b controlled , but how and when is he to be taught that aggression includes, for example, the adoption of a unscientific attitude towards the social problem o nutrition ? We should all like to have Dr Waddington faith that the fundamental notions of the scientific ou look will seep into the minds of mothers and nurses an so be unconsciously transmitted by them to the youn He wonders whether an adequate psycho analytica study of those who have grown up in Soviet nurseri might not provide interesting evidence on this poi It has been observed, with cynicism no doubt but also with truth, that when confronted with two or m courses of action we choose the one that we least dislik but it is the moral education we receive which determin what courses of action we like or dislike It is surely o of the functions of science to equip us with the speci knowledge to enable us to think clearly and so to morally

SHILLING A NIGHT

THE thirteenth annual report of Cecil Houses (In contains Miss Eleanor Farjeon's account of an eve at one of them , to read it is to share in the pa Every evening in the Cecil Houses must be such a pa —a meeting of friends at home to exchange news, views, sympathy and jokes Not many of us can h such a chance for a shilling a night , but those who wo like to keep the party going should write to Mrs Ce Chesterton, founder and hon secretary, at 193, Gr Street, London, N W 1

Dr James Macfarlane of the Department of Health Scotland has been appointed medical liaison officer at th Scottish Office in London, and at the medical intelli section of the Ministry of Health He will maintain lia with the medical branches of the service departments a other government departments in London

ROYAL COLLEGE OF OBSTETRICIANS AND GYNÆCOLOGIST On Saturday, Oct 25, at 2 30 P M , Mr W C W Ni will deliver the fourth Blair Bell lecture His subject w be diet in pregnancy

THE LOAN OF A MICROSCOPE —The education depart of the Royal College of Nursing needs additional microsc for laboratory work in the sister tutor course Owing to present difficulty in procuring these the director would grateful to hear from anyone willing to lend or hire one more microscopes to the college for the session

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[1] Christophersen, K M *Nordisk med Tidskr* March 1, 1941, p 687

[2] Frandsen, O *Ibid*, p 688

ORIGINAL ARTICLES

HÆMOGLOBIN METABOLISM

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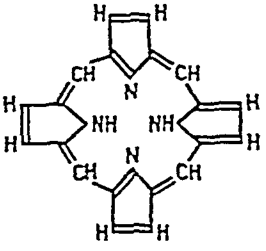
WHEN Hans Fischer began the study of the pigments xcreted in the rare condition of congenital porphyria t could hardly have been foreseen that the extension of his work would lead to a more thorough understanding of the metabolism of respiratory pigments in general, ncluding hæmoglobin. Such investigations are difficult, and although Fischer and his co-workers synthesised hæmin in 1929 much further chemical groundwork has been needed before the results could be applied to the clinical problems of blood-diseases.

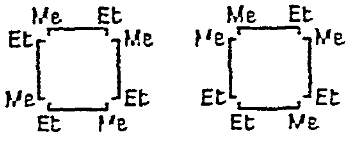
Hæmoglobin is formed by linking together a protein—globin—with an iron-containing pigment "protohæm." This protohæm is a combination of ferrous iron with a substance "protoporphyrin" which is closely allied to the pigments excreted in congenital porphyria. Fischer and his school have shown that all the naturally occurring porphyrins are variations on one theme—the "porphin" nucleus which is made up of four pyrrol rings joined by methene bridges (formula A). When the eight H atoms on the bases of the pyrrol rings are replaced by four methyl (Me) and four ethyl (Et) groups an artificial compound called "ætioporphyrin" is obtained. There are four possible isomeric ætioporphyrins, but the naturally occurring porphyrins all correspond to series I (formula B) or series III (formula C). There is no simple chemical way whereby series I compounds can derive from series III or vice versa; breakdown of the porphin nucleus and resynthesis would be needed and this is thought to be a very unlikely occurrence. The different porphyrins have different side-chains replacing the eight H atoms in porphin. Thus protoporphyrin has four—one CH_3, two $CH = CH_2$, and two $CH_2 - CH_2 - COOH$ groups. Coproporphyrin, the normal excretion form, has four CH_3 and four $CH_2 - CH_2 - COOH$ groups; uroporphyrin, with four $CH_2 - COOH$ and four $CH_2 - CH_2 - COOH$ groups appears only in the porphyrias. Now the protoporphyrin of hæmoglobin belongs to series III and Watson[1] showed that the free protoporphyrin in reticulocytes is also series III. Normal people excrete small amounts of coproporphyrin, about two-thirds in the fæces and a third in the urine; but all the fæcal and at least half the urinary coproporphyrin is series I and cannot therefore have been derived from the breakdown of hæmoglobin. Patients with hæmolytic anæmia known to be destroying large numbers of erythrocytes excrete relatively large quantities of coproporphyrin, but surprisingly this again is all series I. This unexpected finding that the excreted porphyrin is a different isomer and is therefore not derivable from the hæmoglobin porphyrin was called by Fischer the "dualism of the porphyrins" and has to be taken into account in any study of porphyrin excretion designed to throw light on hæmoglobin metabolism. It is not sufficient to know how much porphyrin is excreted—we must know to which series it belongs, and indeed Watson thinks it more important to know which than how much. Unfortunately the determination of the isomeric type is far from simple; it demands[2] the separation of the porphyrins, the preparation of their methyl esters and the determination of melting-points; and since the amounts excreted daily are measured in microgrammes, or only occasionally in milligrammes, skilled chemical technique is essential. For these reasons little data is at present available, but what there is is important.

In pernicious anæmia[3] there is greatly increased excretion of coproporphyrin I. When specific liver treatment is given the porphyrin excretion continues raised until after the reticulocyte peak is passed; then it slowly falls to normal. Coproporphyrin I is also excreted in large amounts in hæmolytic anæmia and in the period of blood-regeneration after hæmorrhage.[2] In aplastic anæmia[4] on the other hand, from a fifth to a tenth of the excreted coproporphyrin is series III, and coproporphyrin III has also been found in poisoning by lead,[2] sulphanilamide[5] and other substances. Hence the excretion of coproporphyrin I seems to be linked with unusual erythropoietic activity, including the megaloblastic erythropoiesis of pernicious anæmia, but excretion of coproporphyrin III seems linked with depressed erythropoiesis. In the first group there is always evidence of excessive destruction of red cells, but as already pointed out the coproporphyrin I cannot have come from the red cells. Is the coproporphyrin III of the second group derived from hæmoglobin? Apparently not. Lemberg's[6] studies of hæmoglobin breakdown have revealed that porphyrins are not formed; the porphin nucleus opens while still attached to globin and iron and thereafter is converted into biliverdin and bilirubin; the excretion forms of bilirubin, urobilin and urobilinogen, are therefore used as indicators of hæmoglobin destruction.

Ingenious explanations of these contradictions have been suggested by Rimington,[7] Dobriner and Rhoads,[2] and Turner.[8] They all suppose that from a pyrrolic precursor porphyrins of series I and III are formed simultaneously, normally much more III than I, but if the production of III is increased I is increased proportionately. The series III porphyrin is protoporphyrin and is used in the formation of hæmoglobin, but the series I porphyrin is apparently useless—it is converted into coproporphyrin and excreted. Hence if there is unusually rapid formation of red cells more porphyrin III is needed for hæmoglobin and a correspondingly increased amount of porphyrin I is formed and excreted. But in aplastic and toxic anæmias, owing either to the absence of erythroblasts or to toxic interference with hæmoglobin synthesis, the porphyrin III still being formed is unused and is excreted as coproporphyrin III. The changes in congenital and acute porphyrias are attributed to disturbance of this orderly synthesis. There is no real evidence in support of this theory but it fits the facts partly at least. Rimington and Hemmings[9] have shown that toxic drugs like sulphanilamide which cause methæmoglobin formation also cause increased porphyrin excretion, and this is coproporphyrin III. Hence they suggest that this may represent an alternative method of hæmoglobin breakdown, but occurring only when methæmoglobin is a phase in the cycle.



Formula A



Formulæ B and C

Clearly there is still room for much more evidence before confident interpretations are possible, but the type of problem these results can be applied to is illustrated by Vaughan and Saifi's[10] investigation into the cause of anæmia in chronic infection. The porphyrins excreted by their patients were estimated by Rimington who reported a rise in the excretion of both series I and III. Since there was no evidence of increased hæmoglobin breakdown it was concluded that a disturbance of hæmoglobin synthesis was responsible. In a previous paper,[11] by correlating cytological examination of the bone-marrow with clinical findings I was able to divide erythropoietic disturbances into broad groups. Further subdivision of these groups may well come from biochemical studies of hæmoglobin metabolism which can detect the conditions in which hæmoglobin is insufficiently available for normal marrow cells. The difficulty of the biochemical methods involved still stands in the way of really systematic investigation of the anæmias from this point of view. As Watson has said what we need is a differential method permitting estimation of the amount of each isomer present without recourse to actual isolation. Until this happy day comes we must proceed where we can, with the determination of the porphyrin isomers appearing in the various anæmias so that there will be sufficient data free from the bias of individual cases

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LIGATION AND CHEMOTHERAPY FOR INFECTION OF PATENT DUCTUS ARTERIOSUS

GEOFFREY BOURNE, M D LOND, F R C P

KENNETH D KEELE, M D LOND, M R C P
O S TUBBS, M B CAMB, F R C S

Note on the bacteriology by R H A SWAIN, M B CAMB

THE dangers of a patent ductus arteriosus lie in two main factors the mechanical effect on the circulation and the local supervention of infection Gross, in 1939, first ligated a patent ductus, since when some 20 or more cases have been reported Gross and Hubbard (1939) considered that infection of the ductus contra-indicated ligation However, in view of the hopeless prognosis in infected cases, operation combined with sulphapyridine therapy was considered justifiable in the two patients here described Case 1 was the first example of successful ligation in the presence of infection yet reported (Keele and Tubbs 1940) The patient was operated on in December, 1939 Until April, 1941, when he was last heard of, he remained an active working citizen free from cardiovascular symptoms, Some hæmaturia from a coexistent nephritis persisted The second patient was similarly treated by the sulphapyridine-operation technique in October, 1940, and remains well 11 months later

CASE-HISTORIES

CASE 1 —Man, aged 23, admitted to St Bartholomew's Hospital under care of one of us (K D K) in October, 1939 Five months before had had febrile attack diagnosed as influenza, for which was kept in bed for 14 weeks, during which there was but slight improvement Weakness and loss of weight (2 st) progressed Since this illness had never felt well Periods of 1–3 weeks at work alternated with similar periods in bed Recently dyspnœa on exertion had been noticed No gross hæmaturia and no pain in chest or petechial rash had been observed No previous illness, apart from "heart trouble" from birth, this had not prevented him from playing football and cycling

Lightly built pallid man (Hb 45%) Small petechiæ over neck, shoulders and legs Cardiac impulse heaving Apex-beat 4¾ in from midline Palpation over the pulmonary base revealed thrill extending through systole into early diastole Loud "machinery" murmur heard all over præcordium, maximal in region of pulmonary base, occupying all systole and large part of diastole Pulmonary second sound audible Blood pressure labile, varying from 110/60 to 150/80 mm Hg with patient lying in bed Liver and spleen palpable A teleradiogram showed slight enlargement of heart and prominence of pulmonary conus region Red cells 2,665,000 per c mm, Hb 45%, white cells 11,300 (polymorphs 80%) Sedimentation rate, 135 mm in 1 hour Urine contained much albumin, with positive guaiacum reaction, microscopy of centrifuged deposit showed many red cells, pus cells and few granular casts, culture grew *Streptococcus fæcalis* (once only) Blood urea, 71 mg per 100 c cm Blood culture positive for *Hæmophilus influenzæ*

Course —High intermittent fever, uninfluenced by general medical treatment and blood transfusions After 2 weeks sulphapyridine begun in dosage of 3 g daily for 3 days, then 1½ g daily for 18 days until operation This small dose produced vomiting and depression, but also dramatic subsidence of fever General condition improved considerably, but blood culture remained positive In view of this it was decided, after 3 weeks' improvement, that he had a chance of surviving ligation of patent ductus, and this was carried out by O S T on Dec 5, 1939 At the moment of ligation, blood-pressure rose from 108/60 to 120/80 and murmur at pulmonary base diminished to short rough systolic murmur, which has since remained unchanged Post operative cour complicated, as expected, by further impairment of renal function, and development of uræmia Headache, vomitin and oliguria accompanied rapid rise in blood pressure to a maximum of 180/120 Blood urea at this time 218 m per 100 c cm and alkali reserve 36 6 Some œdema of neck and upper chest, subsided within 10 days

After this anxious period steady improvement ensued Sulphapyridine had not been given during this time, but nevertheless the blood culture became negative and remained so for 3½ months The hæmaturia diminished and the blood pressure slowly fell At the end of March, 1940 (3½ months), blood culture became positive again and three courses of sulphapyridine, each totalling 30 g in 10 days, were given, with a week's interval between each Since the final course the patient has remained afebrile In spite of this a further positive blood culture was obtained in June, 1940 The patient was then up and had no symptoms, volunteering that he had "never felt better in his life" Blood urea 42 mg per 100 c cm, sedimentation rate 110 mm in 1 hour Urine showed red cells and some granular casts, urea clearance 40% of normal Blood culture was negative 2 months later and has remained so since (January, 1941) When last seen (April, 1941) felt well During a short period at home permitted after 9 months in hospital, returned to work (against our advice) and got married No change in cardiac signs Short pulmonary systolic murmur persisted Blood pressure more stable at 110 Sedimentation-rate 60 mm in 1 hour Red cells 5,530,000, Hb 122%, white cells 18,000 (polymorphs 59%) Blood urea 44 mg per 100 c cm Blood culture negative after 10 days

CASE 2 —A girl of 19 who had always known that there was something wrong with her heart Remained in good health until 4 months before admission to hospital During this time complained of headache, lassitude and undue sweating at night, and fever present more or less continuously No peripheral or pulmonary embolic symptoms On admission intermittent fever present, ranging up to 100° and 101° F Apex beat 1 in to left of midclavicular line Typical systolic murmur and thrill of patent ductus arteriosus present, persisting well into diastole and loudest in second left interspace near sternum Blood pressure 132/40 Blood culture yielded, on three separate occasions, growth of *Strep viridans* in all tubes, colony count in shake culture numbering at first about 300 per c cm Red cells 3,800,000, Hb 62%, white cells 14,800

Course —After a week, 6 g of sulphapyridine per day given for 4 days, then reduced to daily dose of 4½ g for 12 days Fever disappeared and blood-cultures became less profuse and then sterile Afebrile period lasted 12 days until operation on Oct 21, 1940 After ligation of ductus (O S T) febrile reaction occurred lasting 3 days Temperature occasionally touched 99° F during subsequent 3 weeks, then kept normal for whole convalescent period Sulphapyridine continued at daily dose of 4½ g daily for 5 weeks, when reduced to 3 g for 4 days, after which it was omitted Put on a stone in weight in first month Has remained well for 11 months (September, 1941) Sedimentation rate then normal

SURGICAL TECHNIQUE *

The technique employed in these two patients was almost exactly the same as that described in detail by Gross (1939, 1940) for cases uncomplicated by infection so that a detailed description would be superfluous, the main steps in the operation will however be outlined since no similar cases have yet been reported in the English journals

Both patients received intravenous glucose saline during the operation The wisdom of this therapy is doubtful, since these people, like those with an arteriovenous aneurysm, have an increased blood-volume, and the sudden conversion of the circulation to that of the normal person therefore theoretically throws a temporarily increased burden on the heart, fluid put in artificially can only add to this increase It is an insurance again possible rapid hæmorrhage, however, but it should be stopped as soon as the ductus is successfully ligated

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* The surgeon (O S T) wishes to acknowledge that his inter in the subject was initiated by Strieder, who made the first attemp to ligate an infected patent ductus arteriosus (Graybiel Strieder and Boyer 1938)

Anæsthesia was by a nitrous-oxide, oxygen and ether mixture (Dr C L Hewer and Dr F Evans) in case 1, and by cyclopropane and oxygen (Mr B Rait-Smith) in case 2 An endotracheal tube was used in case 1 but not in case 2 The ductus arteriosus was approached through the left pleural cavity, which was opened through the second left intercostal space, the skin incision extending from the midline in front to the anterior axillary line The second and third costal cartilages were divided close to the sternum and excellent exposure obtained by separating the ribs with a rib-spreader The internal mammary vessels were divided between ligatures so that full use of the medial end of the incision might be obtained In case 2, the two layers of pleura were adherent around the medial half of the incision and on the mediastinum and required separation by blunt dissection , the adhesions apparently resulted from infarction of the lung which was firm and red in this region In both patients, the grossly enlarged pulmonary conus was seen to distend abnormally during systole and a well-marked thrill was palpable In the first patient, the region of the ductus arteriosus was exposed by continuing the intercostal pleural incision on to the mediastinum, but it was found that the phrenic nerve and its accompanying vessels prevented adequate working room and had to be divided This was obviously an error in technique and was corrected in the second case by incising the mediastinal pleura parallel with, and posterior to, the phrenic nerve which was then retracted anteriorly No difficulty was experienced in either case in identifying the patent ductus

The cellular tissue under the arch of the aorta was gently swept from the anterior surface of the ductus with a pledget of gauze held in a long hæmostatic clamp Keeping immediately against the wall of the ductus, the adjacent tissues were readily separated by blunt dissection except from the posteromedial surface where a plane of cleavage must be found without a direct view This was done by insinuating the left index finger into the cleft between the aortic arch and the bifurcation of the pulmonary artery anterior to the ductus and passing a malleable blunt-ended aneurysm needle through the tissues behind the ductus, so as to impinge on the left index finger finally bringing the eye into view anteriorly to receive the ligature material This part of the dissection must obviously be carried out most gently, keeping close to the ductus Contrary to the experience of Touroff and Vesell (1940a), in neither case was anything but trivial hæmorrhage encountered Nevertheless, if infection is not of recent inception, the surgeon must be prepared to find the walls of the ductus thinned, friable and adherent, and possibly an associated mycotic aneurysmal dilatation—a danger which has been much stressed by American workers The recurrent laryngeal nerve was not identified in either patient, but it was thought that damage would be avoided by always keeping the dissection against the wall of the ductus It is probable that physiological conduction was interfered with temporarily in the first patient, for he was hoarse for several weeks after the operation, but full recovery was present by the sixth week, when the vocal cords were examined by Mr Norman Jory There was no interference with voice production in the second patient

The ductus was about ½ in in diameter in the first case and a little more than this in the second , in both, the length was approximately ¾ in The idea of excising the ductus appears to be excellent in theory but totally impractical Gross's comment that "the ductus has always been so short that I have not dared to divide it in any instance" applied in our two patients Two doubled no 5 tubular silk ligatures were used to occlude the ductus A faint thrill could be palpated in the pulmonary conus after applying the first ligature in each case, but it was abolished by the second Finally, the mediastinal pleura was sutured and the wound closed in layers Gentle positive pressure was used by the anæsthetist during closure of the wound so that complete reinflation of the lung expelled all the air from the pleural cavity

POINTS OF INTEREST

Physical signs after operation —In case 1 the classical signs of patent ductus arteriosus changed after ligation to a short rough systolic murmur at the pulmonary base The palpable thrill disappeared No detectable change in the size of the heart was found, though after ligation the pulmonary conus and artery seemed to be less distended during systole, being deprived of the blood regurgitated through the patent ductus After operation the blood-pressure rose from 120/80 to 180/120 and the blood-urea from 71 to 216 mg per 100 c cm , since when there has been progressive improvement in these features

In case 2, before operation the typical systolic murmur carried on into diastole had been present After ligation it persisted and remained for some weeks nearly as loud as before After 7 months it had become much less loud, the diastolic part of the sound being now nearly inaudible This curious fact was also noted by Touroff, who in one case cut the ductus between the two ligatures, thus disposing of the criticism that the persistence of the murmur might be due to imperfect obliteration of the vessel The blood-pressure, which before operation had been 132/10, rose after it to 154/122 the diastolic remaining higher than normal for 6 weeks During this time the renal function became and remained impaired, the standard urea-clearance 15 days after operation being reduced to 21 9 c cm , (29 2% of the average normal) for the first hour, and 15 2 c cm (28%) for the second hour There had been no preoperative evidence of any renal or urinary abnormality

Early diagnosis —Both these patients, known to have congenital heart disease, remained febrile for 4–5 months or more before infective endarteritis was diagnosed Case 1 had become almost moribund during this period , case 2 was in much better condition An early diagnosis is obviously desirable in cases of infection of the ductus where ligation is to be attempted Symptoms of infection are not dramatic and influenza may be diagnosed even when pyrexia is persistent In case 1 this remarkable absence of symptoms was again shown after operation when he felt perfectly well, although a positive blood-culture was obtained The same comparative well-being occurred in case 2 with the commoner *Strep viridans* as the causative organism Any patient known to have a patent ductus arteriosus who runs a fever for more than a week without obvious cause should be suspected of infection in this region and investigated accordingly In case 1 the continuance of the focal nephritis, which darkens the prognosis, can be regarded as in some degree due to delay in diagnosis Obviously the earlier operation is performed the less chance there is of renal or other complications

Diagnosis of the heart lesion —In both these patients the physical signs were typical of patent ductus arteriosus In both the high pulse-pressure and the teleradiograms were confirmatory There was no evidence of any other congenital defect, or of infective endocarditis of any valves, though such negative evidence must be of only limited value

Pathology of the lesion in relation to ligation —Maud Abbott (1936) describes the original site of infection as always being at the pulmonary end of the patent ductus This is narrower than the aortic end From here the vegetations spread over the left pulmonary artery far sooner than into the aorta Patches of vegetations are found on the wall opposite the opening of the ductus, presumably carried there by the blood-stream which flows from aorta to pulmonary artery Eventually the pulmonary valves may be involved in the spread of the vegetations Thus left-sided pulmonary infarcts are common Radiological evidence of them was seen in case 2 and a large one was found at operation There seems to be no preoperative method of establishing the length of the patent ductus If the ductus is sufficiently long, ligatures should be placed at each end, special care being taken to obliterate the pulmonary end as completely as possible Periarterial adhesion and fragility of the wall of the patent ductus accounted for fatal hæmorrhage in two of Touroff's cases (Touroff and Vesell 1940b) In our cases the ductus was easily defined, the wall appearing pink but firm No hæmorrhage occurred during the manipulations necessary for passing two silk ligatures In case 2 some oozing resulted from the fact that the inner aspect of a moderately large pulmonary infarct lay over the region of the ductus

Bacteriology —The organism isolated by blood-culture from the first case was a hæmophilus

It was a small pleomorphic non motile gram-negative coccobacillus and had no tendency to filament formation In the first instance the organism was obtained in blood cultures made in glucose broth incubated aerobically, where it appeared as small fluffy spherical masses on the surface of the blood Later it was found that growth was considerably accelerated by cultivation in air to which 10% of carbon dioxide had been added In subcultures the strain was found to lose its capacity for growth on solid media unless cultured in the presence of carbon dioxide The colonies on solid media grown in the presence of 10% carbon dioxide were small, convex, with an entire edge, translucent and non hæmolytic The organism grew well on boiled blood agar, Fildes agar, and 5% horse blood agar In 1% horse blood broth and Fildes broth the organism grew well and gave rise to a slight granularity on the side of the tube A scanty or moderate growth was obtained in the following media serum broth, peptone broth, nutrient agar, serum agar, and inspissated serum Well marked satellitism occurred when serum or plain agar cultures were weeded with a colony of *Staphylococcus albus* The organism did not grow in peptone water or in a filtered peptone water culture of *Staph albus* A growth did occur in peptone water to which X-factor in the form of hæmatin, or V-factor in the form of a heated yeast extract, had been added The following sugars were fermented mannite, inulin, dextrin, glucose, dulcite, arabnose, raffinose and salicin Maltose, lactose, saccharose and galactose were not attacked No indol was formed The organism was agglutinated to a titre of 1 in 1250 by the patient's serum, but not by agglutinating sera of *Brucella abortus*, *Br melitensis* or *H pertussis*

The morphology and cultural characteristics of this organism make exact identification difficult since it differs from *H parainfluenzæ* described by Miles and Gray (1938) in its X- and V-factor requirements and from *H influenzæ* in its biochemical reactions and affinity for carbon dioxide Professor Miles has examined the organism and confirmed these findings, he suggests that the organism is an atypical strain of *H influenzæ* resembling in its carbon-dioxide requirements *H aphrophilus* described by Khairat (1940)

Sulphapyridine therapy —Surgery would have been impossible in case 1 without previous sulphapyridine therapy, owing to the patient's very poor general condition With sulphapyridine the patient had been afebrile for 3 weeks before operation Although we have seen no case of this rare influenzal endarteritis treated with sulphapyridine alone, the likelihood of its being successful while the large mass of vegetations existed can be considered remote With *Strep viridans* infections it is well known that although temporary sterilisation of the blood-stream may be effected with sulphapyridine a fatal outcome is still nearly constant

COMMENT

Hubbard, Emerson and Green (1939), in discussing the indications for ligation of the patent ductus arteriosus, conclude that the procedure should be limited to cases "showing evidence of circulatory embarrassment," among which they include signs of severe regurgitation They doubted if ligation had any prophylactic value against subsequent infections Time alone can answer this question Gross has considered infection of the ductus a contra-indication because of the risk of producing embolism Of this we have found no evidence in these cases, and such risk as there may be will certainly be diminished by early diagnosis and treatment We are of the opinion that infection of the ductus arteriosus is a strong indication for ligation and should be combined with chemotherapy

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CASE OF CRUSH INJURY WITH RECOVER

A IAN L MAITLAND, M B GLASG , F R C S E
SURGEON LIEUT COMMANDER R N V R , SURGICAL SPECIALIST,
ROYAL NAVAL AUXILIARY HOSPITAL

THE following patient received a crush injury towards the end of April, 1941 He has been under observation for four months and recovery has now progressed sufficiently to warrant publication of the findings

CLINICAL FEATURES

Healthy man, aged 40, buried for 15 hours under debris of bombed building Was lying on back with right hand and forearm raised across face Pinned by beams which pressed heavily on right arm, right side of body, right thigh and leg First came under observation about 24 hours after he was extricated, only facts known about this period are that he had passed no urine since the burial 39 hours before, and that treatment had consisted of warmth, morphia and fluids by mouth

At no time was consciousness lost, and on admission he could describe experience rationally There were signs of considerable dehydration and shock with dry and dirty tongue No evidence of internal hæmorrhage but signs of complete lesion of right brachial plexus with fullness and tenderness in right supraclavicular fossa Weals over right antecubital fossa, right side of chest, abdomen, right buttock, outer side of thigh, over both knees and on right leg ranged in diameter from 2 to 4 in and looked like superficial burns He was vomiting slightly and complained of nausea Urinary output during first 12 hours negligible, urine contained cloud of albumin, granular casts and epithelial cells, specific gravity 1016 Blood-pressure 110/90 mm Hg, blood urea 140 mg per 100 c cm

On the second day of observation he developed signs of severe pulmonary concussion with blood stained sputum, subsequent radiography confirmed the diagnosis Right forearm and thigh were swollen, especially thigh, which was tense and brawny throughout its length No effusion into knee joint, posterior tibial and dorsalis pedis pulses full and easily palpable Circumference at mid thigh 5 cm greater on right than left, and 5 cm below antecubital fold 7 cm greater on right side than left (table I)

TABLE I—INCREASE IN CIRCUMFERENCE OF LIMBS ABOVE MEASUREMENT OF NORMAL LIMB ON ADMISSION (CM) THIGH WAS MEASURED 15 CM ABOVE PATELLA (LEFT 45 CM ON ADMISSION), LEG 15 CM BELOW PATELLA (LEFT AND RIGHT 40 CM ON ADMISSION), FOREARM 5 CM BELOW ANTECUBITAL FOLD (LEFT 23 CM ON ADMISSION) *

Day	Thigh		Leg		Right forearm
	Left	Right	Left	Right	
1		5			7
3		5			7
7		2			7
12		5			7
13		4 5		2 5	7
14		5		7	7
16	2 5	9	1 8	5	7
18	5	10	4	7	7
19	2 5	7	4	8 2	7
22	5	10	3	8	7
26		6 2	pr	pr	pr
27		5	,,	,,	,,
28		3	,,	,,	,,

pr = slight œdema still present

* After the patient's recovery the circumferences of the thighs and legs were the same on the two sides The right forearm was then much wasted so that the measurement was no indication of that on admission I have measured the forearms of a number of people who, like the patient, are right handed, and find the circumference of the right averages 1 cm more than the left

The case was recognised as a crush injury as described by Beall and Bywaters,[1] with pulmonary complications and a complete lesion of the right brachial plexus

TREATMENT

At that time (April, 1941) 17 cases of this type had been described with 12 deaths [1 2] Of the fatal cases 1 died of intercurrent septicæmia, in the other 11 the fluid intake had been relatively small and principally made up of serum, concentrated serum, plasma or whole blood Since the treatment was admitted to be in the stage of trial and error

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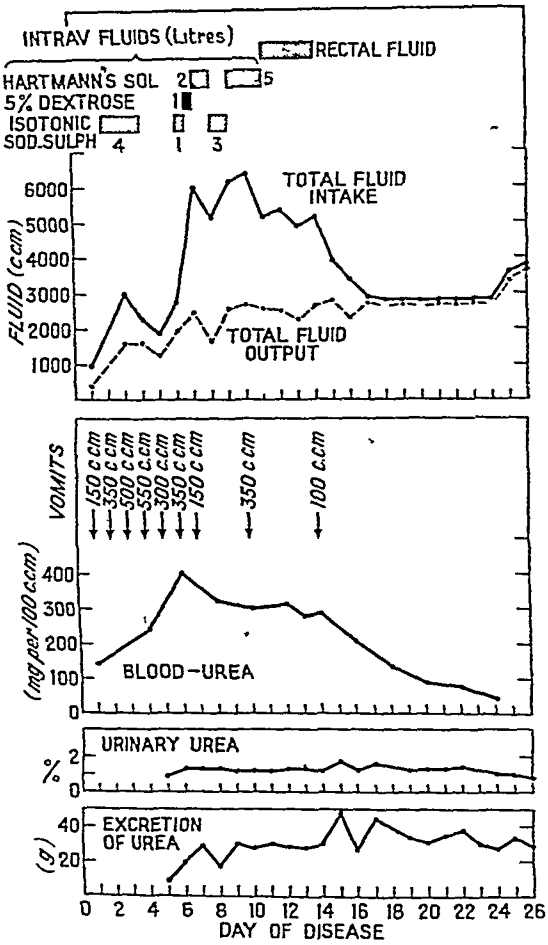
[1] Bywaters, E G L and Beall, D *Brit med J* 1941, 1 428

[2] Beall Bywaters Belsey, R H R, and Miles, J A R *Ibid* p 432, Mayo White R and Solandt O M *Ibid* p 434, M R C Subcommittee on Traumatic Œdema *Ibid*, p 44



(Beall and Bywaters) a different approach was tried This was based on complete protein starvation and forced fluids Protein starvation was used because the biochemical findings in these cases suggested that more products of protein autolysis were being thrown into the circulation than the damaged kidneys could dispose of On this assumption it seemed reasonable to add no more protein to that already there until there was evidence that it could be utilised and the end products excreted Every form of protein was therefore withheld for 18 days, a low protein diet was then instituted and not till the 30th day was a normal diet free of protein restrictions allowed The pathological appearances described i the kidneys associated with a mounting blood urea and iminished urine were similar to the changes of congestive enal failure, as I have pointed out elsewhere[3] In view of his it seemed worth while to employ the usual treatment for hat condition During the first few days the intake by nouth was small and most of the fluid was given intravenously n the form of isotonic sodium sulphate solution The chart hows that despite a considerable intake of this solution no eal diuresis took place and the blood urea mounted steadily Vhen the peak of 400 mg per 100 c cm was reached on the th day it was felt that the risk of death from pulmonary edema was less than that from uræmia and fluid was pushed n by every available route Rectal fluids were tried, but wing to the uræmia were not tolerated until the 11th day, ortunately the patient was able to drink between 5–6 pints laily and thus an enormous daily intake was achieved The ntravenous solutions used in the period between the 6th and 1th days are shown on the chart Hartmann's solution was ised in the later stages because of its close similarity to blood lasma without the protein elements, in any case the need for sodium sulphate was no longer evident when the urinary output reached 2000 c cm

In view of the extensive necrosis of muscle and lesions of the adrenal cortex which had been reported, extract of suprarenal cortex was given from the start Eucortone 4 c cm was given daily for 24 days and 5 c cm daily for a further 8 days

Unfortunately the blood chlorides, were not estimated until the 15th day and the blood potassium and urinary chlorides were not estimated at all Sodium chloride was given from the 18th to the 30th days in a daily dose of gr 135 except on the 27th and 28th days when the dose was gr 270 The highest of a very irregular series of blood chloride figures occurred on the 28th day (table II)

In the later stages—6th week onwards—iron was given in massive doses It was given continuously for 7 weeks and during the last 4 liver was given as well in an endeavour to correct the persistent anæmia The appropriate drugs were used for the intercurrent complications and latterly ascorbic acid and vitamin B_1 have been used as part of a tonic regime They appear to have improved the anæmia, but whether this will be permanent is questionable

Local treatment was simple The abrasions and weals were painted with 1% crystal violet solution The affected limbs were placed in the position of rest, and as soon as possible an abduction frame was applied to the paralysed arm and physiotherapeutic treatment instituted

PROGRESS

General condition remained very poor during first 10 days, with characteristic signs of uræmia Thereafter improvement gradual and slow, with slight psychic disturbances about 18th day On 38th day bronchopneumonia developed in left lower lobe, when recovering from this acute infection of throat with hæmolytic streptococci developed Since this cleared up convalescence has been without incident Blood-pressure readings are shown in table II The blood-counts and hæmoglobin estimations in table II reveal constant degree of anæmia which is persisting despite treatment and is highly suggestive of some permanent renal damage Icteric index was estimated by Meulengracht s method on 5th, 7th and 15th days, figures were all within normal limits (2, 4 and 5 units respectively) Clotting time done on 7th day very prolonged (20 min, normal control 5 min) Method of Lee and White used and estimation not repeated

TABLE II—BLOOD-CHLORIDES, BLOOD PRESSURE, HÆMOGLOBIN AND RED CELL COUNTS

Blood chlorides*		Blood pressure (mm Hg)					
Day	mg NaCl per 100 c cm	Day	Syst	Diast	Day	Hæmoglobin (%)	Red cells (per c mm)
15	220	2	110	90	13	62	
19	500	4	125	85	15	63	2,540,000
21	500	5	110	80	21	68	
23	125†	6	120	80	43	70	3,285 000
25	100†	8	120	95	56	70	3 400,000
28	700	9	150	90	63	68	3 490 000
30	300	10	140	75	70	80	4 000,000
36	200	11	140	80	78	70	3 880,000
					84	82	3,700,000
					95	76	3 500 000
					102	80	3 700,000

* By Whitehorn s method

† These two results are low because the blood was allowed to stand for some hours before the estimation was done They must therefore be discounted

Urine was examined daily during first 4 weeks and varied little Specific gravity remained between 1014 and 1012 for 12 days and thereafter dropped gradually to 1004 Daily output (see chart) rose slowly to 2500 c cm on 7th day and remained around that level throughout period of observation. Urinary urea was estimated by hypobromite method using a Doremus ureometer Albumin constantly present, at first as light cloud, but after 15th day only as trace Epithelial cells present in first specimen only, thereafter for first 6 days granular and hyaline casts and red blood-cells noted Casts present for further 4 days, after that only occasional red cell seen First specimen of urine was negative to reduced phenolphthalein test and contained no red cells Urine never contained pigment and no pigment casts were observed Blood urea estimated by modification of Falen's method

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[3] Maitland, A I L *Ibid*, p 570

Urea clearance was done 5 times and the results were as follows

Day of disease	Blood urea (mg per 100 c cm)	Av % of normal function
6	400	7
13	227	15
20	80	41
36	42	65 5
102	32	91

The swellings of right arm and right thigh were entirely different in character Arm was seat of true œdema, greatest in dependent part of upper forearm, produced by deep hæmatoma around neurovascular bundle in supraclavicular area and due to stasis in veins and lymphatics of arm It was present from the beginning and did not vary in size until it finally cleared up Swelling of thigh was not true œdema but a brawny induration which did not pit on pressure and was most firm and longest in evidence under the weals True œdema supervened later, affecting right leg first on 13th day and appearing in left leg and thigh on 16th day, some œdema also appeared over lumbar region on 22nd day (table I)

PRESENT CONDITION

Four months after injury is able to be up most of day Blood pressure 110/60, fundi normal and lungs have recovered completely No relative wasting of right thigh but muscles very weak and resultant instability has produced small effusion into knee joint Left leg can be extended indefinitely against resistance of 10 lb 32 times per min, but right leg can only be extended 18 times against resistance of 2 lb 14 times per min before fatigue supervenes, renal function has recovered almost to normal Urine normal, sp gr 1012 Anæmia persists and appears to be resistant to treatment, brachial plexus lesion is represented by recovering ulnar palsy

DISCUSSION

The most striking feature of this case is the high proportion of the large fluid intake which was retained between the 7th and 15th days During these 8 days 25 5 litres was retained without any great increase in the swelling of the limbs or the appearance of anasarca The œdema which did eventually develop did not appear till the 16th day and reached its maximum between the 19th and 22nd days This retention cannot be ascribed entirely to the administration of cortical extract and other factors in treatment, since the bulk of the fluid remained in circulation for at least 6 days It must therefore have been required as a diluent of some abnormal substance in the blood, probably a high molecular protein derived from the damaged muscle The two cases of this syndrome recently reported[4] appear to have had a similar course to the one described here Unfortunately the fluid retention, if any, in each case is not stated In one of them (Longland and Murray), however, the clinical features suggest that a true transfusion kidney cannot be excluded, since the patient had a rigor after a plasma-transfusion, followed by icterus and unaccompanied by swelling in the injured limbs

The glomeruli of the kidney are supplied with blood direct from the interlobular arteries through the afferent glomerular vessels, the tubules and loops of Henle are supplied by capillaries derived from the efferent glomerular vessels, and the collecting tubules and ducts of Bellini are supplied from the main branches of the renal vessels through the arteriæ rectæ The lesion associated with the crush syndrome is situated in the convoluted tubules and loops of Henle, and it will be seen that the blood-supply of this area comes through the reducing chamber of the glomerular capillary bed There, not only is the pressure reduced but the blood is concentrated by the loss of fluids and salts secreted by the glomerulus In the light of this knowledge a cause for the lesion suggests itself In all the cases described severe shock has been a feature This is shown by the low blood-pressures recorded In some cases both systolic and diastolic pressures have been low, in this case the systolic pressure alone was low It can be presumed that this shock has its onset when the patient is first buried and therefore is prolonged over many hours This will produce in the capillaries of the convoluted tubules a vicious circle of vascular stasis, hæmoconcentration and thus more stasis These changes will be increased by the absence of fluid intake during the buried period and the flooding of the circulation with a protein of high molecular weight from the damaged muscle There is experimental evidence[5] that a rapid elevation of blood-pressure during the recovery period may produce further tubular damage by intensifying this stasis in the vessels of the convoluted tubules

This hypothesis is supported by the following clinical evidence (1) the invariable presence of abnormality in the first specimen of urine examined, (2) the common critical point in all cases between the 6th and 8th days, (3) the fatal termination in one case despite amputation of the crushed limb, and (4) the recovery of two severe cases with general measures only during the first 24 hours followed by the usual treatment of congestive renal failure The conclusion is that this lesion is produced primarily by the long period of lowered blood pressure or pulse-pressure aggravated by the absence of fluid intake during part of that time and the presence of an excess of a circulating protein derived from the damaged muscle It is in fact an active congestive renal failure with a possible toxic element superimposed and it may be intensified by too rapid elevation of the blood pressure, particularly if that elevation is produced by plasma or concentrated serum The experience of this condition is limited and the theory outlined requires more evidence for its proof, but it seems reasonable and worth further investigation by animal experiment and clinical observations

The lesions described in the adrenal cortex in two reported cases and the irregular behaviour of the blood chlorides in the present case despite a constant dose of cortical extract and sodium chloride suggest that some similar changes to those in the kidney may take place in the suprarenal cortex They certainly point to the necessity for examining the blood and urinary chlorides from the start in these cases

SUMMARY

A man, aged 40, developed severe renal failure as a result of burial for 15 hours under a bombed building He was pinned across the right thigh and right side of the trunk He also had a lesion of the right brachial plexus and pulmonary concussion

He was treated by complete protein starvation and forced fluids, with injections of suprarenal cortical extract A large proportion of the fluid was retained between the seventh and fifteenth days without any corresponding increase in the œdema, though a general anasarca was present from the sixteenth to the twenty eighth day

Improvement began on the tenth day, and four months after the injury the patient appears to have made a good recovery, in spite of an intercurrent bronchopneumonia and a streptococcal infection of the throat An anæmia persists in spite of treatment, which suggests some renal damage not evident to tests of function, and the affected thigh, though anatomically normal, has lost almost all it extensor power

It is suggested that in such cases the renal failure is caused by vascular stasis due to lowered blood-pressure from the time of the injury, to the lack of fluid intake during the period of burial, and to flooding of the circulation with protein from damaged muscle The lesion in the kidney may be aggravated by transfusion with plasma or concentrated serum

I have to thank Surgeon Rear Admiral F J Gowans for permission to publish this case, Surgeon Commander R S Allison for his help and criticism during the treatment of the case and preparation of this paper, and C P O Webster and the staff of the clinical laboratory for the estimations

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[4] Henderson R G *Ibid* 1941 2, 197, Longland, C J and Murray, J *Lancet*, 1941, 2, 158

[5] Miller, H *Brit med J* 1941, 1, 685

MEDICAL DEFENCE UNION —The annual meeting of this society was held on Sept 30 Dr G de Bec Turtle, acting president, who was in the chair, said that the membership was now over 24,000 War had not decreased litigation and he urged doctors to exercise great care in signing medical certificates Dr Turtle was elected president for the coming session

CYCLOPROPANE ANÆSTHESIA

R BLAIR GOULD, M B SHEFF, D A
HONORARY ANÆSTHETIST TO GOLDEN SQUARE THROAT HOSPITAL, SPECIALIST ANÆSTHETIST IN THE E M S

MANY papers have appeared on the pharmacological and physiological aspects of cyclopropane I shall here deal with the application of this knowledge to its administration as an anæsthetic, in the light of experience I have gained during the past few years

Perhaps in no other type of anæsthesia is the apparatus used of such importance, for an inaccurate, leaking, inflexible apparatus will make for failure, and greatly add to the difficulties of the administrator The principles of an ideal apparatus have been described by Harris (1933, 1935, 1938), and I agree with him in favouring the circle filter as against the to-and-fro principle of Waters (1932) Although the latter has the advantages of portability and simplicity it is difficult to handle the irritant soda-lime is too near the face-piece, greatly increasing the danger of its inhalation · while the heat induced in the canister directly affects that part of the gas mixture which is immediately inhaled On the other hand the circle filter if correctly designed provides a flexible apparatus which more closely satisfies physiological requirements, and with an adequate canister can produce a more complete absorption of carbon dioxide In contrast to the method practised by most anæsthetists, I find that less resistance to respiration is produced when the canister is placed on the inspiratory side of the circuit, and this clinical impression is supported by manometric readings of the resistance induced in various types of apparatus at the face-piece end of the circuit

Sensitive directional valves, offering the minimum respiratory resistance, are a necessity. They should be designed to work efficiently with the reduced tidal respiration met with in deep anæsthesia They should be placed as close to the face-piece as possible, for theoretical considerations, fully explained by Harris, demand that the dead space between the unidirectional valves and the alveoli should be less than the volume of the smallest tidal respiration (Placing these valves on the machine takes no account of the expansile nature of the long rubber tubing between the valves and face-piece and permits excessive re-breathing, especially when pulmonary ventilation is reduced) This ideal is almost impossible to attain, but the closer it is approached the less will be the respiratory embarrassment, the smoother the anæsthesia, and the less fatigued the patient at the end of a long operation *

ESTIMATION OF DEPTH

he quietness of the breathing under cyclopropane is not so much to the carbon-dioxide method of ministration as to the depressant effect of the gas on respiratory centre The usual signs of anæsthesia seen with ether are not helpful, and estimation of pth is difficult Passage through the first two stages ery rapid and no excitation of respiration is seen even nduction ; in the third stage a slight and progressive rease in rate and tidal volume occurs, until intercostal alysis is complete , a small increase in concentration l now cause respiratory arrest

Vaters (1936) has shown how the patient may pass ough the third stage without manifest signs except a dual diminution in respiratory movement The rease in rate and depth of respiration which usually urs with other agents just before respiratory arrest is ght or lacking with cyclopropane, which makes it ficult to differentiate the pre-apnœa level Attention detail is therefore essential Romberger (1935 1937) d Guedel (1937) have described a system of anæsthetic ns but these are not complete, because they fail to take o account the phenomenon of general muscular axation , they are also often difficult to assess, pecially in cases where the respiratory threshold has en elevated by preoperative drugs

I find the following simplified scheme (worked out th reference to the respiratory signs only) satisfactory for teaching purposes Where planes of anæsthesia are referred to in this paper this scheme is to be understood.

Third stage	*Signs*
First plane	Light anæsthesia , moving eyeballs
Second plane	
(Upper)	Moderate anæsthesia , fixed eyeballs , intercostal paresis absent or partial only
(Lower)	Deeper anæsthesia , intercostal paralysis becoming complete (The diaphragmatic movement is not exaggerated as it is with ether)
Third plane	Intercostal paralysis has developed gradually and progressively, without any change in the character of the breathing, which is now almost entirely diaphragmatic A slight increase in concentration now leads to
Fourth plane	Apnœa, at first with no signs of circulatory depression This rapidly passes into
Fourth stage	Apnœa with circulatory depression , impending cardiac failure and death

It will be seen that the depth of anæsthesia is reflected with great accuracy by the extent of depression of breathing, and this may be used as a more accurate and easily determined method of estimating the "plane level" during the third stage than an attempt to assess the degree of paralysis of the intercostal muscles The exact points where intercostal paralysis begins and becomes complete (which mark the upper and lower limits of Guedel's third plane) are often impossible to determine in practice More useful information can usually be obtained from observation of the breathing bag and manometer than from palpation of the chest wall.

The general phenomena of anæsthesia—loss of consciousness and reduction or abolition of the reaction to pain—are due solely to the action of the anæsthetic agent on the brain Estimation of depth of anæsthesia as taught to generations of students, depends on the effect on the respiratory function Muscular relaxation, in which the surgeon is more interested appears to depend on diminution of skeletal-muscle tone as the centres in the C N S become depressed ; and in particular on depression of the anterior horn cells of the spinal cord, and suppression of stimuli normally reaching these cells from the cerebrum, cerebellum, basal ganglia skin, joints and muscles (Beecher 1938, Yandell Henderson 1935a and b, 1937, Samson Wright 1940) As a rule cord-reflex arcs are suppressed early in the third stage of anæsthesia, but it is not always easy, at any rate with cyclopropane, to correlate the degree of depression of muscle tone with the degree of depression of respiratory activity. There is evidence that there may be variation, not only between anæsthetic agents but also between patients (Magnus, R quoted by Henderson 1933) With cyclopropane, apnœa may occur before relaxation—i e , the respiratory centre may be paralysed before the cord-reflex arcs are depressed sufficiently to give relaxation—and it is important to prevent this

The drug is certainly difficult to administer in cases where deep surgical relaxation is required Diaphragmatic quietude is always present and the rapid, panting, jerky movements which are such a source of embarrassment to the surgeon with ether are not seen The peritoneum is always easily relaxed, and the intestines are not distended (as they are with the patient under nitrous oxide, which is apparently excreted into the intestinal lumen)

Animal experiment shows that with cyclopropane intestinal tone is increased and the gut is contracted, while the amplitude of contractions is reduced and propulsive movements abolished (Peoples and Phatak 1935, Burstein 1938, Weisel et al 1938) These signs may, however be present with some degree of muscular rigidity and to abolish this while keeping the cerebral concentration below apnœa level is not always easy In my experience, this may most readily be accomplished with safety to the patient by the technique of slow induction presently to be described This is facilitated by the reduction of preoperative sedation to a minimum

Since the C N S constitutes only about 5% of the total adult body-weight the anæsthetic is distributed between a small bulk of tissue upon which it has physiological action, and a far larger bulk of tissues upon which it has

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Special valves which I have designed modified from a pattern kindly supplied to me by Dr Harris and which are sensitive to very low minute volume respiratory exchange, do, I believe closely satisfy these criteria

Urea clearance was done 5 times and the results were as follows

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The most striking feature of this case is the high proportion of the large fluid intake which was retained between the 7th and 15th days During these 8 days 25 5 litres was retained without any great increase in the swelling of the limbs or the appearance of anasarca The œdema which did eventually develop did not appear till the 16th day and reached its maximum between the 19th and 22nd days This retention cannot be ascribed entirely to the administration of cortical extract and other factors in treatment, since the bulk of the fluid remained in circulation for at least 6 days It must therefore have been required as a diluent of some abnormal substance in the blood, probably a high molecular protein derived from the damaged muscle The two cases of this syndrome recently reported[4] appear to have had a similar course to the one described here Unfortunately the fluid retention, if any, in each case is not stated In one of them (Longland and Murray), however, the clinical features suggest that a true transfusion kidney cannot be excluded, since the patient had a rigor after a plasma-transfusion, followed by icterus and unaccompanied by swelling in the injured limbs

The glomeruli of the kidney are supplied with blood direct from the interlobular arteries through the afferent glomerular vessels, the tubules and loops of Henle are supplied by capillaries derived from the efferent glomerular vessels, and the collecting tubules and ducts of Bellini are supplied from the main branches of the renal vessels through the arteriæ rectæ The lesion associated with the crush syndrome is situated in the convoluted tubules and loops of Henle, and it will be seen that the blood-supply of this area comes through the reducing chamber of the glomerular capillary bed There, not only is the pressure reduced but the blood is concentrated by the loss of fluids and salts secreted by the glomerulus In the light of this knowledge a cause for the lesion suggests itself In all the cases described severe shock has been a feature This is shown by the low blood-pressures recorded In some cases both systolic and diastolic pressures have been low, in this case the systolic pressure alone was low It can be presumed that this shock has its onset when the patient is first buried and therefore is prolonged over many hours This will produce in the capillaries of the convoluted tubules a vicious circle of vascular stasis, hæmoconcentration and thus more stasis These changes will be increased by the absence of fluid intake during the buried period and the flooding of the circulation with a protein of high molecular weight from the damaged muscle There is experimental evidence[5] that a rapid elevation of blood-pressure during the recovery period may produce further tubular damage by intensifying this stasis in the vessels of the convoluted tubules

This hypothesis is supported by the following clinical evidence (1) the invariable presence of abnormality in the first specimen of urine examined, (2) the common critical point in *all* cases between the 6th and 8th days, (3) the fatal termination in one case despite amputation of the crushed limb, and (4) the recovery of two severe cases with general measures only during the first 24 hours followed by the usual treatment of congestive renal failure The conclusion is that this lesion is produced primarily by the long period of lowered blood pressure or pulse-pressure aggravated by the absence of fluid intake during part of that time and the presence of an excess of a circulating protein derived from the damaged muscle It is in fact an active congestive renal failure with a possible toxic element superimposed and it may be intensified by too rapid elevation of the blood pressure, particularly if that elevation is produced by plasma or concentrated serum The experience of this condition is limited and the theory outlined requires more evidence for its proof, but it seems reasonable and worth further investigation by animal experiment and clinical observations

The lesions described in the adrenal cortex in two reported cases and the irregular behaviour of the blood chlorides in the present case despite a constant dose of cortical extract and sodium chloride suggest that some similar changes to those in the kidney may take place in the suprarenal cortex They certainly point to the necessity for examining the blood and urinary chlorides from the start in these cases

SUMMARY

A man, aged 40, developed severe renal failure as a result of burial for 15 hours under a bombed building He was pinned across the right thigh and right side of the trunk He also had a lesion of the right brachial plexus and pulmonary concussion

He was treated by complete protein starvation and forced fluids, with injections of suprarenal cortical extract A large proportion of the fluid was retained between the seventh and fifteenth days without any corresponding increase in the œdema, though a general anasarca was present from the sixteenth to the twenty eighth day

Improvement began on the tenth day, and four months after the injury the patient appears to have made a good recovery, in spite of an intercurrent bronchopneumonia and a streptococcal infection of the throat An anæmia persists in spite of treatment, which suggests some renal damage not evident to tests of function, and the affected thigh, though anatomically normal, has lost almost all its extensor power

It is suggested that in such cases the renal failure is caused by vascular stasis due to lowered blood-pressure from the time of the injury, to the lack of fluid intake during the period of burial, and to flooding of the circulation with protein from damaged muscle The lesion in the kidney may be aggravated by transfusion with plasma or concentrated serum

I have to thank Surgeon Rear Admiral F J Gowans for permission to publish this case, Surgeon Commander R S Allison for his help and criticism during the treatment of the case and preparation of this paper, and C P O Webster and the staff of the clinical laboratory for the estimations

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[4] Henderson R G *Ibid*, 1941, 2, 197, Longland, C J and Murray J *Lancet*, 1941, 2, 158

[5] Miller, H *Brit med J*. 1941, 1 685

MEDICAL DEFENCE UNION—The annual meeting of this society was held on Sept 30 Dr G de Bec Turtle, acting president, who was in the chair, said that the membership was now over 24,000 War had not decreased litigation and he urged doctors to exercise great care in signing medical certificates Dr Turtle was elected president for the coming session they leave behind no ill effects They are not accompanied by circulatory deterioration, provided that hypo-oxidation is avoided Histotoxic anoxæmia does not appear to be a complication of cyclopropane anæsthesia provided a sound technique is employed The pulse must be continuously examined so that this condition can be recognised early, when it may be readily abolished by increasing the oxygen concentration The use of adrenaline or other sympathomimetic drug should be avoided with cyclopropane (Orth et al 1939, Meek 1940)

Excess Oxygen —Cyclopropane is administered in an atmosphere of 70–80% oxygen Beecher (1938) states that "there is no doubt that many of the toxic signs and symptoms elicited in man and animals by high oxygen concentrations are frequently seen after anæsthesia in which excess oxygen has been given," and concludes, "one may question the wisdom of administering high percentages of oxygen in anæsthesia for any length of time, at any rate to patients who are recumbent, cachectic, old or otherwise poor risks"

These toxic signs are said to include congestion of the lungs, with thickening of the alveolar walls and the presence of definite inflammatory changes, as shown by eosinophil cells therein (Haldane and Priestley 1935, Binet 1939, Behnke 1940) Horn 1938, Bonham 1939a, and Griffith 1938, have described cases of acute respiratory embarrassment resembling allergic phenomena and even acute pulmonary œdema in the course of cyclopropane anæsthesia, these have been attributed to the use of excessive concentrations of oxygen In the light of more recent experience of oxygen therapy, however, there is some difficulty in justifying such statements Boothby (1938, 1939), for example, has described the practice at the Mayo Clinic where oxygen in high concentrations has been administered to many patients every 3 or 4 hours for as long as four days, with intermissions of a few minutes only, without any evidence of pulmonary irritation

The oxygen content of arterial blood is increased by only 10–15% as a result of inhaling 100% oxygen, this amount, though negligible where the circulation is normal, has a significant effect in preventing tissue anoxia and in improving the general condition of patients whose circulatory system is depressed by shock, cachexia or old age (Card et al 1940) In my experience, cyclopropane, because of the atmosphere of excess oxygen with which it can be administered, is one of the most valuable anæsthetic agents we possess for such cases (cf Frias 1939)

Postoperative Pulmonary Complications, though fewer than are usual with ether, were not entirely eliminated in my series Apparently this has been common experience (Stiles et al 1934, Moffitt 1936, Taylor et al 1937, Schmidt and Waters 1935) The hope that lack of irritant properties in cyclopropane would materially reduce these complications was not founded on sound reasoning, for with spinal anæsthetics, for example, as with other types of local or regional anæsthesia, no direct irritation to the lungs can occur, and yet pulmonary complications are fairly common sequelæ Pulmonary postoperative complications are probably due to a combination of prolonged depression of body tone and pulmonary atelectasis (Fine et al 1938, Coryllos and Birnbaum 1932, Boland and Sheret 1928, Duff 1939, Burford and Jones 1938, Griffith 1934, Leuth 1938) Irritation of the lungs by the war gases produces œdema, a totally different pathological condition from that following operations Spinal anæsthesia abolishes completely the tone in those parts of the body anæsthetised, and in many cases over the whole body, and this explains the frequency of pulmonary sequelæ There is therefore little ground, if any, left for the belief once general, that irritation of the lungs by the vapour of ether or other volatile anæsthetics is the cause of pulmonary complications after inhalational anæsthesia The underlying cause is atelectasis—alike after spinal, local, intravenous or inhalational anæsthesia—due to diminished body tone and subsequent collapse of the lungs (Yandell Henderson 1935a, b, 1936 and 1937, and Ayre 1938)

The improved postoperative condition of patients after anæsthesia with cyclopropane is due to the comparatively non-toxic nature of this drug, the ease with which depth of anæsthesia may be varied at will, so that profound muscular atonia is not maintained over long periods, and the rapid recovery of consciousness and body reflexes, accompanied by a similarly rapid recovery of muscular tone, which occurs unless operative shock has been severe This rapid recovery, although always desirable (Harms 1939), sometimes proves embarrassing After cyclopropane the prolonged stupor and inertia seen after the older anæsthetics does not occur Displacement of nitrogen, however, is a real danger, and care must be taken before the anæsthetic is withdrawn, to restore a more normal alveolar atmosphere Barach (1935a, b, 1936) Bonham (1939b), Eversole (1938) and Burford (1938) have suggested that helium, which is very slowly diffusible, should be added to the gas in the closed circuit machine Helium though easily obtainable in America is difficult to obtain in this country, and I have been unable to get experience of this technique Other precautions must be taken The anæsthetic must not be withdrawn until the respiratory ventilation is again active and adequate The lung bases may be aerated, the tone of the respiratory muscles increased and lost nitrogen be replaced to some extent at least, by the inhalation towards the end of the operation of a mixture of carbon di-oxide and air (not oxygen), often this may be continued with advantage for five minutes every hour, for some hours, during the recovery period By these means the incidence of postoperative lung complications may be reduced

CONCLUSIONS

The final assessment of cyclopropane as an anæsthetic has yet to be made No attempt has been made to compare results of the 500 cases on which this paper has been based with those obtained with any other anæsthetic agent In my opinion some hundreds of thousands of cases would be necessary in order to do this with any approach to accuracy, since conditions vary so much from hospital to hospital, surgeon to surgeon, and anæsthetist to anæsthetist But some propositions may be formulated on the experience gained

1 Cyclopropane produces a smooth induction without excitement, and quiet, even, breathing, with *no irritation of* mucous membranes It is associated with a high oxygen content of the anæsthetic atmosphere which is of value in many cases

2 Depth of anæsthesia is under direct and easy control, and muscular relaxation is usually excellent

3 It produces safe anæsthesia without anoxæmia, carbon dioxide accumulation or irregular, struggling, respiratory movements, even in patients whose vital capacities are limited by disease It is relatively non-toxic to body cells

4 There is a rapid return of consciousness, of the cough and other reflexes, and of general body tone Postoperative nausea and vomiting are decreased, and anæsthetic shock reduced Compared with ether, the postoperative state is more pleasant to the patient and more satisfactory to the surgeon

5 Many of the cases in this series were suffering from acute respiratory disease of one form or another, and the post operative results in these cases were excellent—in most of them some form of local or regional analgesia was the only alternative

6 Although the expense of cyclopropane and of its apparatus is greater than of other routine anæsthetic drugs, the saving in postoperative convalescence makes this worth while

On the other hand, there are some drawbacks the gas forms an explosive mixture with oxygen, there is more operative bleeding, and transient cardiac arrhythmias occasionally develop which, however, do not appear to be of great significance The technique is complicated, and the drug is not one to be administered lightheartedly by the tyro Close attention to detail is essential, and the margin of safety is probably less than with ether The advantages of cyclopropane over ether, however, far outweigh, in my opinion, any possible disadvantages It may be objected that theoretical considerations have been given a disproportionate place in this paper, but I believe that understanding of underlying principles must always precede practical advances

Closer alliance of the anæsthetic departments of hospitals with the pharmacological and physiological virtually none Thus the concentration of the drug in the nervous system will be influenced by its solubility in the rest of the tissues This buffering action of the body tissues delays both induction and elimination With cyclopropane primary saturation †—that is, equilibrium between lungs, blood and brain—occurs quickly, at a time when concentration in other body tissues is minimal (Barbour 1936, Waters 1936, Robbins 1937) Thus it is possible to reach a brain concentration sufficiently high to cause apnœa, while the body tissues generally are almost completely unsaturated With cyclopropane given in a completely closed system, after primary saturation has been reached a relatively high alveolar concentration must be maintained in order to keep the arterial tension at an anæsthetic level, since diffusion will gradually occur into the other body tissues The extent of this diffusion can be estimated from finding of Orcutt and Seevers (1937) that the body fat will hold, under conditions of equilibrium, about seven times as much of this gas as the other body tissues

TECHNIQUE

Induction —The following considerations must be borne in mind about induction with cyclopropane

1 Absence of irritation and rapidity of absorption in the central nervous system allow a smooth induction without respiratory stimulation and usually without excitement

2 A high degree of respiratory depression can be easily induced at an early stage in anæsthesia, and indeed at any stage, but this bears no relation to the degree of muscular relaxation produced

3 Depression of spinal cord reflex arcs (and hence muscular relaxation) can be achieved without the production of prolonged apnœas if the principles on which body saturation depends are remembered

4 Until an appreciable body saturation has been built up, the absorbing capacity of the inert tissues is so great that it is often impossible to get relaxation without producing considerable depression of the respiratory centre, and even prolonged apnœa This is by no means invariably safe

5 The high oxygen content of the anæsthetic atmosphere is not incompatible with severe anoxæmia if pulmonary ventilation becomes inadequate

For these reasons, I find a slow induction with small rate of flow of gas satisfactory, though this is contrary to the practice usually advocated (Bonham 1937, Griffith 1935, Rowbotham 1935) I continue with a flow of about 100 c cm per minute or less until respiration becomes almost imperceptible The extra time required is not appreciable Should apnœa occur at the end of this slow induction it is usually short and gives rise to no anxiety, for the fatty tissues, at this time relatively poorly saturated, provide a safety valve, and redistribution rapidly takes place Alveolar concentration is maintained by a continuous trickle of a very small flow of gas, the object being to build up a concentration in the tissues which, while remaining below the apnœa level, will depress the motor system sufficiently to produce muscular relaxation The bag should contain only enough gas to accommodate tidal respiration, it is better not to allow the breathing bag to become distended with an accumulation of gases of unknown relative composition (Burford 1936) Variation in the flow of cyclopropane or of oxygen then quickly shows itself in a lightening or deepening of the anæsthesia, collapse or distension of the bag, and maintenance of an even anæsthesia is facilitated Manometric observations at the face-piece end of the apparatus show that distension of the bag unduly increases the pressure within the apparatus, thus increasing the load on the respiratory system

Maintenance —Redistribution of cyclopropane, its diffusion through the skin and rubber components of the apparatus, loss through the open wound and in blood spilt during the operation, and inevitable leakage, cause a progressive lightening of the anæsthesia Inaccurate delivery of oxygen may enhance this effect Unless the patient is closely observed the quiet breathing in all planes makes alteration in depth of anæsthesia easy to miss, particularly as, in ascending anæsthesia, eyeball movements do not always recur to mark the return of th first plane There is a point in descending anæsthesia, at the upper part of the first plane, where vomiting may occur if the anæsthetic is not deepened rapidly, th breathing at this point is shallow If the patient i allowed to reach this point again during ascendin anæsthesia the breathing may become imperceptible or cease altogether, which leads to confusion with the third plane Apart from alterations in respiratory volume there is no satisfactory sign to warn against too light anæsthesia until the swallowing reflex becomes active, fo muscular relaxation, once produced, does not always disappear at the same rate as the respiratory function recovers Ascending anæsthesia may best be assessed by observation of the manometer attached to the breathing bag, this, in my opinion, should form an essential part of every closed circuit machine (Harris 1938)

Apnœa —The high oxygen concentration possible with this anæsthetic gives the anæsthetist a feeling of confidence, and the ease with which apnœa can be produced, with associated stillness of the diaphragm, is very striking To produce " controlled respiration " by inducing acapnia is easy, muscular relaxation, however, is not invariably produced by such techniques, nor can they be employed in every case without risk

The possible harmful effect of the indiscriminate production of prolonged apnœas is illustrated by a fatality I have already reported (Gould 1939), and is supported by much experimental evidence Robbins and Baxter (1937) found that during periods of apnœa in dogs, though the mixture in the breathing bag contained adequate oxygen, the arterial oxygen concentration rapidly fell In a typical experiment, the arterial oxygen concentration fell from 20 vols % to 2 vols % during 20 minutes' apnœa

Lengthy inadequate ventilation can bring about a state of anoxæmia, notwithstanding the high oxygen concentration in the apparatus, and considerable damage may be caused to the brain and heart Gebauer and Coleman (1938) and Henson (1937) record cases of encephalopathy after cyclopropane due apparently to nerve-cell deprivation of oxygen, in spite of the high concentration of oxygen available Schreiber (1939) and Courville (1939) have drawn attention to the untoward effects of unsuspected anoxia which may develop during anæsthesia unless careful and continuous observation is maintained In shocked, cachectic, poor-risk patients, and those with decreased cardiac reserve production of apnœa is contra-indicated Individual susceptibility and cardiac reserve are not invariably easy to assess before operation By avoiding heavy preoperative medication, muscular relaxation can usually be produced by the slow-induction technique without the production of potentially dangerous apnœa

COMPLICATIONS

Cardiac Irregularity —The cause of the cardiac irregularities observed with this drug is obscure Seevers (1934), Robbins and Baxter (1937) attributed their onset to the anoxia which may develop durin apnœa Anoxia undoubtedly plays a major rôle, but does not offer a complete explanation Kurtz (1936) Meek and others (1937) and Eversole (1937) have described effects which they attribute to a direct toxic action of the drug on cardiac tissue Robbins and Baxter (1937), and Robbins (1940a, b) describe the effects as invariably arising in animals when morphia i used as a premedicant, and less frequently when barbiturates are substituted Intravenous injection of amytal abolished the bradycardia and arrhythmia which developed in their experimental animals at the time of, or soon after, respiratory arrest (Robbins, Baxter and Fitzhugh 1939) They conclude that morphine enhance, and barbiturates neutralise, the simulating effect of cyclopropane on the parasympathetic system (Robbin 1939, Adriani et al 1940) These findings accord with clinical experience

The exact significance of these cardiac irregularitie cannot be assessed at present, but animal experiment support the clinical observation that, however produced they disappear spontaneously as the anæsthetic concentration is reduced by increasing the oxygen concentration and improving the respiratory ventilation, and that

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† The terms " primary," "secondary " and " tissue " saturation have unfortunately become identified with the technique described by McKesson (1926) who used the first term to signify ' induction,' and the others to describe his method of obtaining profound anæsthesia with nitrous oxide by producing a high degree of anoxæmia The meanings are not to be so understood in the present paper

First operation —Preliminary medication, 1 c cm of Omnopon and hyoscine (Roche), gas and oxygen anæsthesia There was slight tissue œdema and a little clear fluid in the peritoneal cavity At the site of the previous gastro-enterostomy there was a large anastomotic ulcer, adherent to the colon near the splenic flexure, which had ulcerated through nto the colon The colon and small intestine were clamped and dissected free, the anastomosis and fistula being opened The edges of the opening into the stomach and the small and large intestine contained dense ulcer tissue which was cut away The colon was repaired by transverse suture and a piece of omentum was stitched over the suture line The edges of the openings in the stomach and small intestine were dissected free of ulcer tissue and the anastomosis was reconstituted The patient stood the operation well and intestinal peristalsis continued throughout

At 6 P M 200 c cm of 10% dextrose solution and 4 units of ordinary insulin were given intravenously and a similar amount at 9 P M On May 14 at 11 A M 250 c cm of 10% dextrose with 4 units of insulin were given intravenously and thereafter 3½ oz of milk and 3½ oz of water were given by mouth and 10 units of insulin were injected, followed by similar amounts 2 hourly with 2 units of insulin On the 15th 7 oz of milk with 6 units of insulin were given 4 hourly, thereafter solid food was added until, on May 21, he was receiving 2100 calories with ordinary insulin units 30, 25, 20 On the 28th analysis of stools showed total fat 36 5%, free fatty acid 4 9%, neutral fat 8 7%, soaps 22 9% The total blood-calcium was 12 1 mg and plasma phosphorus 4 2 mg per 100 c cm There was thus a substantial postoperative improvement in the condition of the bowel in relation to the absorption of fat, calcium and phosphorus Recovery was uneventful, and the patient was discharged on June 8 on the same diet with insulin 20 units daily and zinc protamine insulin 30 units daily

Progress —After his discharge he felt well and was at work until the beginning of November, 1940, when one morning on his way to work he experienced severe mid-epigastric pain which then moved down to the umbilicus The pain often recurred at irregular intervals not directly related to meals, it was relieved by food and alkalis At times it radiated round to the back, it was aching in character and varied in intensity There was no nausea and no vomiting His diabetic condition remained unchanged, and he was stable on 20 units of zinc protamine with 20 units of ordinary insulin every morning He was readmitted to hospital on Nov 4, 1940 The sudden reappearance of the pain suggested that the repair operation had broken down The stools were examined and showed a total-fat content of 31 2%, free fatty acid 11 36%, neutral fat 8 25%, fatty acids combined as soaps 11 6% Blood red cells 5,600,000, Hb 96%, white cells 17,300 (polymorphs 71%) Thus, since May 28, the stools had become almost normal, and the red cell count normal, although no iron had been administered Together these findings indicated considerable improvement in absorption A barium enema was administered, and Dr M H Jupe reported the presence of a gastro-entero colic fistula

In contrast with his condition on his first admission, he was n good general health, and little extra preparation was required before operation On Dec 2 he had his usual breakast, with 10 units of ordinary insulin, and 10 units of zinc protamine insulin (half his usual dosage), he had his usual dinner, an easily digestible meal, at noon At 2 P M his blood-sugar was 0 33 mg, and he received no further solid ood, he was given 2 oz of glucose in ½ pint of orangeade, with 4 units of insulin, at 2 P M followed every hour by a imilar amount of orangeade and glucose until 10 P M In view of the high blood sugar revealed at the 2 P M test, 2 units of insulin were given at 4 P M, blood sugar at 30 P M was 0 29%, so a further 24 units of insulin was given t 8 P M Nothing but water was given by mouth after 0 P M At 9 A M on Dec 3 the blood sugar was 0 22 mg An ntravenous drip of 10% dextrose was given at the rate of 0 drops per min. until 2 30 P M Blood sugar at 1 30 P M was 0 25 mg This fulfilled our desire to maintain the value ather high in view of the anticipated severity of the operative measures necessary

Second operation —This was carried out at 3 P M Premedication was again 1 c cm of omnopon and hyoscine and the anæsthetic gas and oxygen A mass of adhesions was ound to be matting the splenic flexure of the colon to the posterior aspect of the previous gastro enterostomy The gastro-enterostomy was displayed by separating the adheions The adjacent portions of the gut forming the fistula were divided, exposing the lumens of the portions of the tract involved—the jejunum with a small part of the stomach and the splenic flexure of the colon The colon was clamped with light clamps some distance from the opening, later two more clamps were applied closer to the hole An ulcer could be palpated in the wall of the colon on the distal part of the splenic flexure, and resection was considered essential Some 5 in of colon were excised and with some difficulty the two ends of the bowel were brought together and an end to-end anastomosis performed The original gastro enterostomy was repaired, the edges of the orifice were excised, and the edges sutured with continuous catgut and then inverted with a continuous seromuscular Lembert suture

Immediately after the operation the patient showed signs of shock, and a pint of normal saline was administered intravenously followed by a pint of citrated blood He rallied satisfactorily, and his subsequent progress was uneventful The postoperative regime was similar to that after his first operation A barium enema on Jan 7, 1941, showed the colon to be large but without any defect in it On Dec 20 his serum calcium was 10 4 mg and serum phosphorus 3 5 mg per 100 c cm Blood sugar estimations 2 hourly on the day before his discharge showed a slight nocturnal rise on 25 units of zinc protamine insulin and 10 units of ordinary insulin, so he was discharged on a dosage of 30 units zinc protamine insulin and 15 units of ordinary insulin each morning, his diet consisting of 2100 Calories He was discharged on Jan 18, 1941, having gained 13 lb since his operation

DISCUSSION

One seldom has an opportunity of treating a case of gastro-colic fistula so soon after its occurrence Indeed, in this case, but for the concomitant diabetes and the consequent upset in insulin balance, it might have remained unsuspected for some time

Various authors (Verbrugge 1925, Strauss 1921, Castle et al 1930, Camp 1930, Poynton and Macgregor 1930, Fairley and Kilner 1931, Mindline and Rosenheim 1935, Benker and Hammett 1939, Bennett and Hardwick 1940) have drawn attention to the clinical features of the condition The symptoms are usually those of ulceration, either simple or malignant, of the stomach followed in the former case by gastro-enterostomy and subsequent anastomotic ulcer, and in the latter by direct spread by intestinal ulceration The patient may complain of foul eructations (in our case this symptom was elicited only by inquiry), of loss of weight although the appetite is good, and of diarrhœa, there being sometimes as many as 10–12 motions in the 24 hours The bowels tend to act 2–3 hours after food and often at night The changes in the stools (Strauss 1921) are an early feature Fairley and Kilner (1931) have found that in both sprue and gastro-colic fistula there is usually excess of fat in the stools and that it is well split In our case this was so before operation, but afterwards the stools returned to normal Various other authors (Castle et al 1930 Strauss 1921, Fairley 1930) have recognised the similarity between the findings in sprue and in gastro-colic fistula, and have noted a low blood-calcium and anæmia usually megalocytic, in both, but in gastro-colic fistula there is usually a high gastric acidity while hypochlorhydria is usual in sprue Our patient had a moderate hypochromic anæmia with no abnormal cells, this disappeared after operation without any iron other than in the food, gastric analysis showed hyperchlorhydria.

The importance of radiographic examination was emphasised by Strauss (1921) who said that gastro-colic fistula may sometimes be discernible only by barium enema This was confirmed in our case, for the barium meal was indeterminate, whereas the enema left no room for doubt, and on the second admission a clear result was obtained by enema alone

We would call attention to the ease and convenience of the continuous infusion of dextrose in fairly large amounts, together with insulin injections, as means of securing a satisfactory blood-sugar level with complete absence of ketosis The solution used was not normal saline solution with added dextrose, which would have tended to raise the salt content of the body unduly, but normal saline mixed with either 5 or 10% dextrose in water so as to form an isotonic solution

Our thanks are due to Dr Greenfield and his staff for the biochemical estimations

References at foot of next page

laboratories is a development which has been long overdue

I wish to thank the many surgeons with whom I have had the privilege of working during the past few years Since some of the work which formed the basis of this paper was performed at various L C C hospitals, I am grateful to Dr W Allen Daley for his permission to publish

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Extension of Temporary Register —Up till now an overseas doctor could only obtain temporary admission to our medical register if he was by law entitled to practise in his own country, and doctors who had passed the necessary examinations but were debarred from practice by racial or other legislation were thus unable to obtain temporary registration here A new defence regulation and a new order have now been made and a doctor may now register if he is of good character , holds a medical diploma (or has passed the examinations for the diploma) recognised by the G M C , has been appointed as a medical officer in an approved hospital or as an assistant to a doctor on the permanent register Registration does not affect an alien's obligation to comply with the aliens acts and orders

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GASTRO-COLIC FISTULA COMPLICATING DIABETES MELLITUS

Ian M Anderson, M B GLASG , M R C P

Philip Hamill, M D CAMB , D SC LOND , F R C P

Robert Galloway, M B EDIN , F R C S E

(From an E M S Hospital)

Cases of gastro-colic fistula are not often reported Verbrugge (1925) collected 202 cases from the literature, Poynton and Macgregor (1930) collected 250 cases and reported 1 case Fairley and Kilner (1931) reported 3 cases, Mindline and Rosenheim (1935) a case and Bennett and Hardwick (1940) reported another The case reported here occurred in a diabetic, causing serious difficulties, and it illustrates a technique for the management of a diabetic patient in preparation for a serious abdominal operation and in after-treatment

CASE-HISTORY

A male civil servant, aged 52, was admitted to hospital on March 20, 1940, in diabetic coma He was semi comatose, breathing deeply, in severe ketosis and with a blood sugar of 0 46 mg per 100 c cm For 6 years prior to admission he had been a known diabetic and had been fairly easy to stabilise, 18 months before admission he had undergone a gastro enterostomy for a gastric ulcer , thereafter he had been well until a month before admission, when one evening after dinner he felt a sudden severe abdominal pain which continued until the next day , it left him with diarrhœa which persisted with occasional exacerbations up to the time of admission Owing to his abdominal discomfort and liability to diarrhœa he had become erratic in his diet and at times had had severe hypoglycæmic attacks Before the pain and diarrhœa began he had been stable on 20 units of zinc protamine insulin and 20 units of ordinary insulin daily, but since then the dosage had had to be greatly reduced , indeed, for the 2 days before admission he had had no insulin at all

In hospital there was a satisfactory response to insulin, dextrose and intravenous saline, and after a week he was receiving a 1400 calorie diet and in 3 weeks a 2100 calorie diet with three doses of 10 units of ordinary insulin daily On this diet his morning blood sugar was high, so his evening dose of insulin was increased to 20 units He then developed a severe nocturnal hypoglycæmic attack At the same time the diarrhœa increased and he lost weight The diarrhœa now became persistent, especially at night, and he had nocturnal hypoglycæmic attacks in which he sweated profusely and became extremely violent and disoriented On May 10 the insulin had had to be reduced to 5, 10 and 5 units It was clear that there was a relation between the severity of the diarrhœa and of the hypoglycæmia , presumably owing to failure to absorb carbohydrate The stools were greyish, with a fatty sheen suggesting the presence of fatty acid crystals On the history and these observations a diagnosis of gastro colic fistula was made with some confidence

Pathological and radiological examinations —Blood red cells 4,700,000 , Hb 75% , white cells 11,600 , no abnormal cells Serum calcium 8 8 mg , plasma phosphorus 2 8 mg , blood chloride 420 mg per 100 c cm Fractional test meal some increase in free and total hydrochloric acid Urinary diastase index 10 Stools total fat 59 3% of dried fæces, free fatty acid 23 9%, neutral fat 9 1%, soaps 26 3%

Dr E E Holdsworth reported the presence of a gastro colic fistula after a barium enema, the results of a barium meal being inconclusive

Preoperative treatment —Since the patient appeared to be somewhat dehydrated and no reliance could be placed on his power of absorbing carbohydrate by mouth, it was decided to administer 150 g of dextrose daily intravenously by slow drip, and to cover it with appropriate amounts of insulin At 10 P M on May 11 infusion was begun, the solution consisting of three parts of 5% dextrose solution and one part of normal saline , the rate of flow was 30 drops per min , and 5 units of insulin was injected into the lumen of the tube near the cannula every 2 hrs On the 13th the blood sugar was 0 15 mg at 11 A M The infusion was continued until 1 45 P M and the operation was begun at 2 30 P M Until that morning fluids were allowed freely by mouth in order to wash the stomach and intestine The patient's general condition immediately prior to oper

THE LANCET

LONDON SATURDAY, OCTOBER 18, 1941

HOSPITALS FIRST

On Thursday of last week, in reply to a question in e House of Commons (see p 466), the Minister of ealth outlined the Government policy on the spital service after the war It is the objective of e Government, he said, to ensure that appropriate eatment shall be readily available to every person need of it This task will be laid on the major local thorities, whose duty it will be to secure a comehensive service by placing on a more regular footing eir existing partnership with the voluntary hospitals ut the design of the service is to be based on areas rger than counties and county boroughs, in order to clude in each a teaching hospital or other such centre which the more highly specialised services can be rovided Patients will be expected to make a easonable payment, whether by contributory schemes r otherwise, towards the cost of their treatment, the emainder being borne by the local authority or the oluntary hospital with the assistance of an Exchequer ontribution Teaching hospitals are to have inreased educational grants Such in broad outline is o be the sequel to the Emergency Hospital Scheme vhich came into being just two years ago It will not urprise those who have read the PEP report of December, 1937 ("The hospital problem is essentially egional   "), or have followed attentively the levoted labours of the Nuffield Provincial Hospitals Trust, with Sir Farquhar Buzzard as adviser, vhich have familiarised the country with a scheme of ospital reorganisation based on regional units Mr Ernest Brown in announcing his project for an mmediate survey of hospitals in Greater London cknowledges the valuable preliminary work done by he trust outside the metropolis He spoke of three tages in orderly progress consultation between all oncerned, which has already taken place , then the urvey , and afterwards the working out of the cheme—" of course,' he added, " with the approval f the Ministry " But he did not specify who is to ontrol the new regionalised hospital scheme—no loubt the right sort of independent corporation will be ound when the time comes—and he flatly declined o consider a general national health service or the uture of the medical profession as a whole , " that s," he said, " of course a wider question, and the ospital service must be considered first "

There are several reasons why the course of postvar hospital policy may be smoother than could have een foretold two years ago The state, as Mr E A Bedwell reminds us,[1] has now undertaken to eplace the damage done to parent hospitals by airaids, and the satellite hutments of 1939–41 are more attractive than those of 1914–18 with the result that patients like them " Some recent voluntary ospitals have cost £1000 or more a bed, but a 40-bed utment can be provided for £70 a bed One worldamous British hospital spent its first thirty years happily in the hutments of an even earlier war-period Mr Bedwell, reviewing the ground covered by the PEP report, speaks of the " silent revolution " in the hospital service effected by the Local Government Act of 1929 Under its de-rating clauses the million sterling grant from the Exchequer to voluntary hospitals (promised in 1924 and later repudiated) was more than handed over to the county councils to help them meet their dual obligation to provide hospital beds for all, and in so doing to consult the voluntary authorities Since then the hospital wagon has been drawn by a team which begins to look like a span Following London's admirable example, under the tutelage of Sir Frederick Menzies, local authorities all over the country are increasing their payments to voluntary hospitals for services rendered, under a wide variety of agreements , in the darkening valley their paths have drawn closer during the last two years The ideal area for hospital administration is also the ideal one for all sorts of public-health work and presumably for other large scale public activities That conviction, stated in these columns[2] when the Ministry of Health began to intervene, has only been strengthened by what has happened since But it may well be true, as Mr Bedwell suggests, that local authorities might be more easily reconciled to the surrender of their hospital control to a regional authority if they could retain their general care of the public health, for which a personal knowledge of the needs of the people and of their manner of living is essential At all events Hospitals First is the watchword, and we may be well content that the Government has committed itself to consultation, survey, preparation and settlement of a comprehensive scheme

LYSOZYME

In spite of the successes of the sulphonamides and acridines, and lately of penicillin, the demand for local antiseptics is not yet satisfied For some years the Russians have been investigating the possibilities of lysozyme Fleming,[3] its discoverer, gave this name to a class of enzymes possessing the power of dissolving a variety of micro-organisms These enzymes are almost universally distributed in animal tissues and body fluids They are found particularly in saliva, serum and tears, and, of the solid tissues, cartilage, but curiously enough they are absent from the cerebrospinal fluid High concentrations are found in white of egg Pure lysozyme was isolated by Roberts[4] and crystallised by Abraham and Robinson[5], it is a readily diffusible protein of low molecular weight which is rather more soluble in fats and oils than in saline and water Fleming clearly established that its physical properties were those of an enzyme It is not, for instance, used up in the course of bacteriolysis , it operates on bacteria over a narrow range of pH in the neighbourhood of neutrality, and it is inactivated in neutral or alkaline solution by moderate heat The substrate of lysozyme (the substance on which it acts) was thought by Hallauer[6] to be a glyco-protein, while Meyer and his colleagues[7] showed that reducing sugars were split off from the bacterial substrate during the course of digestion

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[1] *Quarterly Review* October 1941

[2] *Lancet*, 1939 2 939

[3] *Proc roy Soc* B 1922, 93 306, *Lancet* 1929, 1, 217

[4] *Quart J exp Physiol* 1937, 27, 89

[5] *Nature* 1937 140 24

[6] *Zbl Bakt* 1929 119, 240

[7] *J biol Chem* 1936, 113, 303

A CASE OF POLYRADICULONEURITIS

WALLACE BRIGDEN, M B CAMB
LATELY HOUSE-PHYSICIAN AT SUTTON EMERGENCY HOSPITAL

THE case of polyradiculoneuritis described here made an unusually rapid recovery The disease appeared to be intermediate in type between the acute febrile form of Holmes and the Guillain-Barré syndrome as exemplified in the East Anglian epidemic described by Stuart Barber [1]

A previously healthy, well nourished man, aged 30 A fortnight before his first nervous symptoms he had a sore throat which he believes was unaccompanied by fever, from this he recovered in a few days Weakness and pain in the calf muscles, followed rapidly by numbness and weakness in the arms, heralded the paralytic stage Walking became impossible 3 days later He was then admitted to hospital and was found to have reduced power in both arms, the left being more affected than the right With the exception of the right triceps jerk all tendon reflexes were absent Thoracic muscles were normal, but the superficial abdominal reflexes were absent Both legs were in flaccid paralysis with all tendon reflexes absent, but the plantar reflexes were extensor His calf muscles were tender There was no proprioception from great toe movement, and some loss of epicritic sensation over a small area on the lateral aspects of both ankles, otherwise sensation was unimpaired There was persistent tachycardia and slight enlargement of the heart The cerebrospinal fluid was under pressure, and showed considerable rise in protein and no increase in cells The Wassermann reaction was negative During the next 3 days the facial muscles and recti abdominis, except in the right upper quadrant, became completely paralysed and speech was slurred, and on the fourth day it was noted that the left lower intercostals were involved Blood sedimentation rate 73 mm in 1 hour White cells 12,200 (polymorphs 77%, lymphocytes 18%) This marked the maximum extent of the paralytic process, which remained stationary for a further week, at the end of which the B S R had improved to 56 mm in 1 hour, and white count to 11,200 (polymorphs 69%, lymphocytes 30%) From this time the facial and intercostal muscles regained normal power in about a fortnight, while there was a general improvement in muscle tone, for some days stroking the sole produced a flexor response of the whole limb with extended toes During this recovery phase the B S R progressively fell, by the end of the fourth week reaching only 12 mm in 1 hour, the white blood cells were now 6000 (polymorphs 64%, lymphocytes 33%) In the next few days the abdominal muscles regained their power, the hamstrings and recti femora became almost normal, and proprioception returned Tachycardia subsided during the fifth week Seven weeks after admission he was able to stand and no signs of abnormality in the nervous system other than an indefinite plantar response on the left side were obtainable Normal walking soon followed B S R fell to within normal limits, but there was a slight unexplained rise in leucocytes

Intramuscular injections of 10,000 units of vitamin B_1 were administered daily for 10 days, and a third of this dose for a further 10 days No indications of vitamin deficiency existed before his illness, and it is doubtful whether this treatment helped in his rapid recovery Physiotherapy was given to the limbs for 2 weeks before he began to walk

In this patient the pathological process spread from the motor roots and anterior-horn region to involve the upper motor neurone, and in view of the slight sensory impairment other tracts were possibly also affected The rapidity of recovery suggests that the condition was due to no more than an inflammatory œdema or the diffusion of a locally produced toxin The raised B S R and leucocytosis favour the infective theories of its origi but differ from the findings in Stuart Barber's cases resemblance was found on examination of the C S F In other cases reported the B S R was either normal o not investigated This man responded well to th unknown noxious agent, this probably produces a generalised metabolic disturbance of which paresis ma be only one aspect The intensity of the patient response may have been related to the rapidity and completeness of his recovery.

I am indebted to Dr Louis Minski for permission to repo the case

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[1] *Lancet*, 1940, 2, 548 The differential diagnosis, ætiology and pathology of the disease are discussed in Barber's paper

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Reviews of Books

Doctor and Difficult Child

WILLIAM MOODIE, M D St And, F R C P, D P M medical director, London Child Guidance Clinic and Training Centre London Humphrey Milford, Oxford University Press Pp 214 8*s* 6*d*

THE Commonwealth Fund of America is to be congratulated on this publication, in these days of shortage and "ersatz" it is a joy to get hold of a book so beautifully bound and printed Nor are the contents less pleasing, from his vantage as a pioneer of child psychiatry in this country, Dr Moodie has surveyed the whole range of problems which a child is likely to present to its harassed parents or teachers The book could be used as a manual of practical advice, not only to doctors, but to anyone who deals with children and their problems The author has all the good Scots belief in hard work and sound education, and the danger is that the two may suppose that it is all as easy as it looks "The education of neurotic or so-called 'nervous children' needs special care" says Dr Moodie "They require to be kept interested and encouraged to make an effort They must not, on any account, be driven Education has special value for them because it utilises the mental energy which is behind their nervous symptoms, and at the same time it gives them things to think about and so directs their thoughts from themselves and their fears" But having led the horse to water, how to make him drink? Mechanisms are not dealt with in detail, and the book should be read less as a textbook in child psychiatry than as a pleasant account of the way in which many problems in childhood can be sensibly approached and satisfactorily treated

Practical Biochemistry for Students of Medicine

(4th ed) A T CAMERON, D Sc Edin, F R S C, and FRANK D WHITE, Ph D Edin London J and A Churchill Pp 246 9*s* 6*d*

FIVE years separate the new edition of this approved Manitoba manual from the previous one, but the authors have made but few innovations, preferring, as they state, to keep the old tested methods as far as possible However, an account of the micro Kjeldahl estimation has been introduced, and also the estimation of ascorbic acid and Fearon's test for citrulline A possible weakness of this book is the rather scanty section on the blood pigments, while for the estimation of phosphate in urine the use of cochineal as internal indicator might be preferred to the external use of ferrocyanide Strong points are the excellent section on alkali reserve, the introduction to liver function tests vitamins and hormones, and the instructions for the handling and standardisation of quantitative apparatus

Catechism Series Surgery

(5th ed) Edinburgh E and S Livingstone Pp 7 In two parts, each 1*s* 6*d*

Part 1 deals with the general aspects of surgery such as infections, hæmorrhage, shock and gangrene, and diseases of bone Part 2 embraces fractures, dislocations and diseases of joints It is surprising what a wealth of information is contained in these necessarily compressed accounts, and for what they are—unashamedly examination cram-books—these slight volumes are commendably up to date and informative The introduction of X-ray photographs is a useful new feature, most of these have reproduced sufficiently well to be of value t the student but some (notably Paget's disease of th tibia and the benign giant-cell tumour) should b strengthened or replaced in the next edition

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There are several reasons why the course of post-war hospital policy may be smoother than could have been foretold two years ago The state, as Mr C E A **Bedwell** reminds us,[1] has now undertaken to eplace the damage done to parent hospitals by air-aids, and the satellite hutments of 1939–41 are more attractive than those of 1914–18 with the result that " patients like them " Some recent voluntary hospitals have cost £1000 or more a bed, but a 40-bed hutment can be provided for £70 a bed One world-amous British hospital spent its first thirty years happily in the hutments of an even earlier war-period Mr **Bedwell**, reviewing the ground covered by the PEP report, speaks of the " silent revolution " in the hospital service effected by the Local Government Act of 1929 Under its de-rating clauses the million sterling grant from the Exchequer to voluntary hospitals (promised in 1924 and later repudiated) was more than handed over to the county councils to help them meet their dual obligation to provide hospital beds for all, and in so doing to consult the voluntary authorities Since then the hospital wagon has been drawn by a team which begins to look like a span Following London's admirable example, under the tutelage of Sir **Frederick Menzies**, local authorities all over the country are increasing their payments to voluntary hospitals for services rendered, under a wide variety of agreements, in the darkening valley their paths have drawn closer during the last two years The ideal area for hospital administration is also the ideal one for all sorts of public-health work and presumably for other large-scale public activities That conviction, stated in these columns [2] when the Ministry of Health began to intervene, has only been strengthened by what has happened since But it may well be true, as Mr **Bedwell** suggests, that local authorities might be more easily reconciled to the surrender of their hospital control to a regional authority if they could retain their general care of the public health, for which a personal knowledge of the needs of the people and of their manner of living is essential At all events Hospitals First is the watchword, and we may be well content that the Government has committed itself to consultation, survey, preparation and settlement of a comprehensive scheme

LYSOZYME

IN spite of the successes of the sulphonamides and acridines, and lately of penicillin, the demand for local antiseptics is not yet satisfied For some years the Russians have been investigating the possibilities of lysozyme **Fleming**,[3] its discoverer, gave this name to a class of enzymes possessing the power of dissolving a variety of micro-organisms These enzymes are almost universally distributed in animal tissues and body fluids They are found particularly in saliva, serum and tears, and, of the solid tissues, cartilage, but curiously enough they are absent from the cerebrospinal fluid High concentrations are found in white of egg Pure lysozyme was isolated by **Roberts**[4] and crystallised by **Abraham** and **Robinson**[5], it is a readily diffusible protein of low molecular weight which is rather more soluble in fats and oils than in saline and water **Fleming** clearly established that its physical properties were those of an enzyme It is not, for instance, used up in the course of bacteriolysis, it operates on bacteria over a narrow range of pH in the neighbourhood of neutrality, and it is inactivated in neutral or alkaline solution by moderate heat The substrate of lysozyme (the substance on which it acts) was thought by **Hallauer**[6] to be a glyco-protein, while **Meyer** and his colleagues[7] showed that reducing sugars were split off from the bacterial substrate during the course of digestion

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[1] *Quarterly Review* October 1941

[2] *Lancet*, 1939, 2, 939

[3] *Proc roy Soc* B, 1922 93, 306, *Lancet* 1929, 1, 217

[4] *Quart J exp Physiol* 1937, 27, 89

[5] *Nature*, 1937 140 24

[6] *Zbl Bakt* 1929 119, 240

[7] *J biol Chem* 1936, 113, 303

These facts were reconciled by EPSTEIN and CHAIN,[8] who showed that lysozyme, like "spreading factor," is a carbohydrase, and that lysis of bacteria takes place when the products of hydrolysis, like the purified substrate, are soluble in water It is probable that the substrate has protein attachments in the bacterial envelope, and that lysis in addition to antisepsis—an important distinction first made by EPSTEIN and CHAIN—occurs only when the conditions of digestion are such that the bacterial proteins dissolve in the digestion fluid Thus, as NAKAMURA[9] first observed, a mere adjustment of pH may bring about the "flash lysis" of bacteria which are structurally unaffected by the enzyme

There are serological differences between samples of lysozyme from different sources,[10] but all alike digest the purified substrate in vitro The test organism since universally used for examining the action of lysozyme was isolated by FLEMING from nasal mucus and named by him *Micrococcus lysodeikticus* He found that three-quarters of more than 100 airborne microbes studied, including bacilli, yeasts and moulds as well as cocci, were susceptible to lysozyme, but some classes of bacteria, notably the coli-typhoid group, are totally resistant to its action A striking fact is that *Brucella abortus* and *Bacillus pseudotuberculosis rodentium* are moderately susceptible these, FLEMING writes, "are culturally and serologically identical with *Micrococcus melitensis* and *B pestis* respectively, both of which are very pathogenic for man, and for which there is apparently no lysozyme in the human secretions It may be that it is in this sensitiveness to a human lysozyme that the difference between these microbes lies" Unfortunately it is chiefly, though not entirely, on the non-pathogenic organisms that lysozyme acts, the determining factor, EPSTEIN and CHAIN point out, is whether or no the enzyme substrate is present in the bacteria *B anthracis*, for instance, is destroyed though not dissolved by lysozyme Many organisms may in fact be non-pathogenic because of their susceptibility to lysozyme Moreover, FLEMING found that by exposure to lysozyme bacteria may acquire, and maintain during cultivation, a resistance to its action Thus RIDLEY observed that lysozyme-resistant survivors from an originally innocuous strain of staphylococci had acquired, with their resistance, the power of producing keratitis when injected into the cornea of rabbits

There are, then, serious limitations to the powers of lysozyme as an antiseptic, and there is still another difficulty to be faced if lysozyme is to be given by injection or applied to raw vascular surfaces This is that in such circumstances lysozyme will act as an antigen, and the recipient may find himself sensitised to the foodstuffs which contain the enzyme So far egg-white has been the only practicable source of lysozyme in quantity Treatment with this "foreign" lysozyme might sensitise the patient to eggs, though not to other animal foodstuffs since their lysozyme is serologically different, and the antigenic effect would not be destroyed by ordinary cooking This objection, however, will not apply to the application of lysozyme to the eye or unbroken serous surfaces

For the last ten years YERMOLJEVA, BUJANSKAYA their colleagues in Russia have been examining possibility of using lysozyme in surgery In the s review[11] they published in 1938, before purified l zyme was available for their use, they reported encouraging results in the treatment of co ulcers, in the general surgery of the eye and elsewhere How far these applications can usefully be extended remains to be seen

HEALTH AND THE JOB

DOCTORS are usually fair-minded people but if their outlook has a bias it may be said that it points naturally and justifiably, like the needle of a compass towards the interests of their patients, for when someone comes for help and advice it would only be a churlish fellow who did not respond to the compliment and do his best Not all doctors, however realise the weight that medical certificates carry nor how great an influence the medical profession in the aggregate can exert on the war effort Workpeople know that doctors are ready to help them in their troubles and they are accustomed to seek medical certificates to support their physical and psychological objections to doing night work, an unpleasant job, or working in a particular factory controlled by the Essential Work Order Many such objections and applications are genuine and the medical certificates are rightly issued after adequate deliberation by the medical men If however the doctor states, in good faith but without first-hand knowledge, that the factory conditions or processes are detrimental to the worker's health, his certificate goes beyond his experience In the Sheffield district, for example, the process of grinding has a bad name because the dust from the sandstones which were used in the past gave rise to grinders' rot or silicosis Nowadays nearly all sandstones have been replaced by artificial abrasive wheels made of non-siliceous materials and grinders on the whole are no longer exposed to the risk of silicosis Other processes go by the name of grinding such as "precision grinding" in the manufacture of machine tools The grinding is often done by a diamond point from which little or no dust arises, and in all cases the work is either done wet or under exhaust ventilation But in Sheffield grinding is still grinding (in the same way as pigs is pigs whether guinea or otherwise) and therefore dangerous to health—and this folk-lore is apt to be reflected in doctors' certificates Such lack of knowledge or discrimination, if it is not checked, can have a deleterious influence on the output of essential war material On another page a letter from a works manager illustrates this point

When a doctor is confronted by a worker who asks for a medical certificate stating that his work is endangering his health, he would do well to bear in mind that such a certificate cannot justifiably be given unless he knows both the worker's state of health and the conditions of his work The doctor can take his choice between going to look at the job the worker has been doing, getting in touch with the works medical officer (if there is one) and discussing the case with him, or consulting one of H M medical inspectors of factories who are stationed in London, Birmingham Bristol, Sheffield, Leeds, Manchester and Glasgow, d are always ready to advise on occupational health sks in general or on the processes of a particular ctory

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[8] *Brit J exp Path* 1940, 21, 339
[9] *Z ImmunForsch* 1923, 38, 425
[10] Roberts, E A H Macgrath B G and Florey, H W *Quart J exp Physiol* 1938, 27, 381
[11] *Acta med URSS* 1938, 1, 248

EMPORARY IMMUNITY AGAINST INFLUENZA

WHILE we await the development of a trustworthy ethod of active immunisation against influenza, the emporary protection conferred by immune sera is not ecessarily to be despised Such evidence as there s suggests that the prospects of achieving a local passive immunity are hopeful SMORODINTSEFF[1] reported promising results from the inhalation of finely dispersed immune horse-serum, but full details are not available TAYLOR[2] has lately described the results of experimental studies on influenza A virus infection of mice A single dose of immune ferret serum administered intranasally to mice protected them against virus introduced by the same route 24 hours later, even after 48 hours some protection was given Serum applied intranasally after virus infection achieved much less, but there was a definite effect if the interval between infection and administration of serum was not greater than 6 hours Intranasal serum was in all experiments far more effective than intraperitoneal, apparently because it achieved a high antibody concentration at the spot where it was most needed There must be some danger from producing sensitisation by administering foreign sera intranasally to human beings, but convalescent human sera should be available quite early in an epidemic and methods of quickly estimating the potency of these are known Even temporary protection of key persons would often be worth while For instance, as often happens, if father and the children are all down with the 'flu and mother is looking after them, much would be gained if she could be protected during the difficult period by sniffing antibody once or twice daily But further work is needed to establish that TAYLOR's findings can be applied to war, and it has yet to be decided whether the effect could be best achieved by installation of liquid or by using snuff or a fine spray A great attraction of the sniffing technique is that it could be applied not only to influenza A—the variety of influenza most troublesome in recent years—but perhaps to other virus infections also It may be that pandemic influenza is due to neither of the known viruses, A and B We may one day be faced with a devastating scourge such as that of 1918–19, with little hope that laboratory studies can provide a remedy in time Prophylactic application of convalescent serum to the nasal passages might then prove a godsend, capable of being put into effect even by those isolated from centrally organised help

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[1] Smorodintseff, A A *Proc 3rd int Congr Microbiol* 1939, p 375
[2] Taylor R M *J Immunol* 1941, 41, 453

THE new crop of war-blinded are reaching St Dunstan's Captain Sir Ian Fraser, chairman of the executive council, finds them more serious minded than their forerunners of the last generation They are quick learners in walking about wards and classrooms, and many have already passed the exacting tests in braille reading and typewriting expected of them, and have begun to share in the indoor and outdoor games and recreations open to them, including cards, dominoes, tug-of-war, rowing, tandem cycling (presumably with a seeing partner), acting, music and dancing "Recovery of sight," Sir Ian writes in the twenty-sixth annual report, "is impossible for many but recovery from blindness is the rule"

Annotations

SOURCES OF VITAMIN C

ONE of the most striking changes in our diet since war began has been the fall in the consumption of fruits Few raspberries, strawberries and blackcurrants have been obtainable this summer outside the districts where they are grown, and the large supplies of fruit which could normally be expected for winter and spring—oranges, lemons, grapefruit, bananas and the wide variety of canned fruits—have been greatly restricted[1] These fruits are mainly of dietetic importance for their vitamin-C content Holmes, Pigott and Tripp[2] point out that, on an average, 110 ml of orange, grapefruit or lemon juice will supply the 50 mg of ascorbic acid which the adult probably requires daily The importance of these citrus fruits in normal times lies not only in their high antiscorbutic value but also in their relatively low cost as sources of vitamin C,[3] and alternative cheap sources of the vitamin are therefore needed Andross[4] has collected some useful information on the vitamin-C value of wild fruits, and has tested jams, juices and puree made from wild rose hips, elderberries, wild raspberries, cranberries, bilberries and crab apples Of these fruits wild rose hips alone seem to be worthy of practical consideration as antiscorbutics Pezold[5] in Germany quotes values ranging from 500 to 1100 mg of ascorbic acid per 100 g of wild rose fruit He also discusses the effect of various methods of presenting hips in an edible form and urges the importance of picking the fruit before they are over-ripe when they lose something like half of their vitamin-C content He considers that during the winter months responsibility for vitamin-C intake must lie largely with the jam manufacturer, for he found that jam is one of the most effective ways of preserving the hips He also strongly recommends hip wine, but this might be an impractical suggestion for this country where the commercial preparation of fruit wines is not so common as in Germany Here the housewife has been rediscovering the tastiness of hip marmalade and hip jelly, and hips are being collected on a large scale by women's institutes, schools, boy scouts and girl guides It is hoped to convert some 500 tons into syrup The picking organisations are to receive 2s per 14 lb for the fruit, so that it should be possible to sell the syrup at a reasonable price Among our cultivated fruits we have a rich source of vitamin C in blackcurrants, and the Ministries of Food and Health have reserved a significant proportion of this year's crop in the form of puree and juice for young children But the supply of vitamin C for older children and for adults too must be considered Olliver[6] reports that in the spring of this year, cooked green vegetables provided almost all the vitamin C in the diet of test subjects, and that one 4 oz helping of freshly cooked green vegetables could supply the total daily requirement of the vitamin Root vegetables, such as potatoes, may be valuable antiscorbutics when freshly harvested but are poor sources of the vitamin in the spring owing to loss on storage The consumption of green vegetables in the late winter and spring is obviously to be encouraged, provided the material is properly handled Olliver's experimental work emphasises the need for the careful cooking of vegetables and shows that about half the vitamin C is destroyed after the vegetables have been kept hot for only 40 minutes These results, together with the recent summary by the Medical Research Council[7] of the best methods of preparing green vegetables for the table, should be impressed on housewives and caterers, and especially those who are responsible for feeding large numbers of children

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[1] See Widdowson, E M. and Alington B K. *Lancet* Sept 27, 1941, p 361
[2] Holmes A D Pigott M G and Tripp, T *New Engl J Med* 1941 225 68
[3] Olliver M *Lancet* 1940 2, 190
[4] Andross M *Analyst*, 1941, 66, 358
[5] Pezold F *Dtsch med Wschr* 1941 133, 897
[6] *J Soc chem Ind Lond* 1941, 60, 586
[7] *Lancet* 1941 1, 838

PELLAGRA IN SPAIN

THE unhappy Spanish war led to malnutrition of which the extent can be inferred from the numerous clinical papers on vitamin deficiency in Iberian journals Thus in the second number of the new *Acta Española Neurologica y Psiquiatrica there are three articles based on only* too rich an experience B Llopis has studied 118 cases of psychosis due to pellagra, from the initial to the final stages, he reports endogenous as well as organic syndromes, and has observed four stages in the disorder—neurasthenia, apathy, oneiroid confusion and, finally, profound disturbance of consciousness, which are respectively akin in his judgment to mental fatigue, going to sleep, light sleep and deep sleep The psychological content of these syndromes is derived from organic disturbances of sensation, which are localised, and the translation of which into hallucinations can be clearly traced in the patients, facilitated as it appears to be by the clouding of their consciousness Llopis devotes the greater part of his paper to a review of the significance of this for psychopathology From Madrid, J Marquez Blasco and M Peraita contribute two papers on the capillaries and the skin temperature in this disorder During the autumn and winter of 1937, they state, a great part of the civil population of Madrid showed a syndrome, essentially of pellagrous nature, characterised chiefly by paræsthesiæ, a smaller group, more gravely affected, showed the "rich and singular symptomatology" of a pellagra syndrome in which burning pain, similar to causalgia, was prominent The authors decided therefore to see what part the capillary system played in these causalgia-like phenomena, *they used the clinical material* of Llopis, and of Jimenez Garcia, as well as Peraita's own cases—56 in all, with neurological disturbances in all but 6 Absolutely normal capillaroscopic findings were never found, but 54% of the cases were in the main normal in this respect, and in 18% the picture was quite abnormal The capillary changes increased as the illness went on, and were related to neurovegetative disturbances There did not appear to be any connexion between the type of capillary anomalies and the presence or absence of cutaneous and mental symptoms, They found, in 40 subjects whose cutaneous temperature was measured, that there were in the extremities many departures from the normal (the readings being lower, as was to be expected from the frequency with which these patients complained of coldness in the extremities) whereas in proximal zones, such as the forehead, normal readings were obtained The vasomotor control was investigated in 6 of the cases and in 5 of them judged abnormal, the response to immersion of the arm in warm water being either delayed or incomplete

CYCLICAL CHANGES IN HUMAN ENDOMETRIUM

THE unique activities of the glandular cells of the endometrium during the menstrual cycle have been further investigated in Dublin by O E Aykroyd and J Bronte Gatenby[1] Taking advantage of recent advances in *histological technique they have been able to show a* remarkable series of changes in the Golgi apparatus and paraplasmic inclusions, corresponding to different phases in the cycle, which they divide into the proliferative, progravid, menstrual and postmenstrual periods At menstruation the Golgi apparatus suddenly disperses while much of the cell contents is thrown into the lumen But the Golgi apparatus of the basalis portion of the endometrium, which is not shed, undergoes a similar change During recovery the fragments of Golgi apparatus are gathered into a transverse line parallel with the free margin of the cell, producing thus a palisade effect when a row of cells is viewed, though there is no evidence of any intercellular connexion between adjacent pieces of the apparatus During the proliferative phase (lasting from the fifth or sixth day to the fourteenth day after menstruation) the Golgi apparatus reforms into the usual net-like arrangement lying near the nucleus and remains thus for the remainder of the cycle In this proliferative phase no sudanophil fat is found within the cells, but droplets appear on a small scale early in the progravid phase (fifteenth to twenty eighth day) and thereafter increase This fat becomes greatly exaggerated if pregnancy supervenes, in menstruation it is shed into the lumen These changes in the Golgi apparatus are interpreted by Aykroyd and Gatenby as representing the preparation of the apparatus for the active production of a solid, probably proteid, secretion related to early pregnancy This secretion, appearing in the form of cytoplasmic droplets stainable with Heidenhain's iron hæmatoxylin, is increased in the cells in early pregnancy and is a feature of diagnostic help in the histological examination of curettings from a suspected case of interrupted pregnancy The physiological significance of this secretion seems to be unknown It would be useful to know if it is also present in association with other conditions giving a positive Aschheim Zondek test

CHEMOTHERAPY IN TUBERCULOSIS

SUBSTANCES which have been administered to the long suffering patient in the vain hope that they would destroy the tubercle bacillus without first destroying him are enumerated by Calmette as follows salts of calcium, gold, silver, bismuth, copper, and the rare earths of the ceric group, formic aldehyde, benzyl alcohol, xylol and the creosote series, iodine and its compounds, dyestuffs, and the fatty acids of chaulmoogra and cod-liver oil Even this list is by no means complete Gold has had the best press, and still has its disciples—and martyrs During the last five years a new school has arisen, as was inevitable, to try out the sulphonamides, and a large number of papers has been published recording experiences of administrations to patients and experiments in vivo with laboratory animals and in vitro with various strains of tubercle bacillus on different culture media Lately Feldman and Hinshaw[1] in America have noted a definite modification and retardation of the expected course and character of experimental tuberculosis in guineapigs receiving sulphapyridine, though they encountered unpleasant results on the mucosa of the digestive tract Feldman and Karlson[2] also tested it on rabbits infected with avian tubercle bacilli, but with unsuccessful results Heise and Steenken[3] encountered similar disappointments with guineapigs, and noted that the growth of the tubercle bacilli was not entirely inhibited by sulphapyridine introduced into the culture media even in concentrations of 80 mg per 100 c cm Flippen Forrester and Fitz Hugh[4] confirmed these negative findings, and it looks as though another chapter of failures has been closed A variant of these chemotherapeutic experiments has been made by controlling the oxygen Saz and Bernheim[5] set out to find a substance which would inhibit extra oxygen intake, the drug known as 2 3 5 triiodobenzoate being *selected* With this compound in very low concentration inhibition of growth was obtained on culture media It is tolerated by rats and guineapigs, and man can take it by mouth without apparent ill effects—and absorb it from his gastro intestinal tract Apparently it can inhibit growth without destroying cells The difficulties of all this work are obvious Not only is the chemo pist faced with the task of damaging the bacilli out damaging tissue cells which is common to all of this kind, but he has to encounter two additional acles In the first place the histological tubercle is cular, and quite early in its development has a zone rotective collagenous fibres around it Secondly, the y envelope of the tubercle bacilli is a law unto itself n in a test-tube it is difficult to destroy, and attempts lo so in living tissues, with drugs of known potency apsule destruction such as sulphapyridine, have not n conspicuously successful A new method of roaching the problem has now been devised by mart and Smith,[6] with an ingenious technique for ivating the tubèrcle bacillus on the chorio allantoic mbrane of the chick embryo In this way they are e to obtain tubercles within 4–6 days of implantatión, l to make cytological studies of the reactions to the erent cultures used This method may enable the motherapist to obtain what he has long been wanting rapid picture of the tissue reaction to a drug in erculosis

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[1] *Quart J micr Sci* June 1941, p 541

[1] Feldman, W H and Hinshaw, H C *Amer Rev Tuberc* 1940 41 732

[2] Karlson A G and Feldman *Ibid* 1940 42 146

[3] Heise, F H and Steenken, W jun *Ibid* p 801

[4] Flippin, H F Forrester, J S and Fitz Hugh T jun *Ibid*, p 821

[5] Saz, A K and Bernheim F *Science* 1941, 93, 622

SPONTANEOUS" RUPTURE OF THE SPLEEN

THERE have been about 20 reports in the last 20 years spontaneous rupture of the normal spleen, and though t all of them bear scrutiny there are a few careful cords under this self-contradictory title Rupture of e spleen is a known if rare complication of malaria d typhus fever and it is not unknown in typhoid or deed in almost any disease where the spleen is enlarged this country it is usually caused by trauma and the roplane and motor-car have done much to increase incidence Of more immediate interest are those stances of delayed rupture where a patient receives blow but after a short time appears normal and may en return to work only to collapse several hours or ys later with serious internal bleeding The cause delayed rupture is not certain but it is believed that the iginal splenic tear is quickly sealed by coagulation or nentum and that the bleeding starts again when is plug is dislodged Another possibility is that the iginal injury produces a subcapsular hæmatoma with bsequent pressure necrosis, softening of the pulp and osion of fresh and large vessels In spontaneous pture such delayed effects of trauma must be excluded d adequate histological examination of the spleen ust be made before the diagnosis can pass muster ius King's[7] case report of spontaneous rupture in ectious mononucleosis, which contains one of the few tailed descriptions of the pathological findings in that ease, is not in the accepted sense spontaneous since e spleen was greatly enlarged In Hamilton Bailey's[8] t of 11 recorded cases it is noted that in 4 no microopical examination of the spleen was made, and in 1 was said to be apparently normal Nor is it wise to ike all on a casual or even a categoric denial by the tient of a blow and Hamilton Bailey's view that the leen cannot be ruptured without the patient remember- the knock is certainly open to question Workers industry often receive blows which are capable of using grave injury but are quickly forgotten if they do t involve immediate incapacity for work The time tor is important and a case-record by Hohenwallner[9] ens the question of just how long a delayed rupture of e spleen may be delayed Hohenwallner's patient is struck on the chest on Sept 2 but after a short rest recovered and went on working until Jan 3 when he is found to have abdominal bleeding from an old tear the upper pole of the spleen That the injury received ur months previously caused the rupture and the later ness seems evident and the implications both to the practice of traumatic surgery and to the theory of spontaneous rupture are obvious It may be that sometimes neither trauma nor any known change in structure plays a part in the so called spontaneous rupture of the spleen but if the cause is unknown it is better to avoid euphemistic terms like "spontaneous" and say so plainly when we do not know.

AN APPOINTMENT IN SUSPENSE

THE Dudley town council has affirmed by 15 votes to 13 its decision to suspend its medical officer of health Dr W A McLennan, for the duration of the war Its sole reason is that, being obliged by law to register for military service, Dr McLennan registered as a conscientious objector in the manner prescribed by law There is no suggestion that he is incompetent on the contrary, his efficiency has been publicly acknowledged The Government, and indeed the Minister of Labour and National Service himself, long ago deprecated any victimisation of those whose conscience leads them to follow a course which the law expressly permits The borough is depriving itself of a key officer of recognised ability and experience at a moment when these qualifications are particularly important and when replacement must be made from a limited field and from relatively inexperienced applicants It can hardly be supposed that this aspect of the most profitable use of medical man-power can have escaped the attention of the Minister of Health It is understood, however, that he has hitherto found himself unable to convey to the town council of Dudley any suggestion that its decision should be reconsidered

UROLOGICAL COMPLICATIONS OF CERVICAL CARCINOMA

ALL gynæcological textbooks lay emphasis on urological complications as a cause of death in carcinoma of the cervix, but a thorough urological investigation is often omitted in such cases except when obvious symptoms focus the surgeon's attention on the urinary tract Anatomically, this tract is most vulnerable to carcinoma of the cervix in its lower reaches—in the bladder and the pelvic portions of the ureter, notably where they traverse the base of the broad ligament Lesions of the urethra, the abdominal part of the ureter, or the kidney are secondary findings caused either by advanced malignancy or by back pressure from ureteric obstruction Renal metastasis is rare and was seen only once by T F Todd[1] among over 1000 cases of carcinoma cervicis The incidence of involvement of the lower urinary tract can be judged from his statement that he saw bladder involvement in 110 cases at their first attendance, whereas the rectum, that other close neighbour of the cervix, was involved only once in all cases prior to treatment The growth first invades the muscle wall, causing circulatory changes in the mucosa, and next spreads forwards into the mucosa, finally ulcerating and producing a vesico-vaginal fistula Cystoscopy, and cystoscopy alone, can diagnose these bladder changes in their early stages The mucosa is at first congested and distorted, there is transverse ridging of the base of the bladder, with isolated hillock formation, and later bullous œdema and finally ulceration These last two phenomena place the patient in stage IV of the League of Nations classification The importance of this cystoscopic examination is that in 195 cases clinically assessed as stage III no less than 44 showed involvement of the bladder in Todd's series—a clinical error of 20% The prognosis in these cases is thus gravely affected by the urological investigation It is not, however, only as a diagnostic and prognostic procedure that cystoscopy is of value, but also in the urological complications of treatment These are twofold recurrent malignant disease in the bladder,

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Emmart E W and Smith M *Publ Hlth Rep Wash* 1941, 56 1277

King R B *New Eng' J med* 1941 224 1058

Bailey, H *Brit J Surg* 1930 17 417

Hohenwallner, J *Zbl Chir* 1938, 65, 1910

[1] *J Obstet Gynæc* June, 1941 p 334

not differing in appearance from that of the untreated case and therefore self-evident on examination, and postradiation ulceration—quite a different entity In Todd's series postradiation ulceration was rare, he saw only 10 cases in 5 years, and of these only 4 proceeded to the stage of ulceration, the remaining 6 showing merely a telangiectatic atrophy of the vesical mucosa The ulcers were all situated above the interureteric bar, and had suspicious heaped-up edges and a surrounding zone of bullous œdema, the adjacent mucosa was blanched, with scattered telangiectatic spider-web patches, the ulcer was occupied by a slough Treatment is expectant, and in 3 of the 4 cases the ulcer healed spontaneously with a scarred bladder base The diagnosis of the radio-necrotic ulcer is made on the cystoscopic appearance and the absence of any definite malignant lesion For the malignant ulcer there is no treatment Todd divides ureteric complications into three groups those occurring in untreated cases, and those following surgical and radiation treatment In the first group he investigated 90 cases before treatment by retrograde or intravenous pyelography Two of these 90 were in stage I and had no urological complications, among 26 in stage II he found hydronephrosis in 3 Among 32 in stage III he found hydronephrosis in 5 and a functionless kidney in 3 and poor renal function in 1, and among 30 cases in grade IV 10 showed hydronephrosis and 9 a functionless kidney In many of these cases the blood-urea, investigated as a routine before treatment, was within normal limits In a follow-up of his cases with urological complications in the upper urinary tract, Todd found that the prognosis was particularly gloomy Post-radiation complications of the upper urinary tract are not uncommon in patients investigated months or years after treatment, and Todd places the figure as high as 50% in a small series that he investigated The lesion noted was some form of ureteric obstruction, but whether the cause was actual stenosis from growth or fibrosis he declined to decide

TROUBLE WITH TRIGONELLINE

THE assessment of nutritional status is gradually being placed on a quantitative basis Thanks largely to the work of Leslie Harris and his collaborators at Cambridge, methods have been evolved of estimating the level of nutrition in respect of certain water-soluble vitamins They found that people with recognisable vitamin deficiency—for example, with scurvy—excreted much less of the vitamin in the urine than did people on diets well provided with it[1] The "saturation" tests evolved by these investigators made it possible to determine the amount of (say) vitamin C which it was necessary to administer as "test doses" before the excess overflowed in the urine By comparison with subjects known to be receiving optimal amounts of the vitamin it became possible to determine with some degree of accuracy the deficit of the vitamin in subjects who were only mildly below standard and who had no obvious clinical manifestations of scurvy Such tests have since been used extensively for assessing[2] the nutritional level of vitamin C and, more recently,[3] of vitamin B_1 Since the discovery and identification of nicotinic acid as the pellagra-preventing vitamin many workers have elaborated methods for estimating it in the urine, in the hope of developing a saturation test for detecting its deficiency It is now possible to determine the amount of the vitamin excreted with some degree of accuracy, and several investigators have already found that the "resting" excretion—i e, in the absence of test dosing—is diminished in deficiency of this vitamin[4] It was recognised though, that test dosing would probably a better indication of deficiency than the simple mination of resting levels Some workers, for e suggest that there may be overlap in the excretions, so that normal subjects occasi excrete less nicotinic acid than subjects who deficient[5]

The question of test dosing is however complicated the fact that ingested nicotinic-acid is excreted in urine partly as such and partly as other conjugated degradation products, the most important of which trigonelline The excretion of trigonelline, which biologically inactive, is also affected by factors other nicotinic-acid intake, being especially increased substances rich in trigonelline such as legumes B provided the diet is free from trigonelline, it has be shown independently by workers both in America[5] a in Cambridge[6] that the resting excretion of trigone is diminished in deficiency, and this diminution may more considerable than that of the nicotinic acid it The Cambridge workers have also devised an accur method for estimating trigonelline, which previou has only been determined semi-quantitatively Th suggest that the saturation technique (in which the vitamin is given and the excretion of trigonelline measure provides a better measure of antipellagra status than th measurement of the resting level of excretion, the amount of trigonelline derived from the controlled diet will be insignificant compared with the much larger quantities produced from the test doses of the vitamin On the other hand, should it be impossible to arrange for the controlled diet and for the test dosing, the estimation of nicotinic acid in the urine is to be preferred to that of trigonelline, since nicotinic acid is derived from the vitamin alone, whereas trigonelline may be derived from biologically inactive substances in the diet It wi be of interest to see further results in this field, particularly since it has been suggested that nicotinic ac deficiency may play a part in the causation of Vincent angina and of some types of stomatitis as well as pellagra-like dermatitis

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DR THURNAM, whose death at the age of 71 is an-nounced in another column, was one of Dr Otto Walthe early patients at Nordrach and on his return from th Black Forest founded on the Mendips the first sanatori to be run on Nordrach lines Walther remained alm unknown in his own country and it was his British a American patients who brought to light the rob open-air treatment which he initiated and introduced new era in open bedroom windows

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[1] Harris L J and Ray S N *Lancet*, 1935, 1, 71

[2] Harris, *Ibid*, 1940, 2, 259

[3] Wang Y L and Harris *Biochem J* 1939 33, 1356

[4] Harris and Raymond W D *Ibid* p 2011 Kuhnau, J *Klin Wschr* 1939, 18 1333 Rosenblum L A and Kühnau *J Biol Chem* 1940 134, 1 Naganna, B, Giri, K V and Venkatesam, P *Ind med J* 1941, 76, 208

[5] Field H, jun, Melnick, D, Robinson W D and Wilkins C F jun *J clin Invest* July, 1941, 379

[6] Kodicek, E and Wang *Nature*, July 5, 1941, p 23

ANGLO SOVIET MEDICAL COMMITTEE —An executive com-mittee has now been appointed to carry out the plan the Anglo-Soviet Medical Committee formed on Sept (*Lancet*, Sept 20, p 344) At a meeting of the exec on Oct 8, with Sir Alfred Webb Johnson the presid in the chair, there was progress to report 26 doc have volunteered to help with translations and the Soc for Cultural Relations with Russia have handed ov all their medical literature to the committee A new t to be undertaken is that of advising lay organisations on th purchase of medical supplies for the U S S R Sir Al considered that the committee should accept responsibil for giving such advice but should not be responsible for ma purchases or arranging shipments Mr Somerville Ha said that the Welsh miners had raised £60,000 for t purpose, and that his advice had been sought about disposal Lord Dawson and Lord Horder suggested that committee should work with the joint Red Cross in th matter A subcommittee was appointed to explore situation and give advice

Special Articles

RADIUM THERAPY IN WAR-TIME

M LEDERMAN,
M B LOND , D M.R.E
RADIUM THERAPIST, ROYAL
CANCER HOSPITAL (FREE)

W V MAYNEORD,
D SC BIRM , F INST P
PHYSICIST TO THE HOSPITAL

AT the outbreak of war radium therapy was one of the w branches of medicine the practice of which seemed advisable, if not impossible, under the anticipated nditions of warfare Not only is radium very costly, that the loss of any large quantity would prove a rious financial problem to any hospital or doctor but the event of the destruction of radium-containing pparatus by bombing the scattering of the contained adium salt might render the site of disaster dangerous ntil the dispersed radium could be recovered Should ecovery not prove possible the scattered radium salt would retain its radio-active properties for centuries and onstitute a possible danger to workers undertaking learance of the site or erection of new buildings, or to uture inhabitants of the buildings

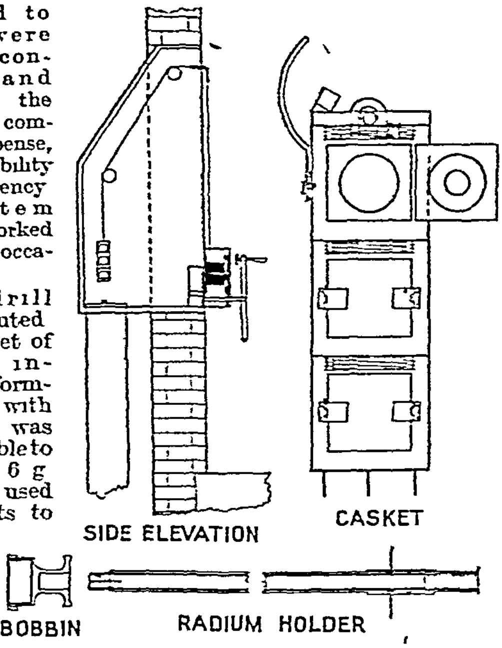
The scattered radium salt is harmful inasmuch as its entry in the form of radio-active dust into the body, by inhalation or ingestion, results in radium poisoning [1, 2] a condition which should not be confused with the effects of the therapeutic use of radium, wherein the body tissues are exposed to the radiations from radium and its products After entry into the body radium behaves in a manner comparable to lead, being carried in the blood-stream and either excreted, or deposited in the bones bone-marrow, liver, lungs and spleen. The rate of elimination is at first rapid but quickly diminishes with the passage of time. After a year any radium in the body is to all intents and purposes fixed The clinical phenomena associated with radium poisoning are chronic, and arise from the fixed radium which acts by producing an alpha-particle bombardment of the tissues in which it is deposited Usually no harmful effects are noticed until years after the entry of the radium into the system That the osseous and hæmopoietic systems suffer chiefly is shown by the occurrence of bone necrosis radiation osteitis, spontaneous fracture and osteosarcoma Changes in the blood are usually in the form of regenerative anæmia of the myeloblastic or pernicious type, in contrast to the anæmia secondary to excessive gamma radiation, which tends to be aplastic Colwell and Russ [2] say “It has been estimated that 10 microgrammes of radium distributed over the whole skeleton would be sufficient to produce a horrible death, years after it had been ingested So far as we can see, radium is thus the most deadly poison known , tetanus toxin had, we believe, previously held the record with a lethal dose of 0 22 mg”

PROCEDURE AT THE ROYAL CANCER HOSPITAL (FREE)

At the outbreak of war the radium stocks of the Royal Cancer Hospital, in common with those of several other London hospitals, were buried in a specially constructed borehole extending to 50 ft below ground, at which depth the radium was considered safe even from a direct hit by a large calibre bomb At the end of November, 1939, however it was possible to resume to a restricted extent the use of radium in the treatment of patients Two of the three existing teleradium units (one 5 g and one 1 g) were put into commission and 0 5 g of radium in the form of tubes of various denominations was made available for use in surface radium and gynæcological applicators The third teleradium unit possessed by the hospital was so constructed that the radium, once in place, could not easily be removed

In order that the radium in these units could be quickly buried in case of air attack a second borehole (see figure) was constructed immediately *outside* the teleradium treatment room, which is situated on a second floor approximately 30 ft above ground level A steel tube 70 ft long was sunk 40 ft into concrete, the remaining 30 ft just reaching the sill of a window of the treatment room By removing the window and building a small cage outside, a radium table was formed just reached by the steel tube A simple wooden sliding door and steel plate which could be locked in position normally closed the top of the hole A special casket having three compartments and suspended from a steel hawser acted as a container for the radium The doors of the casket were so designed as to be closed and locked in position very quickly and securely. The three compartments were used for 5 g , 1 g , and radium tubes respectively A winch and series of pulleys completed the apparatus needed for raising and lowering the radium to and from the place of safety Several more complex systems involving motor driven hauling gear and pneumatic transference from bomb-head to borehole were carefully considered and rejected on the grounds of complexity, expense, and unreliability in an emergency The system chosen has worked well on all occasions

A R P drill was instituted a suitable set of rules and instructions formulated, and with practice it was found possible to return the 6 g of radium used in the units to the casket and to lower it out of sight in 15 sec About 45 sec sufficed to lower to the bottom of the borehole, the speed of the casket being controlled by pressure on the rim of the wheel of the winch The radium was lowered on the sounding of an alert and at the completion of treatments at the end of each day. Special holders were designed to aid in the rapid removal of the radium from the unit to the borehole



Until September, 1940 cancer of the skin and cancer of the uterus were treated by the appropriate types of applicator without any serious restriction For insertion into the tissues radon needles have been used at all times though recently (June, 1941) some radium needles have been put into use Owing to the continual air attacks on London in September, 1940 it was found advisable to abandon temporarily the use of radium in the form of surface or intravaginal applicators but treatment by teleradium continued without interruption The net effect of the day and night air-raids has been to restrict the number of cases treated, but in recent months it has been found possible to return once again to normal standards.

The treatment of skin cancer and cancer of the uterus by radium was resumed early in October, 1940 Radium applicators were employed for the cases of skin cancer The quantities used were relatively small, only one patient was treated at a time and treatment was always carried out during daylight hours As the patient was kept in a ward near the radium department these applicators could be quickly removed and transferred to the borehole when the occasion demanded, a special compartment being available in the casket The position with regard to intra-uterine and intravaginal applicators was rather different Continuity of treatment is important and the rapid removal of the applicators presents difficulties To remove applicators of this type every time a warning was sounded or to use radon instead of radium, would have made treatment impracticable, for transfer of the radium to a place of safety could not be effected quickly (that is, in less

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[1] Evans, P D *Amer J publ Hlth* 1933 23 1017 , *Amer J Roentgenol.* 1937 37, 368 Aub, J C. Evans, R D Gallagher, D M and Tibbetts D M. *Ann intern Med* 1938 11, 1443

[2] Colwell, H A and Russ, S X ray and Radium Injuries, London 1934, p 178

than 2 min) and meanwhile a large quantity of radium would have been exposed to danger Secondly, radon supplies in the quantity necessary to treat any appreciable number of these cases are not readily or regularly available To meet this situation the following arrangements were made Not more than 90 mg of radium was ever left in use during an air-raid and the patient with intravaginal and intra-uterine radium was kept in a room by herself in the safest part of the hospital —the ground floor of a modern five-storey ferroconcrete building Responsibility for the safety of the radium was allocated in the event of enforced evacuation of the hospital, and rules formulated for other relevant emergencies In the circumstances it was felt that the chance of dissemination of radium salt enclosed in a double metal container and placed within the deep parts of the female pelvis were small even should the hospital sustain a direct hit, since only complete disintegration of the patient would cause loss of the containers and even then there was a reasonable chance of the metal containers remaining intact

PROTECTION OF PERSONNEL

Normally the conditions under which radium work is carried out are the subject of special and stringent recommendations laid down by international agreement Protective measures are taken to ensure that no radium worker receives radiation in excess of a certain minimum quantity (0 2 r per day) which is considered to be consistent with safety to general health It was obvious, of course, that repeated exposure to large quantities of radium under abnormal conditions imposed by the need for speedy removal of the radium to a place of safety meant that the staff responsible for this work ran the risk of receiving a dose of radiation greater than that considered safe By calculation and direct measurement it was found that the amount of radiation received by the staff still lay below the "tolerance dose," the average daily dose received by those taking part in the transference being about 0 1 r The special means adopted to ensure the maximum of safety under the new conditions were therefore briefly

1 Speed Rapid removal of the radium serves to reduce the time of exposure to a minimum

2 Distance The radium containers are kept as far as possible from the body during transference

3 Careful check is kept on the amount of radiation received during the duty periods of the members of the radium department An ionisation chamber is normally carried by each person employed in radium work at this hospital, and this check now becomes doubly important

4 Distribution of the risk among as many individuals as possible Initially a rota consisting of 8 members of the radium and physics departments was employed, but it was soon found possible to divide this work among fewer people without harmful result

As the result of the experience of eighteen months we have no reason, either clinical or physical, to question the effectiveness of the methods employed from the point of view of protection of personnel

WAR AND THE PATIENT

At various times since the outbreak of war patients requiring treatment by radium have undoubtedly suffered and some have even lost their lives as a result of the impairment of the facilities normally available during peace-time Patients undergoing radium treatment at the Royal Cancer Hospital at the outbreak of war had to be discharged, and, although it was found possible to recommence the treatment by X-ray therapy of some of these cases several weeks later, the remainder who could not be so treated have succumbed to their disease and the outlook of those who restarted was considerably affected For the first five months of the war no cases of cancer of the uterine cervix were treated by radium at this hospital With the possible exception of stage-1 cases, it is doubtful whether either of the alternative methods of treatment (surgery or X-ray therapy) can satisfactorily replace radium in the treatment of every type of case, so that the patients treated by these methods during the period in question must be considered as having had inferior treatment

The dispersal of population either as a result of deliberate evacuation to other parts of the country or migration to other parts of London because of air raids the shelter-life led by many patients of the hospital class since September, 1940, and the bombing of hospitals and temporary disorganisation of civilian medical practice have had the result that new cases coming for treatment are less numerous It was rare, for a time to see a hospital patient with an early lesion in certain body sites (buccal cavity, pharynx, cervix) In the two years preceding the war the number of early cases of disease in these situations attending for radium treatment had shown an encouraging increase, and there seemed reasonable hope that this was because the importance of early diagnosis and treatment was being realised by both patient and doctor If so, the war has largely nullified the work of years of careful and persistent propaganda just when tangible results were forthcoming

In normal times a waiting-list can be kept down to an unavoidable minimum, but since the outbreak of war the number of beds available for cancer cases at this hospital has had to be reduced with the result that the waiting list has increased Although during the quiescent periods of the war no time was needlessly lost in treating patients for whom the slightest hope of cure existed, since the onset of intensive air-raids it has on occasion proved difficult to arrange the admission of patients to hospital as rapidly as one might have wished Another point of importance is the difficulty in obtaining radon supplies at reasonably short notice This difficulty led to an early request by the honorary staff for the resumption of the use of radium needles, but no further action was taken at this hospital until recently

An efficient follow-up system is an essential part of any cancer service, its primary objects being to facilitate early detection of recurrence or of further metastases after treatment, and to permit correct assessment of late results of treatment and comparison of different methods of treatment It is thus a necessary adjunct to clinical cancer research The efficiency of this system at the hospital has for various reasons dropped from 95% to about 55% Many patients have evacuated Some have kept in touch with the hospital but many have neglected to do so Others have lost their homes as a result of enemy action, and have been very difficult to trace Private doctors are often of great assistance in providing information about patients who cannot attend regularly for examination In several cases these doctors are either on military service or have lost their surgeries by bombing so that it is difficult to make contact with them for information Other hospitals occasionally undertake the follow-up of patients living in their districts, and in some cases we have been deprived of follow-up information owing to the destruction of their hospital records Although outpatient sessions are held in the morning to save patients travelling during the blackout, difficulties of transport or fear of air-raids have prevented some patients reporting. We do not as yet know whether any of the untraced patients have been killed by enemy action, but it may be necessary to make allowance for cases of this kind in future surveys The effect on the patients of the lack of regular supervision is seen from time to time when an untraced patient ultimately appears with an advanced recurrence, having delayed coming for one of many possible reasons connected with the war

Even in normal times, with a full range of foods to choose from, the feeding of patients undergoing teleradium treatment for cancer in the head and neck region is fraught with difficulties Not only does the treatment induce anorexia and perversion of taste but reactions in the irradiated mucous membranes give rise to dryness, pain and dysphagia Ordinarily, semi-solid or fluid diet containing eggs, milk, fats and carbohydrates of high caloric value form a basic food designed to supply 2000 Calories per day, which is considered the minimum requirement for these patients But in spite of difficulties in obtaining many of the common items, the culinary ingenuity of the nurses responsible for feeding these patients has been such that no patient has suffered as a result of the shortage

Two other points deserve mention Most of those undergoing teleradium treatment are inpatients, and during periods of intense air-raids are often concerned about the welfare of their relatives This worry, added he mental depression usually associated with the g and tedious course of the treatment, affects ersely the well-being and equanimity of many ients They become irritable and non-coöperative, n at a time when full cooperation is imperative, l when the actual treatment is completed they hasten ne long before their reactions have subsided or they fit to go As home often means a public shelter at ht, the chances of a debilitated patient succumbing to intercurrent infection is high, and we have noted the ith soon after leaving hospital of 2 patients who uld probably have survived had they remained in spital until they were fit to go For treatment of ncer by irradiation to be effective regard must be id to the time over which the treatment is spread ny appreciable interruptions or delays in the ordered ntinuity of treatment diminish its value Several nes since September, 1940, patients have interrupted eir treatment to return to their homes—or erst-while mes—because of a tragic domestic sequel to an air-id In a few cases when the patients have not turned to complete the treatment it is certain that ey will succumb to their disease Where the patients ve returned it is as yet too early to assess the precise fect the delay may have on the ultimate response to eatment

We would like to acknowledge our gratitude to the members our staffs who have carried on their normal and abnormal ities under very trying circumstances, and have thereby abled radium treatment to be continued in this hospital In rticular we would mention Miss E W Glazebrook, sister in ie radium department and Dr J R Clarkson of the physics epartment The accessories to the borehole were constructed y Messrs H Hodt, senior and junior, technicians to the hysics department

NTERNATIONAL STANDARD FOR VITAMIN E

An international standard for vitamin E has been stablished and, as in the case of the international standrds for vitamins A, B_1, C and D, the National Institute r Medical Research, London, acting on behalf of the ealth Organisation of the League of Nations, has underaken its supply to laboratories, institutes and research orkers throughout the world

Synthetic racemic α-tocopheryl acetate ($C_{31}H_{52}O_3$) as been adopted as the international standard for itamin E The investigation of the chemical, physical nd biological properties of this substance, its suitability r adoption as the international standard and the manner of its application in biological assay was carried out, t the request of the Health Organisation of the League f Nations, by the vitamin E subcommittee of the ccessory food factors committee of the Lister Institute nd the Medical Research Council The subcommittee ere able to enlist the coöperation of experts in fourteen aboratories in Europe and America, and have recommended the adoption of synthetic racemic α-tocopheryl cetate as the international standard They further ecommend that the international unit for vitamin E hould be defined as the specific activity of 1 mg of the andard preparation, this being the average amount hich, when administered by mouth, prevents resorption-estation in rats deprived of vitamin E

In normal times the results of the cooperative investigaon would have been submitted for discussion at the ird international conference on vitamin standardisaon, which had been arranged for the autumn of 1939, ut because of the war this conference was not held he report and recommendations of the subcommittee ave, however, been placed before the members and fficers of the League of Nations' Permanent Commission n Biological Standardisation and of the International onference on Vitamin Standardisation, who were availble, and they have accepted the responsibility of adoptng the proposed standard for vitamin E, accepting the ecommendation defining the international unit, and uthorising the National Institute for Medical Research o proceed with the distribution of the standard

The international standard for vitamin E is issued as solution in olive oil of which one international unit is ontained in 0 1 g In countries where national ontrol centres have been established it will be supplied to their directors for local distribution · it will also be supplied to laboratories, institutes and research workers in this country, and in countries in which national control centres have not yet been set up Application should be made to the department of biological standards of the National Institute for Medical Research, Hampstead London, N W 3

MEDICINE AND THE LAW

Illness after Hotel Lunch

CATERING establishments do not guarantee the health of every visitor to whom they serve a meal Actions for damages are sometimes brought by visitors who have felt ill after eating at a restaurant or hotel They do not always succeed , *post hoc* is not necessarily *propter hoc* In the recent county court case of Braham *v* Grand Hotel, Birmingham, a lady gave evidence that while eating steak and kidney pie at the hotel, she found something unexpectedly solid in her mouth She thought it might be a piece of tooth , it turned out to be a chip of crockery That night, she said, she woke in great pain , there was medical evidence that she was suffering from food poisoning She claimed damages for breach of warranty of the quality of food supplied , alternatively she alleged negligence in allowing the food to become contaminated On the other hand the defendants denied that the food was defective or that their staff had been negligent There seemed no necessary connexion between the chip of crockery and food poisoning They had served nearly a hundred portions of steak and kidney pie that day, and this was the only complaint The city bacteriologist found no poisonous organisms in the pie The judge disregarded the crock He found no indication of slackness in the conduct of the hotel The only suggestion against the pie was that the plaintiff was ill after eating it it would be unsafe to say that the illness was due to the hotel luncheon Judgment for the defendants with costs

NEW OFFICIAL NAMES FOR DRUGS

THE General Medical Council has issued a further list of approved names for drugs which are now produced or likely to be produced in this country

Approved name	*Other names*
Amethocaine hydrochloride	Decicain
Menaphthone	2-methyl-1 4 naphthoquinone
Pethidine hydrochloride	Dolantin
Soluble phenytoin	Epanutin, Eptoin, sodium diphenylhydantoinate, Solantoin, Soluble Dilantin
Sulphacetamide	Albucid

The council hopes that these and the approved names previously published [1] will be generally adopted

ORTHOPÆDIC CONFERENCE AT ROEHAMPTON

A CONFERENCE of the orthopædic surgeons attached to the Ministry of Pensions hospitals was held at Queen Mary's Hospital, Roehampton, on Sept 24–26, Mr G R Girdlestone, honorary consultant to the ministry, presiding Clinical rounds were conducted by Mr Pomfret Kilner and Mr George Perkins, and Mr Fraser demonstrated the methods used by himself and Mr Kilner in fractures of the jaws Dr R D L Kelham, surgeon in charge of the limb fitting department, assisted by Captain Maxwell, gave lecture-demonstrations on modern artificial limbs, and explained the present-day sites of election—for an above knee amputation 10 in below the tip of the greater trochanter , for a below-knee amputation 5½ in below the level of the knee-joint on the medial side , for an above elbow amputation 8 in from the acromion process , and for a below-elbow amputation 7 in from the tip of the olecranon Surgeon Lieut -Commander John Bunyan, R N V R , showed a cinematograph film of the results of treating burns by irrigation with electrolytic sodium hypochlorite in the Stannard bag, and afterwards demonstrated his procedure on patients from the Queen Alexandra Hospital, Cosham, and other cases with septic amputation stumps and wounds The conference provided an opportunity for exchanging views on orthopædic treatment and coördinating the work being carried out in ministry hospitals

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[1] See *Lancet*, 1940, 1, 804, 1941, 1, 614

In England Now

A Running Commentary by Peripatetic Correspondents

THE call was for blood—human blood It all began in the early summer of 1939 when a well-known radio commentator asked a responsive public to report for service at their nearest hospital What was to be done with all these volunteers? Were they to be admitted to our select body of hospital donors or were they to constitute a "national emergency panel—Garumchester (pronounced Gumster) branch" We decided on the latter course In the rapidly growing queue outside the pathological department the secretary discerned some of Garumchester's leading citizens, including civic and legal dignitaries, a retired aristocrat of the Church and another volunteer entitled to wear a small size in coronets "Am I to enter them all for Wassermanns?" she asked betraying her concern at the serodiagnostician's lack of discrimination Our senior technician remarked that an occasional transfusion of luetic blood would make little difference after three or four years of total war, but his implication was considered to be both unjust and cynical "Why not wait and do the Wassermann when you take the blood?" he said, "the fact that they are negative now doesn't mean that they will be after a couple of years of war Anyway, what's arsenic for?" The essential wisdom of his remarks was accepted and the volunteers were rapidly reviewed, being let off with an inspection of the arm veins and the token donation of two or three drops of blood for the grouping test We closed the laboratory that evening with schemes already afoot for running the department on a war basis If the worst happened pathological investigations would have to be rationed, clerical work curtailed and all reports shortened We sincerely hoped war would not come but we were resolved that if it did there should be no deterioration in our ability to aid in the diagnosis of venereal disease "Do you mind if I slip off a little early tonight," asked the senior technician, "to plant a few more rows of winter greens for the guineapigs We can't afford to let the complement fall below 0 08 in war-time," he added, "and an intensive course of purple sprouting before the breeding season is beneficial, if it comes to that, it wouldn't do me any harm myself"

This is a war of battles The Battle of the Blood Groups is still on We were all asked to adopt the League of Nations classification and most of us did, bearing the genial sarcasm of the more senior clinicians "In my day, my boy, 1, 2, 3 and 4 were good enough for us, why alter it?" "But, my dear Hornbeam, the newly adopted classification does tell me the agglutinogen content of the corpuscles, and therefore I find it preferable to the Moss and Jansky schemes which lead only to confusion" "I should forget about those—those things you were talking about," rejoined our pathologophobe, emphasising his remarks with the instrument of precision which is habitually suspended around his neck, "we always managed to transfuse without them before you came here and if you take my advice you will not alter the present arrangements Of course, transfusion came in after my day, but I have watched it develop" "Did you ever run across James Blundell, of George's, sir? He was one of the first on the job" "I used to go there quite a lot when I was dressing at Ananias's," he replied, "but I don't recall him" "He may have been after your day," I rejoined cautiously "He wasn't born till 1790"

Many of us have met this unwillingness to accept the international classification, the compromise which most have adopted is to give that of Moss first followed by the international version in brackets The more daring have reversed the procedure and told our printers to lighten the bracketed numbers with each succeeding impression The dual system of nomenclature has raised misgivings in some donors, who don't much like belonging to group B3 "I live a healthy out-of-doors life and never had a doctor since my last baby, but Mrs J around the corner in Plaice St has blood which the doctor said is very rich—he called it A1—and she isn't nearly so particular as to what she eats Tell me, doctor, what I ought to take to make my blood A1?" What a blessing the Geneva tribunal didn't ordain A, B, C and D for the groups! C3 blood would have taken explaining away

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In our area is included what must surely be the delightful small country town in England, far forgotten by the poets In this charming comm the keenness for the blood-transfusion service exc anything previously seen, and on a warm day in J we enrolled close on 8% of the population as don The local organisers were surprised at the success of t scheme and were anxious to reach a certain n number A request was therefore sent to the c nearby, the pub opposite and the adjoining dance hal The response was gratifying The cinema interrup its performance while the visitors, led by the jo manager and the bar-tender, with his thirsty follow filed in to be tested before resuming consumption films and drinks Later, on this summer evenin procession of men and girls from the dance hall arrive the girls still wearing their cool and colourful evenin frocks Afterwards we were able to report that th required number had been exceeded

Most of our donors hide their lamps under bushel A few of them however, are fussed over by anxiou relatives who are assured by the victim that althoug it wasn't too bad the fact remains that he is now workin with a pint less blood than before, but that he doesn intend to let the work suffer for it and he will see that it i done just the same It requires more than average human effort of will to discourage the hero worshipper But this type of donor, who is fortunately rare, may do much to delay recruiting in a small community, and embarrass the machinations of the local hæmophilist On the other hand, we have met with many instances which reflect great keenness to serve, as well as personal courage There was the youth who had recently lost an arm in an accident and whose other arm was ankylosed to an angle which would have made it wellnigh impossible to insert the needle The deaf, the lame, the blind and even the paralysed have visited us to give their donations We have had to reject many who were too ill—a woman with carcinomatosis, a girl in an advanced state of phthisis and an old man with heart failure, he had been compelled to abandon munition work and had chosen this alternative form of national service In one hamlet no less than fifty near neighbours assembled in a farmhouse kitchen on a Sunday evening in late spring and braved a deluge to get through An old lady who was rejected because of ill health burst into tears

One afternoon in winter we were due to group inhabitants of a few lonely hamlets pocketed away in the hill Our hostess's suggestion to "bring chains" seemed to u in the town sixteen miles away rather fatuous, but we were glad of her advice and only after a hazardous an circuitous route did we reach the house Our fears tha the volunteers would not venture through the storm were dispelled by our hostess who assured us that they would all come—as indeed they did They came throug driving snow and the blackout, fine hefty farm lads, lar girls and farmers' wives, all ready to give first-aid to th blitzed cities We have had girls of fifteen and sixtee posing as eighteen in order to be accepted, and old m and women taking off ten years or so, and what a goo response we have had from ex-Service men of all ranks In fact, there is no section of the community which ha not responded, while friendly, neutral and enemy alie have come forward equally well It is particularly gratifying to enrol people who have themselves been transfused at some time in the past and are now ready to pay back Evacuees and especially those from the bombed areas are amongst our keenest customers One woman had come over from a nearby town, temporarily disorganised after a heavy raid, in order to shop, she was so delighted at her successful forage that she came along to show her appreciation by an offer of blood We had a visit from a member of the London A F S who had been sent down for a week's rest He was so grateful to the inhabitants for the hospitality they had shown him that he came along to give a donation of blood to the local bank by way of repayment He wrote later "How are your blood donors, are they rolling in, or do you sit patiently gazing at your samples, waiting for a custom to call? Should the patient who had my blood ev complain of hearing fire-bells, just tell him it is a fa

Don't forget, doc, if you want more just let me and I'll be right on the spot Funny thing, hardly gave hospitals a thought until that day, then I ed that every day there are patients and children P S Your blackout is deplorable "

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r tortuous ways a copy of the *Deutsche medizinische henschrift* for Sept 5 has come into my hands and I eagerly scanned the page of *Kleine Mitteilungen* iews stories) which is all that this fat medical weekly ys itself to tell of current happenings in *Gross- schland* Pride of place is given to an announcement final medical examination next June under the new ilations which prescribe two preclinical and two ical years or four years of medical study after military labour service are over The old regulations remain force at Vienna, Graz and Innsbruck Women lical students will be allowed to count emergency sing as part of the prescribed course in place of factory agricultural service Then we are told that the *ırer* has set up in Berlin under Home Office control an cial institute for assessing vitamins and finding new s There was to be a three-day festival in Salzburg Paracelsus with foreign guests and a gala performance Goethe's "Faust," followed by a two-day conference the Alpine climate, opened by Dr Conti, medical ector-general, and covering besides physiology, ychology and the inevitable raciology, such things as pnotic drugs, sulphonamide therapy and the treatment sterility A ten-days course at Alt-Rehse has the tonishing title of "The totalitarian idea in dentistry," th lectures on chewing gymnastics, relaxation therapy d psychopathology of artificial dentures, as well as the ore familiar focal infection Scanty university news eked out with some trifling honours to Prof Paul iepgen in Buenos Aires and Bucharest, and the 70th rthday of Prof Birch-Hirschfeld Book announce- ents include the final instalment (bibliography) of imann and Myrbäck s "Methods of Ferment Investiga- on," a new study of the anti-tuberculosis campaign, o small practical books on diabetes, a standard work on e public-health doctor, and a new edition of Schede's Hygiene of the Foot " Not very exciting, you may say, it nevertheless a rough sketch of the background of edicine in contemporary Germany But one of my llow peripatetics might have made more of it

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I was rather surprised to hear the other Sunday that e Brains Trust had no idea why man enjoyed music oviously man's acoustic apparatus was not formed for aring his own and other people's voices It was rmed for defence, though for this purpose, in modern mes when auditory awareness is not of such vital cessity, it has atrophied As natural man or any her animal moves about he is surrounded by a myriad oises, the manifold rustlings of the vegetable world, the ppling of the poplars, the harsh whisper of the holly, the y-sand sound of the acacia, a vast insect orchestra, ie song of sea or river, animal and bird calls, and the oise of his own movements As a babe he was frigh- ıned of some of these noises, but gradually one by one admitted them as friendly noises, until their number as so large that he couldn't give them individual atten- on, so, probably by allowing entrance to a note here id there from each, he blended them into a pattern his pattern of friendly noises surrounded him in his aking hours and to some extent in his sleep (Most ulors wake up if the ship's engine stops when they re asleep) This pattern is a protection, like tentacles ıst near and far, for the approach of an enemy or even ie sudden cessation of one of its constituents would reak the pattern and put him on the alert and in a mild ate of fear The hearing of the pattern then meant ıfety Modern man uses the same mechanism though ot so often for defence, he can turn what he knows to e a harmless and friendly railway train's noises into a hythm—arankatitanka-titanka He can turn his own ıreless blare into a soothing background of sound, hough he has much more difficulty with his neighbour's hich he feels to be hostile Absolute silence, which a rarity in the natural world and meant to man that e was without his acoustic protection, still brings a eeling of awe Incidentally in tinnitus there is a great effort on the part of the pattern-making mechanism to turn the intrinsic stimulations of the cochlear nerve into friendly noises—"wind in the chimney ' and ' an outboard motor with an occasional mis-beat " are the last two in my case-book Now music, and to some extent verse, not only gives a well-ordered pattern of noise and therefore a feeling of safety, but it does so ready made, without any strain on the pattern-making mechanism, leaving the other emotions, uninhibited by fear, free to have a binge Why precisely "Rule Britannia " should make one want to cut throats and Handel's Largo to ooze altruism probably depends on memories, words or suggestions associated with their particular chords Elementary, my dear Julian!

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It is traditional that a doctor is unwise to treat the members of his family, from which arises some of the difficulty about repaying a colleague for kindness I have never held this view, the unwisdom supposes that the medical husband and father is either unable or unwilling to approach the case detached or that he finds it irksome to regard such a patient in terms of anatomy, physiology and pathology Maternal anxiety may be the cause of much of this The same doctor, however, essays the correct approach to those non-family patients with whom he is on terms of close social intimacy How many doctors find it inconvenient to make an internal examination of a constant bridge partner? If for no other reason than this, the plight of such a patient justifies the existence of the independent consultant group Years ago as I was leaving home one morning my neighbour, a London surgeon, told me almost casually that his wife's bowel was resisting enemata the number had reached seventeen I knew nothing of her medical past, which included operation for ovarian cyst, but I murmured equally casually that a band might be the cause On my return in the evening the ambulance was at his door and a surgeon ready at the nursing home, but she died that night Lately I have myself had the care of a doctor's wife at a distance He has no colleague within ten miles and more, on the eighth day he asked me to come over I found lobar pneumonia, with the crisis yet to come in spite of his sulphapyridine He had not been able to diagnose pneumonia for certain because his wife was still about and had declined to permit him to investigate

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'You are going on holiday next week?" I inquired "Aye, next week, Sir," replied John, the senior laboratory attendant adjusting the time-marker 'Rothesay?" "Aye" "The children will be very excited?" I ventured "Aye they are so ' "And what about yourself, John—do you still enjoy a seaside holiday?" "Aye," he said again, but this time his tone implied serious reservations He was obviously uneasy His answer would need elaboration I watched the struggle between his innate reticence and his Covenanter's zeal for truth At last he looked up "Doctor" he began "Yes?" "Shall I tell ye what I consider to be the best part of ma holiday?" he asked solemnly "Do!" I exclaimed enthusiastically, and settled down to listen Would the high spot be the morning stroll along the promenade? Sun-bathing? No, I felt sure that John would frown on that, but I was prepared to hear that in moments of complete abandon he might go so far as to paddle with the three weans ' Well Sir," he proceeded, as a faintly ecstatic expression crept into his face, "the best moment is when the train draws into Central Station when we return to Glasgow Man, ' he added almost fervently, "yon's a grand smell!"

* * *

The registrar, being in a reminiscent mood, launched into an account of the death certificates which he had returned to the hospital First came the surprising death of John Smith, aged 3 days, from chronic bronchitis and senility, and, on the same day of William Brown, aged 86, from intracranial hæmorrhage due to birth injury Then came the form, satisfactory in all respects except for the completion of the section "qualification" Here the worried doctor, straight from a pneumonia ward had started with M B and then drifted to 693 A useful qualification, perhaps, for this day and age.

Parliament

Post-War Hospital Policy

In the House of Commons on Oct 9, in reply to Sir FRANCIS FREMANTLE, the MINISTER OF HEALTH said The question of post-war hospital policy and reorganisation, more particularly in relation to the Emergency Hospital Scheme, has for some time been engaging the attention of the Government While any immediate reorganisation must be regarded as impracticable in present circumstances, certain broad principles can be laid down as the basis of Government policy

It is the objective of the Government as soon as may be after the war to ensure that by means of a comprehensive hospital service appropriate treatment shall be readily available to every person in need of it It is accordingly proposed to lay on the major local authorities the duty of securing, in close cooperation with the voluntary agencies engaged in the same field, the provision of such a service by placing on a more regular footing the partnership between the local authorities and voluntary hospitals on which the present hospital services depend The Government recognise that to achieve the best results and to avoid a wasteful multiplication of accommodation and equipment it will be necessary to design such a service by reference to areas substantially larger than those of individual local authorities It will be the aim of the Government also to avoid overlapping and uneconomical expenditure by securing the provision of the more highly specialised services at teaching hospitals and other centres selected to serve these wider areas, and by arranging for a proper division of function between hospitals in these areas

With regard to the financial aspects of the Government's proposals, it is their intention to maintain the principle that in general patients should be called on to make a reasonable payment towards the cost whether through contributory schemes or otherwise In so far as any new burden may be thrown upon local authorities in providing or maintaining hospital accommodation, or in contributing towards the expenditure of voluntary hospitals, a financial contribution, the extent of which will be a matter for further consideration, will be made available from the Exchequer Special arrangements for dealing with the teaching hospitals by way of increased educational grants are in contemplation

In present circumstances the arrangements for hospital services must be determined by war-time requirements, but the Government are anxious to take every step to avoid any unnecessary delay I have already had preliminary discussions with the bodies representing the municipal hospital authorities and the voluntary hospital movement and I am hopeful that these discussions will be continued With their concurrence I am instituting a survey of hospitals in London and the surrounding area, to provide the information needed as a basis for future plans As regards the remainder of the country, valuable preliminary work has already been done in some areas by bodies representing both the municipal and voluntary hospital authorities, in particular, by an organisation formed under the auspices of the Nuffield Provincial Hospitals Trust In any surveys which it may be found necessary to institute in the provinces I shall have full regard to the information already available in this way, which I am glad to know will be at my disposal for the purpose

Mr BROWN added that the aims of future policy in Scotland were generally similar, but that certain important differences in the Emergency Hospital Service and in the methods of financing voluntary hospitals in Scotland were being given special consideration

Man Power and the War Effort

Man power is the beginning and the end of our war effort and a debate in the Commons on Oct 8 brought out clearly the difficulty of striking a fair balance between the needs of industry and of the services As Mr GRAHAM WHITE pointed out, not only must we equip our men but we must man our equipment He appealed to the Government not to confuse time with eternity and he warned them that the fabric of distribution by the food trade was wearing thin It was no less important to fill men's stomachs than to fill shells He did not think the Industrial Research Board was being given a fair opportunity of working out the best of work for different jobs Miss MEGAN LLOYD G deplored the fresh call-up of land-workers, for there may be an alternative between guns and there is no alternative between guns and bread felt that the production of red tape was still one major industries and asked for firm treatment of th and select company of shirkers and for the adm women as partners, and not as conscripts, in the gr struggle our country has ever faced

Replying Mr ERNEST BEVIN said that no co not even Germany, has tried what was virtually compulsion of women as we have tried But in han women you must proceed gently and have regard f parents He was coming to the conclusion that reservation would have to go and that individual re tion would have to take its place He wished that process of training and manning the country had t place in peace-time and not in war-time He would h liked to see a double-purpose army where the w nation was trained both for fighting and product But such a policy could not be achieved if the War O was completely scrapped in peace-time and the Gov ment was expected to improvise a military machine carry out gigantic tasks in fifteen months

QUESTION TIME

Priority Milk

Replying to a question Major G LLOYD GEORGE said th on the recommendation of the Special *Diets Committee*, th milk supply scheme (see p 473) makes provision for a wid range of sick persons than the scheme for regulating distribution which has operated throughout the summer The arrangements for expectant mothers, children and adolescents are also based on the advice of nutritional experts

Domestic Staff Difficulties

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From the School Reports

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Dr Hugh Paul says that the outstanding feature of the year was the continuing high standard of physical and mental health which was maintained throughout " Even the sustained night bombing of the last quarter failed to have any visible adverse effect on the children " It seems likely that the unprecedented high level of health and nutrition which we reached before the outbreak of war largely accounts for the comparatively slight effect air-raids have had on the health and morale of our people If so, it means that in the end the butter will beat the guns

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The Kent dental scheme does not yet make general provision for the treatment of pupils in secondary schools but this is available to some extent The senior school dentist in his report remarks that in some schools the parents though unable to afford private dental treatment do not take advantage of the clinics with results that are deplorable " Many of the pupils at these schools present an appalling amount of gross oral sepsis " He attributes this refusal to accept treatment to " a curious form of snobbery, either on the part of the parents or, more frequently, of the children themselves "

Parliament

Post-War Hospital Policy

In the House of Commons on Oct 9, in reply to Sir Francis Fremantle, the Minister of Health said The question of post-war hospital policy and reorganisation, more particularly in relation to the Emergency Hospital Scheme, has for some time been engaging the attention of the Government While any immediate reorganisation must be regarded as impracticable in present circumstances, certain broad principles can be laid down as the basis of Government policy

It is the objective of the Government as soon as may be after the war to ensure that by means of a comprehensive hospital service appropriate treatment shall be readily available to every person in need of it It is accordingly proposed to lay on the major local authorities the duty of securing, in close cooperation with the voluntary agencies engaged in the same field, the provision of such a service by placing on a more regular footing the partnership between the local authorities and voluntary hospitals on which the present hospital services depend The Government recognise that to achieve the best results and to avoid a wasteful multiplication of accommodation and equipment it will be necessary to design such a service by reference to areas substantially larger than those of individual local authorities It will be the aim of the Government also to avoid overlapping and uneconomical expenditure by securing the provision of the more highly specialised services at teaching hospitals and other centres selected to serve these wider areas, and by arranging for a proper division of function between hospitals in these areas

With regard to the financial aspects of the Government's proposals, it is their intention to maintain the principle that in general patients should be called on to make a reasonable payment towards the cost whether through contributory schemes or otherwise In so far as any new burden may be thrown upon local authorities in providing or maintaining hospital accommodation, or in contributing towards the expenditure of voluntary hospitals, a financial contribution, the extent of which will be a matter for further consideration, will be made available from the Exchequer Special arrangements for dealing with the teaching hospitals by way of increased educational grants are in contemplation

In present circumstances the arrangements for hospital services must be determined by war-time requirements, but the Government are anxious to take every step to avoid any unnecessary delay I have already had preliminary discussions with the bodies representing the municipal hospital authorities and the voluntary hospital movement and I am hopeful that these discussions will be continued With their concurrence I am instituting a survey of hospitals in London and the surrounding area, to provide the information needed as a basis for future plans As regards the remainder of the country, valuable preliminary work has already been done in some areas by bodies representing both the municipal and voluntary hospital authorities, in particular, by an organisation formed under the auspices of the Nuffield Provincial Hospitals Trust In any surveys which it may be found necessary to institute in the provinces I shall have full regard to the information already available in this way, which I am glad to know will be at my disposal for the purpose

Mr Brown added that the aims of future policy in Scotland were generally similar, but that certain important differences in the Emergency Hospital Service and in the methods of financing voluntary hospitals in Scotland were being given special consideration

Man Power and the War Effort

Man power is the beginning and the end of our war effort and a debate in the Commons on Oct 8 brought out clearly the difficulty of striking a fair balance between the needs of industry and of the services As Mr Graham White pointed out, not only must we equip our men but we must man our equipment He appealed to the Government not to confuse time with eternity and he warned them that the fabric of distribution by the food trade was wearing thin It was no less important to fill men's stomachs than to fill shells He did not think the Industrial Research Board was being given a fair opportunity of working out the bes of work for different jobs Miss Megan Lloyd deplored the fresh call-up of land-workers, for there may be an alternative between guns and there is no alternative between guns and bread felt that the production of red tape was still one m major industries and asked for firm treatment of th and select company of shirkers and for the admiss women as partners, and not as conscripts, in the gr struggle our country has ever faced

Replying Mr Ernest Bevin said that no co not even Germany, has tried what was virtual compulsion of women as we have tried But in ha women you must proceed gently and have regard f parents He was coming to the conclusion that reservation would have to go and that individual r tion would have to take its place He wished th process of training and manning the country had place in peace-time and not in war-time He would liked to see a double-purpose army where the w nation was trained both for fighting and produc But such a policy could not be achieved if the War O was completely scrapped in peace-time and the Gov ment was expected to improvise a military machine carry out gigantic tasks in fifteen months

QUESTION TIME

Priority Milk

Replying to a question Major G Lloyd George said t on the recommendation of the Special Diets Committee, th milk supply scheme (see p 473) makes provision for a wid range of sick persons than the scheme for regulating distribu tion which has operated throughout the summer The arrangements for expectant mothers, children and adolescents are also based on the advice of nutritional experts

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From the Annual Reports

CORK STREET FEVER HOSPITAL, DUBLIN

Dr C J McSweeney's report for 1940 is written on a general note of optimism Amongst 2160 patients treated (a record figure) there was a gross mortality of 5 5%, the lowest ever recorded in the history of the hospital Gravis diphtheria is apparently still prevalent in Dublin but the fatality (6 5%) shows a slight improvement from the previous year, although clinically the cases appeared to be more severe This success is attributed partly to the use of "avid" diphtheria antitoxin in certain severe cases, an experiment which has been recorded already in these columns (McSweeney, C J *Lancet*, 1941, 1, 208) Whether one agrees or not with this conclusion, further elucidation and trial of the elusive "anti-B" factor in diphtheria antitoxin remains a matter of impelling interest Nine cases of diphtheritic respiratory paralysis treated in a Bragg-Paul pulsator did well, but Dr McSweeney seems hardly justified in asserting that the 48 patients whose recovery has been credited to this machine since 1935 would inevitably have died without mechanical aid to respiration Streptococcal diseases fared well during the year, there being a trifling mortality (0 87%) in scarlet fever, one death in 20 cases of puerperal sepsis and no death at all amongst 78 cases of erysipelas Dr McSweeney does well to remind us how much the modern treatment of erysipelas owes to chemotherapy Chemotherapy in combination with specific serum was used in the treatment of 30 cases of meningococcal meningitis and 28 recovered, a result for a small series which could scarcely show improvement Nor could a fatality of 1 83% for 109 cases of lobar pneumonia treated with sulphapyridine and specific serum Bronchopneumonia alone or in combination with measles or whooping-cough fared less well Indeed a curiously high fatality of 21 8% in whooping-cough appears almost wholly to have been due to bronchopneumonia, no less than 64 out of the 94 cases treated being so affected

DUBLIN'S HEALTH —In an address to a conference of municipal authorities Dr M J Russell, superintendent M O H for Dublin, said that the extension of the city boundaries during the last twenty-five years has increased its area from 7911 acres to 18,777 and its population from 312,750 to 491,800 The density of population has thus been reduced from 38 8 persons per acre to 26 per acre The death-rate per 1000 in 1915 was 21 8, last year it was 14 5 The death rate from tuberculosis had fallen by more than half Credit for the progress in the prevention of tuberculosis, and improvement in general health, was in part due to better housing and wages, and a purer milk supply Dr Russell advocated a system of differential rentals which would discriminate in favour of the tuberculous

Infectious Disease in England and Wales

WEEK ENDED OCT 4

Notifications —The following cases of infectious disease were notified during the week smallpox 0, scarlet fever, 1217, whooping-cough, 2078, diphtheria, 997, paratyphoid, 87, typhoid, 34, measles (excluding rubella), 715, pneumonia (primary or influenzal), 629, puerperal pyrexia, 151, cerebrospinal fever, 109, poliomyelitis, 31, polio-encephalitis, 2, encephalitis lethargica, 4, dysentery, 108, ophthalmia neonatorum, 80, relapsing fever, 1 No case of cholera, plague or typhus fever was notified during the week

Deaths —In 126 great towns there were no deaths from measles, 4 (1) from enteric fever, 1 (0) from scarlet fever, 11 (0) from whooping-cough, 26 (3) from diphtheria, 33 (0) from diarrhœa and enteritis under 2 years, and 14 (0) from influenza The figures in parentheses are those for London itself

Birmingham, Wolverhampton and Poole each reported a fatal case of enteric fever There were 3 deaths from diphtheria at Gateshead In the same week Dublin had 45 deaths from diarrhœa

The number of stillbirths notified during the week was 204 (corresponding to a rate of 40 per thousand total births), including 16 in London

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Dr J W Trevan, director of the Wellcome Physiological Research Laboratories, has been elected a director of the Wellcome Foundation, Ltd

Letters to the Editor

THE CHRISTMAS GIFT

SIR,—Old customs and traditions are greatly and treasured by elderly people Memories of p are very precious—perhaps none more so than t happy Christmas days gone by For many years readers have most generously supported my ap behalf of the christmas gifts fund of the Royal M Benevolent Fund and the annual distribution of a 30*s* has brought great happiness to our benefic many of whom are old and lonely I have now president of the fund for nearly 25 years and would to thank all who have responded to my appeal in years and have every confidence that this year the kindness will be shown With an additional cont tion we could raise our gift this year to £2 instead of which would give much pleasure

Will contributors please address to "Christmas Gift Royal Medical Benevolent Fund, 1, Balliol House Manor Fields, London, S W 15, and their gifts will all gratefully acknowledged

THOS BARLOW,
President, R M B F

ENURESIS

SIR,—Mr Winsbury-White (*Lancet*, Sept 20, p 331 has analysed 310 cases of enuresis in an age group, I gather, of 2–14 years He finds that in 98% there was a history of at least one of the exanthemata The signific ance of this figure is not explained, and I was furthe mystified when I found that the exanthemata "did not always precede the enuresis" One is reminded of the American surgeon who reported that over 90% of the married women on whom he operated for acute appendi citis had husbands who were cigarette smokers

Mr Winsbury-White has also made numerous observa tions on the normal calibre of the urethra at various ages, by noting the size of the largest instrument which will lie in the urethra without being gripped Is the passage of sounds into the urethras of normal childre of both sexes a psychologically justifiable procedure He found, in 70% of these patients on whom he performed cystoscopy, inflammation of the trigone and the internal urinary meatus, and in 76% of those in whom the po terior urethra was examined, inflammation of this t "Several cases with chronic coliform infection had much dilatation in the upper urinary tract that t infection was obviously a complication of urina stasis," but of the cases examined by urography "Cu showed abnormalities in the upper urinary tract wh though slight, indicated early changes due to the chro inflammatory process below" It would be interesti to know how he differentiates these apparently oppo groups He adds, "Where the dilatation was withe remedy so was the infection" In the light of the rec work of Helmholz and others at the Mayo Clinic, I would like to know what methods of treatment we tried before the infection was finally regarded as withe remedy

Lastly, he states that "the paraurethral gland of Skene and any glands (except those of Bartholin) which open directly into the urethra are the homologues of the glands of the prostate" The glands of Bartholin do n open into the urethra, but lateral to the hymen bet its attached border and the labia minora The homolo of the prostate is a more complex business than statement suggests, but in any case the next p ("and an infection of the vulval glands automatic involves the urethral glands") appears to be a n sequitur

His observations, and the treatment that follo rationally from them, are of such importance that th deserve discussion I want especially the pædiatrists to me whether the 97% who received benefit from uret dilatation might not have been cured by the threat t "next time you do it, you'll have those things sho up you again" Perhaps the 3% who obtained no ben rather enjoyed the process

Whitchurch, Aylesbury RAYMOND GREENE

SIR,—In 1918 I published a study on enuresis based several thousand cases of all ages and I may therefore cl to be familiar with this disease Mr Winsbury W ns to be under the impression, that an inflam-ion of the lower urinary tract is in most cases sally connected with enuresis He does not mention many other causes which produce this symptom—example, the disturbance of the nervous control of detrusor and sphincter muscles of the bladder, spina da occulta, epilepsy idiocy, threadworm infection, inism, and in a certain number of cases simple lazi-s and indifference There are also large numbers of ents of all ages in whom none of these causes can found, and who form the group of " enuresis sui neris " These patients have insufficient tone in the incter muscle and defective nervous conduction tween bladder, spinal cord and brain The contrac-ns of the detrusor muscle under the influence of the l bladder are not considerable enough to wake the tient Those cases in which every other form of eatment—whether by suggestion, drugs or instruments had failed I treat with 3–4 epidural (sacral) injections 30 c cm of saline, achieving immediate success in % and ultimate success in 68% The injection causes mechanical irritation of the lowest part of the spinal rd with its nerves to the bladder and the sexual gans In men, priapism lasting several hours is often used, and if cystoscopy is performed shortly after the jection hyperæmia of the lower half of the bladder hich did not exist before is found in most cases The tients feel the need to micturate more imperatively, d this wakes them up before they have passed urine asting success I believe to depend on a kind of education the bladder, comparable to the training of bowel tion Diet is also important as my cases fell to a quarter the number when the fat deficiency of the last war was lieved in 1919 by the arrival in Germany of bacon om America I agree with Mr Winsbury-White that yperæmia and chronic inflammation of the trigone and e neck of the bladder are common in adult women, and published two papers on this as a cause of frequent icturition in 1905 and 1906, but I have generally und no evidence of such inflammation in children, ith or without enuresis Might not the hyperæmia e caused by the instruments inserted ? The absence every microscopic sign of infection in the urine of 5% of his cases seems to suggest this explanation, since real inflammation of the neck or the trigone of the-ladder a few leucocytes are always to be found

ARNOLD HEYMANN,

Bensham General Hospital, Gateshead

Late Consultant Urologist at Luisen-spital, Dusseldorf

BIPP AND ITS FRIENDS

SIR,—I was very pleased to see your leader on the se of bipp for to many of us who have used it in housands of cases in this war and the last it still remains he treatment of choice One great advantage, which ou do not mention, is the ease and painlessness of the ressings , a man who is desperately ill and septic cannot tand the pain of removing a dressing that is sticking adly, or, on the other hand, a daily anæsthetic This nakes the treatment highly popular with the patient imself , he can eat his dinner after his dressing and there s not that rise of temperature due to opening up resh paths of infection which must occur when the emoval of the dressing causes bleeding from the granu-ating area Any pus can escape quite easily between he wound and the gauze well " buttered " with bipp f after excision of the wound, designed to leave as far as racticable a funnel-shaped cavity, a bipp-covered plug f gauze is carried lightly to the bottom of the wound, o dressing need be done as a rule for 2 or 3 days The lug is then removed and never replaced , the oily layer eft in the track will keep it well open and allow free rainage It will rarely be found necessary to reopen he wound and in many cases it is possible to do a econdary suture in 7–10 days

The bogy of bismuth poisoning is easily laid I first eard of bipp when on leave from France in the last war, efore, I think, any account of it had been published Either my informant got the formula wrong or my emory luckily let me down and our bipp was made from ismuth carbonate 2 parts and iodoform 1 part There s no reason whatever to use the nitrate, which is well nown to have dangerous properties , the carbonate is bsolutely safe and as much as 6 oz used to be given for bismuth meals before barium came into its own I have seen trouble from Morison's formula but never from the carbonate, while the lessened amount of iodoform also precludes any risk of iodoform poisoning, which did occasionally occur During this war we have added 10% of sulphonamide powder and so greatly increased its value Bipp used with bismuth carbonate is safe, effective and will please both surgeon and patient I hope it will at least be given a trial by any surgeon who has not used it

Southampton

H JOHN NIGHTINGALE

HOME GUARD PROBLEMS

SIR,—The views lately expressed on medical arrangements in case of invasion diverge on minor details of organisation and equipment needed but all are fairly unanimous about the existing position Most correspondents agree that the arrangements made are totally inadequate that the equipment issued is rudimentary , and that the little preparation that has been made is unsuitable to meet the conditions that can reasonably be expected during an attempted invasion

It is six years since the shadow of war was first discernible in England (the A R P Department of the Home Office was established in 1935) It is three years since every intelligent Englishman was convinced that war would have to be waged to stop German aggression and that all civil defence measures must be pushed to the utmost It is over two years since the outbreak of war and it is more than a year since we were told that invasion should be expected at any time After all this, suddenly to discover that our casualty arrangements made for invasion are practically non-existent can only lead to one of two conclusions Either the criticisms levelled have no basis of reality and are therefore extremely harmful to morale, or responsible officials have been guilty of an oversight or lack of efficiency The articles and letters calling attention to the lack of preparations are written by doctors engaged in Home Guard, civil defence and so on, who are therefore specialists in their fields with the facts at their disposal One may quarrel with their conclusions but the picture they paint looks accurate Are the arrangements which they think necessary in fact essential, and if so was it humanly possible to make the necessary provision before this ?

Casualty services, besides their humanitarian aspect, have a direct military value for they are essential to the sustenance of morale It is questionable whether successful defence can for long be carried on if the medical service has broken down At times soldiers may have to be asked to fight to the bitter end, even without a casualty service, and they will do this if they understand the reason why and do not feel that the lack arises from inefficiency on the part of those responsible for their welfare In England where successful defence is so inextricably mixed up with proper morale the need for proper medical arrangements is vital for security reasons

Was it, however, possible to make those arrangements ? It can be argued that we had to expend our maximum effort on munitions production, fortifications and military training This may be so, but even the manufacture of a million tanks and 24 hours a day training need not have prevented doctors and administrative officers pushing on their preparations to the utmost, for these are independent of the others It may be said that medical services do not depend only on medical men and organisation, but that precious equipment is also needed and this could not be manufactured because of other calls on the factories But A R P and E M S preparations were based on estimates and sustained casualty figures which were incomparably greater than any met so far or likely to be met for a long time to come Equipment, then, has been prepared for all the casualties we may get, the only objection being that all our organisations and equipment are concentrated in the industrial areas, whereas Home Guard casualties will mainly occur in rural areas It seems to have been forgotten that the Home Guard are our own civilians who have taken up the rifle in defence of their homes As soon as it became apparent that the threat of invasion was changing the tactical picture of defence plans should have been reviewed and necessary steps taken to regroup our dispositions and redistribute our equipment Both personnel and equipment are there, but bureaucracy and lack of foresight have prevented their being put where the danger is most likely to occur and made flexible enough to meet the new offensive strategy The successes of the Nazis have come from their speed and unexpectedness Our defence must be planned with this fact in mind

Whose responsibility was it to make those arrangements? The Ministries of Home Security and of Health could perhaps have claimed that the Home Guard being military falls properly within the province of the R A M C This would be a short-sighted view, for the R A M C is but a limb of the Army, and the Army will always remain mobile, it may at any time again become an expeditionary force. The Home Guard was built to meet a need the Army could not meet, except at the risk of undue dispersal It always remains static within its township and its casualties will be inextricably mixed with those of the civilian population It must therefore remain a medical responsibility of the E M S at any rate until the War Office decides to take over the whole civil defence of the country

The Prime Minister said in his recent speech at County Hall that he is advised that our civilian preparations are being pushed to the utmost, that as a result of experience changes have been made and everything possible is being done Can we have overlooked the medical arrangements in case of invasion?

Battersea G B SHIRLAW

SIR,—In your issue of Oct 11 (p 442) Brigadier Cowell turns his guns, wanton and unprovoked, on the Home Guard Medical Service, which has distressed him by using the expression C C P (casualty collecting posts) to describe the posts which it arranges for the reception of its own casualties Being to some extent responsible for that term I join issue with him at once Practical experience of conferences with the civil authorities shows that they do not understand the nature of military posts unless those posts which are really distinguished in equipment, control and function are also distinguished by different names. The civil authorities meet with exactly the same difficulty when dealing with the military, most of whom are unaware of the essential differences between a first-aid point and a first-aid post In vain does Brigadier Cowell proclaim that the initials C C P are "confusing, redundant and unnecessary" So long as he requires three separate sets of initials to describe his own regimental posts—F A P, C A P and even P A P (platoon aid post)—he is in no position to rage about the mote in his brother's eye

GORDON WARD,
Sevenoaks Lieut-Colonel, H G

PLUMP TYPE OF GRAVES'S DISEASE

SIR,—The paper under this title by Dr Trotter and Mr Eden in your issue of Sept 20 I feel calls for some comment, since it results in making certain generalisations which are scarcely justified by the evidence Familiarity with toxic goitre in all its many manifestations teaches that there is no classical sign of the clinical complex described by Graves which may not be absent, and it is dangerous to make any attempt to separate off any particular category as being fundamentally different from the rest The medical officers who have worked in recent years at the L C C thyroid clinic at New End have been familiar with the toxic patient who has not lost weight or may even have gained Among several hundred patients treated by partial thyroidectomy there have been many more "plump" individuals than are recorded by Dr Trotter and Mr Eden, yet I do not recall that any deaths have taken place among them As pointed out by Dr Page in your issue of Sept 27, death in these particular instances may have been due to some cause quite unconnected with the type of patient, and it seems to me to be entirely misleading to make a general statement that the type entails special dangers on evidence derived from so small a number Lymphoid hyperplasia is common in all types of toxic goitre

In addition to this it is, in my opinion, misleading to suggest that the results of thyroidectomy are likely to be uniformly worse in the "plump type" than among other patients It is well known that the results are, in general, much less dramatic among the "atypical categories (including the plump patients) than the classical examples of "Graves's disease" and is room for judgment in forming an opinion for or a operation Nevertheless the more slowly obt benefits are usually well worth having in the run, and the delay is no argument for withho treatment

If I were to apply the principles of generalisation by the writers of the article I might maliciously out that among their seventy patients the mortality been more than four times as high as it ought to ha been Let the causes for this be fully investigated, I should anticipate that this mortality will not b repeated when the numbers treated in their clinic hav materially grown

Wendover GEOFFREY KEYNE

NATIONAL HEALTH ASSOCIATION

SIR,—I should like to bring to the notice of your readers the objects of the National Health Association, formed on Aug 22 at Tunbridge Wells It must be evident to the profession that big changes in medical and hospital practice will come about after the war, more especially since the Minister of Health has said that voluntary hospitals will receive aid from local authorities At the second reading of the National Health Insurance, Contributary Pensions and Workmen's Compensation Bill in July many Members of Parliament expressed their strong disapproval of the medical benefits allowed to insured persons, and also of the lack of diagnostic and treatment facilities in insurance practice The National Health Association was formed so that the public and medical profession could get together and solve, without interference from outside sources, such as vested interests and political parties, the problems that affect their common interest

When the National Health Insurance Act was passed in 1911 doctors and the public became conscious of medical politics, or of the interest that the state was now going to take in the administration of medical benefits and the profession This state interference forced medical men to find a refuge from the Government and the politician in the B M A and the Medical Practitioners Union, but even after 30 years little or nothing has been accomplished for either the profession or the public For obvious reasons the profession was not represented in the House of Commons as a political entity, and, except for a small number of doctors representing their respective parties, legislation from a purely medical viewpoint and also that of the sick man was impossible to implement A square deal for the doctor and the patient was almost impossible, leaving the question of the remuneration of the profession in its present state and no special facilities available to the public, other than through the already overworked voluntary hospitals Thus the whole subject of specialist medical benefits and remuneration in N H I practice was left to the B M A and the M P U to adjust, which they have not yet been able to do This I feel has been due to the fact that they deal directly with the Ministry of Health, an administrative body, and not with a legislative chamb Parliament alone can solve this problem and the objects of the National Health Association are to educate the public and Members of Parliament in what the doctor and people desire and thus get legislation passed that i acceptable to all concerned The association will make it possible for doctor and patient to sit round a table and discuss problems affecting on the one hand the economi position of the profession and on the other modern diagnostic and treatment facilities, clinics and hospital which come within the scope of post-war reconstruction It is hoped that, by means of properly directed propaganda, controlled by the profession and the public, the association will be able to influence public and parliamentary opinion, thus obtaining through Parliament a modern and efficient national medical service that is acceptable to all The association is meeting with support throughout the country and although only a newborn child is rapidly expanding I should be pleased to send a copy of its memorandum to any interested reader

E F ST JOHN LYBURN

Hastings Clinic, Ferndale, Tunbridge Wells

LIGHTING OF WARDS

—After the war many hospitals will be remodelling vards and the experience at the Moreton District al may help in designing lighting systems This al built two new wards in 1935 and for general ig individual bed lights with additional central ig was adopted ; this is very satisfactory but care l be taken to fit the individual bed lights sufficiently on the wall so that they cannot be smashed by a attached to the bed For lighting during the night iatron, Miss M B Ockenden suggested that the should be lit by concealed lights such as are used on tairs and corridors of cinemas, and this idea was ed A fitting, the "Major Flush Louvre Light" nfactured by Manjor Equipment Co), was let into all where it would be underneath a bed, 1 ft 8 in. the floor At this height the louvred openings are below the level of the bed and the light cannot be tly seen by any patient in the ward , at the same they illuminate the polished floor completely and eflected light makes objects on the beds and lockers visible This fitting could be improved, for the cement of burnt-out bulbs is troublesome and the st power of bulb available is 15 watts, which is too

Five of these were fitted in a ward of 12 beds . 6 in × 20 ft and gave more light than is required , ight to 300 sq ft should be sufficient This system ghting has since been copied in the Acland Nursing ie and the Nuffield wards of the Radcliffe Infirmary xford

reton in Marsh **CLARK NICHOLSON**

OIL FOR FLOORS

R,—We were interested to read Dr J M Twort's r of Aug 16 (p 205) in which he pointed out the inogenic properties of spindle oil, and the danger h may therefore be associated with its use as a dust-r on hospital floors The term "spindle oil" is used over a wide variety of mineral oils of varying degrees finement, ranging from the relatively crude, carcino-c lubricants employed in cotton mills to the highly ied, biologically inert white oils and the new paraffi-liquidum leve B P Cost is a useful indication of degree of refinement of these oils, the more highly fied oils costing 2*s* 6*d* per gallon while the cruder may be obtained for less than half this amount extent of the danger of using "spindle oil" as a layer depends on the degree of refinement of the ised and the frequency with which it is applied to s, so that care is necessary in selecting an appropriate

We have always used a well-refined oil of the more ensive type, the specifications of which we have ned (*Lancet*, 1941, 2, 123) Dr Twort informs us this oil is unlikely to be harmful, and we consider, efore, that the danger associated with the application presence of spindle oils of this nature on hospital s is negligible Should circumstances necessitate olonged and intimate contact of the skin with the oil re and after it is applied to the floors the still more ly refined oils may equally well be used These oils equally efficient dust-layers, but are slightly more ensive that the spindle oil we have used Dr Twort kindly tested such an oil for us (Technical White Oil ied by the Manchester Oil Refinery, Ltd.) and found be biologically inert It was the consideration of carcinogenic properties of the cruder oils which led o recommend the more highly purified oils for dust-ng on bedclothes, where intimate contact between the ent's skin and the oil is inevitable

M VAN DEN ENDE
JOHN C THOMAS

tional Institute for Medical Research

THE GOVERNMENT AND PROPRIETARY MEDICINES

IR,—At the recent annual general meeting of Beechams , Ltd , the Chairman said (as reported in the *Times*)

For the ninth successive year our trading profits show an ease The profit for the year amounts to £1,085,893 The company s normal trade both at home and overseas, out accounting for Government contracts, shows con-rable expansion

"Since we last met, Parliament has passed the Pharmacy and Medicines Act of 1941 . Generally, it is hoped that the new Act will improve the status of proprietary articles and patent medicines The directors have decided that the full benefit shall be given to the public "

As regards the Government contracts mentioned, the Financial Secretary to the Treasury, in reply to Sir E Graham Little, M P , said on Sept 30 "So far as I have been able to ascertain, no Government department has a contract with this firm " I think the profession is entitled to know which of these two statements is correct

Leicester **N I SPRIGGS**

RADIOLOGY AS A CAREER

SIR —It is with surprise that I read of the novel scheme for producing radiologists, revealed in your annotation of Oct 11 (p 432) It is difficult to appreciate the reason for the unusual step that is being taken, unless a shortage of radiologists is upon us At present there is no evidence that such is the case I have recently been informed that no radiologists are required by the E M S , and as the Services will not take them without considerable clinical and radiological experience, the new candidates will not find their path as rosy as would appear at first sight In any case it seems a retrograde step to be subsidising would-be specialists when, to my knowledge alone three qualified radiologists are unable to find work. Radiologists have many trials to undergo because their specialty is a junior one, but I am surprised that my senior colleagues have not resisted this unnecessary attempt to induce people to join their ranks, for it cannot enhance our prestige

D M R E

HAD THE CERTIFYING DOCTOR KNOWN

SIR,—At a recent gathering of doctors at a steel works the topic of certification of employees in industry came under discussion, and the company had received an urgent request for help to manufacture a part for a war machine The shortage of this component was causing a serious delay in supplies It so happened that there was in one shop adaptable equipment but no skilled operatives available In reviewing the labour force it was remembered that three men who were skilled at this type of work had been transferred several years before when orders were short to other departments They were requested to report back the following week to their original shop Two days later they presented medical certificates, each bearing a different doctor's signature, giving some reason for their not transferring to the operation required I felt satisfied that the real cause of the trouble was not a question of health The men had settled down to a new occupation with a fresh set of men, in surroundings which happened to be more congenial, and they were displaying the understandable and common dislike of being uprooted and disturbed I interviewed the three men and they all seemed to be in normal health I pointed out to them that, although the work that they were at present doing was of importance, the work to which they were requested to transfer was particularly urgent and vital and that their greatest utility value to the country on this occasion would be to return to their original occupation Two of them, on considering these points immediately volunteered to do as we wished The third man disclosed that he had lost a sister and brother from tuberculosis and that as the original shop was certainly dustier than his present shop he did not want to return It was apparent that his fear was quite genuine It was, however, pointed out to him that if he had a liability to tuberculosis probably the shop that he was working in was not the most suitable that open-air work would be preferable, and that in any event he ought to have enough courage to have an examination before it was too late for his doctor to help him To this he reluctantly agreed and it was arranged that he should be examined by the local tuberculosis officer The result of this examination was not reported, but ten days later the man presented himself for work in the occupation that he had been requested to take up and he was a happier man than he had been for some years past

That is what happened ; but if this satisfactory conclusion had not been reached the problem would have been different Even supposing twelve able-bodied men from the Ministry of Labour had been available—which was out of the question—it would have been fortunate if as many as three of them could have adapted themselves to the work, which calls for considerable dexterity and stamina, and those three men would have taken at least two or three months before they could have given the output that the original three men actually gave in a few days I was urged to pass these particulars on to you I do so, with some reluctance and with the feeling that had the certifying doctors known all the facts the situation would never have arisen It is, however, worth considering how such events can best be avoided

WORKS MANAGER

Obituary

JAMES KERR

M D CAMB , D P H

BY the death in Edinburgh on Oct 5 of Dr James Kerr in his 80th year the country has lost its Grand Old Man of school hygiene It was in Bradford that he initiated what was to become a vast instrument of human welfare, and when the B M A met there in 1924 the president described him as "a brilliant scholar who never realised how brilliant he was even when it was impressed upon him by others" But for his epitaph he would have chosen "the first school medical officer for London"

James Kerr was born in Glasgow, educated at Manchester Grammar School St John's College, Cambridge (of which he became a fellow) and St Bartholomew's Hospital, qualifying in 1887 He took up the double specialties of eye and ear surgery and after hospital experience at Swansea and elsewhere he started practice in Bradford The school board of this town (Margaret McMillan was then a member of it) was the most progressive in the country and employed Kerr as consulting medical officer He was thus the first medical man in England (with the possible exception of Clement Dukes) to pay attention to the physiological questions arising out of the practice of confining children within walls and seated at desks during long periods each day during a time of their life which should naturally be spent largely in activity in the open air His investigations produced new and vital knowledge of the reactions of children to these artificial conditions and paved the way for the advances in school practice which took place in the first two decades of the century The fruit of these early researches was published by the Royal Statistical Society, which awarded him the Howard medal, and in the Ingleby lectures delivered at the University of Birmingham

In 1902 the school board for London, alarmed at the evidence of widespread defect among the elementary-school population, determined to create a medical department and Kerr was appointed as its head He thus became the first whole-time school medical officer in the country and he made full use of the opportunity thus created He possessed exceptional powers of leadership and gathered around himself a band of brilliant young specialists whom he fired with his own enthusiasm His conception of school hygiene was broad and inclusive, medical inspection and treatment, with which the idea became linked in many minds, was for him far too narrow an interpretation He thought in terms of the whole child and of its primary requirements, physical and mental, for a healthy life. His mind worked always as an educationist, rather than as an officer of the public health concerned primarily with the prevention of disease, and he had a keen understanding of the social implications of his work Thus he created a school nursing service, started the open-air school movement, and engineered a series of reforms in educational methods Slates and pencils disappeared, fine work in infants' departments was abolished sewing by artificial light prohibited, sight-saving classes established, and personal cleanliness insisted upon And on the work done in London under his direction were based the legislative enactments which later established the school medical service throughout the country In 1911 the London County Council, which had superseded the school board as education authority, decided gamate under one head all the medical services direction and Sir William Hamer thereupon school medical officer Henceforward until his ment in 1926 Kerr occupied the post of research officer to the council and was freed from the t office routine He was then able to devote much time to literary work. He re-wrote New "School Hygiene," the standard textbook on the ject, his life-long interest in the hygiene of the senses found expression in a monograph on " Vision and the Myopic Scholar", and finally he lished "The Fundamentals of School Health," a packed with concise information and revealing the lines some of the idealist's dreams of the future.

After his retirement, spent in Edinburgh, interest in school hygiene never flagged and masterly reviews came from his pen His mind re acute and active to the end During later years he tified himself with the care of the deaf in S becoming chairman of Donaldson's Hospital He survived by his wife and his son, Dr Douglas principal police surgeon to Edinburgh Corporation.

ARTHUR CHARLES SHELFORD

M.B EDIN ; SURGEON LIEUTENANT, R N V R.

Arthur Shelford was born in 1914 at the D School, Alnwick, where he also received his early ed tion In 1932 he began his medical studies at Edin University and he graduated M B in 1937 holding resident posts at Sunderland Infirmary he joi the practice of one of his chiefs who writes of him "Shelford was rather shy but the more one knew him the more one liked and respected him He had sound principles of conduct and the character and will power to put them into practice Conscientious and interested in his work he would have made an excellent practitioner, and many of his patients still talk to me about him He was devoted to his home, Northumberland and the Cheviots" Dr Shelford volunteered for the Navy at the outbreak of war and received his commission as a surgeon lieutenant at the end of 1939 Early the next year he was posted to H M S *Express*, and during the week of the Dunkirk evac He had some strenuous and exciting experiences He reported lost in September, 1940, and in July of th the German authorities notified the Admiralty th was buried on the island of Pellworm on Sept 26, 1

Gladstone Adams Wh

THE LATE PROF AGNES COWAN

Dr Agnes Cowan died at Cambridge on Au 1940, after she had been invalided home from C and her friends will welcome some notes of her c which we have now received Agnes Marshall w daughter of Sir John Cowan, well known as a steel gineer She was educated at the University of burgh where she qualified in 1906, and within a ye her graduation she set out for Ashiho, the most nort mission post in Manchuria Shocked by the miser wastage of women's lives she began almost at once tackle the barriers of ignorance and prejudice before she returned to this country during the la t she had built up at Ashiho a women's hospital and trained women to carry on her work Back in t country she served women again at the factori Gretna and in the camps of the W A A C s When returned to China after the war she was called to M den to superintend the women's hospital and pr in her own specialty The medical college app her to the chair of obstetrics and gynæcology lectures, all of which had to be delivered in Chinese added to her busy life Her courage, integrity and appealed to the Chinese, and she counted their frie as her reward for thirty years of service.

Medical News

sity of Cambridge

itle of the degrees of M B & B Chir has been conferred Hallinan (Girton) and J W Shrimpton (Newnham)
he examination for part II of the D M R E Dr John has been successful

rsity of Sheffield

Margaret Happey has been appointed assistant bacteri-, and Mr F Dickens, D Sc director of the Cancer ch Laboratory, Newcastle on-Tyne, has been appointed al examiner in biochemistry for the Ph D Thesis G A. Clark has been elected to represent the university General Medical Council

College of Surgeons of England

meeting of the council held on Oct 9, with Sir Alfred -Johnson, the president, in the chair, Mr D L Kerr dmitted as a Macloghlin scholar
John Beattie was appointed Bernhard Baron research sor It was decided not to fill the post of Conservator Museum at present, and Dr A J E Cave, assistant rvator, will continue in charge for the time being
A D Marston, L D S, was appointed an additional iner for the diploma in anæsthetics
Prophit studentship has been awarded to Dr J Clark lson, and a Mackenzie Mackinnon research fellowship to eoffrey Bourne
was decided to recognise the posts of resident surgical r and of one house surgeon at the Kent and Sussex ital, and of house surgeon at the Walsall General Hos- for the six months' surgical practice required of candi- for the final fellowship examination
diploma of fellowship was granted to Peter Smith, Lond, and diplomas of membership to François Xavier e, J D C Gowans, D K Sambrook, A L H Smith and ys J Wade Diplomas in child health were granted, ly with the Royal College of Physicians, to the following

W Abramson W W Burnett Winifred M Davidson, W G es Mabel A Henderson, S L Mohan David Morris, Lorna C sen, Gaya Prasad, I D Riley and Margaret M Strange

al Faculty of Physicians and Surgeons of Glasgow

a recent meeting of the faculty, with Mr Roy Young, president, in the chair, the following were admitted to the wship —

W Ferguson (Gartcosh), H R MacLennan (Glasgow), Thomas ple (Newton Mearns), and H E O Wilson (Bearsden)

dico-Legal Society

meeting of this society will be held at 26, Portland Place, don, W 1, on Thursday, Oct 23, at 4 30 P M, when Dr mas Christie, medical officer of Winchester Prison, read a paper on the manic depressive psychoses in relation he crime of murder

ority Milk

he Ministry of Food will allow priority claims on the ply of liquid milk up to two pints a day for periods mally not exceeding one month by the following people

) Workers including domestic workers, during an illness which porarily incapacitates them for work

) Persons suffering from an illness characterised by high and longed fever or from post-operative conditions after major rations

) Sick children not attending school

) Persons suffering from one or more of the following illnesses, ether incapacitated or not Active tuberculosis of all types, osis affection of the mouth throat or gullet or organic nervous order causing interference with swallowing, gastric duodenal or stomotic ulcer, certain cases of dyspepsia due to conditions er than ulceration of the stomach or duodenum colitis, diabetes llitus thyrotoxicosis; nephritis

) Expectant mothers who are allowed a priority claim of one t a day until approximately one month after confinement

A certificate signed by a medical practitioner will be uired, except by an expectant mother, for whom the tificate of a certified midwife or health visitor will be epted

Infants between one and twelve months old who are being tle fed on cow's liquid milk will be supplied with up to ints a week, in addition to their priority entitlement of 7 ts a week under the milk supply scheme The additional antities must be bought at the full retail price

Memorial to St Thomas's Masseuses

A war memorial fund is being formed in memory of the four staff masseuses who lost their lives when St Thomas's Hospital was bombed in September, 1940 It is suggested that funds for four bursaries should be raised to help students in the physiotherapy department, to be awarded as follows

In memory of Barbara Mortimer Thomas—primarily for a student from the Dominions

In memory of Gwendolen Lockyer—primarily for the daughter of a medical practitioner

In memory of Marguerite Doucet—primarily for the daughter of a past or present member of the Services

In memory of Stephanie Dunn—primarily for the daughter of a clergyman

Donations should be sent to Miss M Randell, at the massage department of St Thomas's Hospital, S E 1

Lister Medal

The Lister medal for 1942, which is awarded in recognition of distinguished contributions to surgical science, has been granted to Prof Evarts A Graham, professor of surgery in the Washington University (St Louis, Mo), and he will deliver the Lister memorial lecture in 1942, or later, under the auspices of the Royal College of Surgeons of England

Royal Society of Medicine

On Tuesday, Oct 21, at 2 30 P M at the section of comparative medicine Mr H W Steele-Bodger, M R C V S, will open the first of a series of discussions on the general principles involved in a campaign to control diseases of cattle inimical to man At 5 P M on the same day there will be a general meeting of fellows, and on Thursday, Oct 23, at 4 P M, the section of urology will hold a clinico-pathological meeting On Friday, Oct 24, at 2 30 P M, Dr Donald Paterson, Dr Richard Dobbs, Sir Lancelot Barrington-Ward and Mr David Levi will open a discussion at the section of disease in children on pyloric stenosis in infants At 3 P M on the same day Dr E H R Harries will deliver his presidential address to the section of epidemiology and state medicine He will speak on the trend of fever hospital practice

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Among the victims of German reprisal in Czecho-Slovakia is, we are informed, the chief of mental hospitals in Prague, Dr F Kafka, who was also director of the psychiatric clinic in the German University there

Births, Marriages and Deaths

BIRTHS

BOUCHER —On Oct 6, at Woking Maternity Home, the wife of Dr Anthony Boucher—a son

BROWN —On Oct 8, at St Albans, the wife of Dr G L Brown—a son

EDHOLM —On Sept 26, at Belfast, the wife of Dr O G Edholm—a daughter

GILBERT —On Oct 6, the wife of Dr R G B Gilbert, of Barnstaple—a son

GURNEY —On Oct 8, at Windsor, the wife of Captain James Gurney, R A M C —a son

HAMILTON —On Oct 11 at Monk's Orchard, Beckenham the wife of Dr J G Hamilton—a son

INNES —On Oct 6, at Liverpool the wife of Mr Alexander Innes F R C S —a son

SWAYNE —On Oct 3, at Hitchin to Dr Margaret Swayne, (née Peggy Blenkin), wife of Captain D H Swayne, R A M C—a son

TEMPLETON —On Oct 1, at Midhurst Sussex, the wife of Dr William Templeton, of Chichester—a son

MARRIAGES

BELLIS—RICHARDS —On Oct 11 at Leicester, Gordon Worsley Bellis, L R C P, Flying Officer R A F V R, to Barbara Irene Richards

BOOTH—DENNY —On Oct 11 at Sydney, Robert Philip Booth, M B, surgeon lieutenant, R A.N, to Winifred Daphne Denny

DUERDEN—ALLAN —On Oct 11 at Port Glasgow, John Wilson Neander Duerden, M B captain R.A.M C, to Grace Pride Allan

LEDWARD—COLYER —On Oct 11, at Charing Alexander Davenport Ledward, M B, lieutenant R A M C, to Margaret Leith Colyer

MACALPINE—HIRSCHMANN —In October, George Lawson Macalpine, of Accrington to Ida Hirschmann, M D, formerly of Harley Street London

MACARTNEY—CAREY —On Oct 11, at Bromley, Kent James Norman Macartney M D, major, R A M C, to Phyllis Susannah Carey

DEATHS

MILL.—On Oct 8 at Keswick Thomas Mill, C M.G, C.B E, M B Edin, F R C S E F R.A C S

O'CONNELL —On Oct 2 at West Moors, Dorset David Valentine O Connell M D R U I, D P H colonel, late R.A M C aged 83

THURNAM —On Oct. 8 at Hayle Cornwall, William Rowland Thurnam, M D Durh, founder of Nordrach upon Mendip

Notes, Comments and Abstracts

BLOOD TRANSFUSION IN THE FINNISH WAR

Dr Erik Unonius and Dr Inga Schroder (*Nord Med* 1941, 10, 1046) tell us something of the problems encountered by the Finnish blood-transfusion service in the Russo-Finnish (as distinct from the Finno-Russian) war Many of the donors moved away from their homes during the early months of war and it became necessary to enrol new ones in large numbers in order to have a supply available for emergencies Donors are only accepted if the results of general examination, Wassermann and Kahn tests, and the sedimentation-rate are favourable Blood is taken directly into the transfusion apparatus Vichy-water bottles fitted with a special stopper were found to be satisfactory for the purpose The donor's hæmoglobin was estimated before the blood was taken, and it was found that the figure did not return to normal within 7 weeks of blood-taking The rate of restoration varied greatly between donors Men between 26 and 35 and women between 35 and 45 made up the loss most quickly, though elderly donors tolerated the loss of blood well Only group O blood was sent to the front, since grouping was impossible there Blood of other groups was used at the base hospitals as far as possible In field hospitals and casualty stations a mixture of equal parts of blood and normal saline was found to be the most useful for transfusion Stored blood showed similar changes whether treated with citrate or heparin The red cells were very resistant, but the whites disintegrated rapidly After 5 weeks the red cells were only down by 14%, but after a fortnight there were no undamaged white cells left According to Unonius and Schroder the destruction of white cells releases albuminous products in the blood which may account for the rigors occasionally seen The sedimentation-rate decreased rapidly, and after 2 weeks was 0 mm in one hour (Westergren) Blood-sugar fell quickly to a third and then remained constant The hæmoglobin percentage fell a little in the first week and then became steady Blood stored for 3 months was used for transfusion in two cases with no ill effects

HE'S A GOOD BOY

THE Cockney mother who went to the police-court to plead for her son put the idea of the Hawkspur camp in a nutshell "He's a good boy, yer honour, bar what he does" But in "The Hawkspur Experiment" (Geo Allen and Unwin Pp 192 6*s*) Mr David Wills describes in greater detail the attempt made at this voluntary camp of 70 youths to find a solution for delinquency not in discipline from without, but in control from within The workers at Hawkspur went all out to show the boy that though they *could not always approve* of what he did they always very much approved of him The Q Camps Committee, which continues to work among evacuated children, started the camp in May, 1936 When in January, 1940, the war made it impossible for the camp to carry on it was still chronically short of funds and officially unrecognised But it had the germ of a great idea and Mr Wills tells an enthralling story of pioneer effort The various forms of government adopted by the campers is in itself an instructive study of constitutional history The work of diagnosing the members of the camp was carried out by a selection and treatment committee, mainly composed of medical psychologists—though Mr Wills is careful to explain that he himself writes as a Christian and not as a psychologist—and the Institute for the Scientific Treatment of Delinquency gave a physical and psychometric examination as well as a psychiatric interview to each boy Happiness is a human birthright and delinquents are among those who have not found it, Mr Wills feels we should meet them not with retribution or punishment, but with treatment inspired by love

CONTRACEPTIVE TECHNIQUE

WHATEVER his views on the ethics of contraception the doctor needs to be well informed about its practical aspects, for sooner or later he is sure to be called on to give advice on them Many recently qualified men and women have been dismayed by their own ignorance when a patient asks for instruction on an efficient method of preventing conception In the medical c the subject is avoided, so that the young doctor is loss for theoretical data, and the patient's p knowledge of the subject may be better than his What is the safest, most reliable, least distasteful cheapest method of contraception? To answer important questions Dickinson and Morris have produ a concise well-illustrated booklet[1] All methods, g or bad, are reviewed, such dangerous devices as Grafenburg ring and the wishbone pessary are menti to be condemned All gynæcologists recognise t dangers of infection and perforation from these methods, which are not in any case certain prevent of conception since fœtus and ring have been seen occu ing the same uterine cavity The authors favour the condom for its simplicity, and the diaphragm pess but insist that both should be fortified by the c comitant use of a reliable spermicidal jelly They do n advocate postcoital vaginal douching, since it is un able and must be used immediately if it is to conf even a minor degree of protection They point out th dangers of using too strong a solution, most gynæ logists will recall cases of serious lysol or perchloride bu from this cause There are short chapters on perman sterilisation in the male and female, and an append on the organisation of a contraceptive clinic The book let will be useful to the man in practice and the final yea student

VINEGAR AND CIRRHOSIS

A CORRESPONDENT tells us of his sister who died some years ago from cirrhosis of the liver which the hospital physician thought to be alcoholic In fact the lady was almost a teetotaller, but she did take a great deal of vinegar, both poured over other food and as a drink The correspondent suggests that the vinegar may have been the cause of the cirrhosis The composition of vinegar varies, but apparently it may contain in addition to the main constituent, acetic acid, small quantities of formic and tartaric acids, free mineral acids combined sulphate, phosphates, caramel, sulphur dioxide and iron The acetic acid is converted into acetates and these ar quickly oxidised to carbonates and bicarbonates whic do no more than alkalinise the urine Some vinegar are fortified with sulphuric acid, but this should not b harmful in the doses likely to be taken. It does seem possible however that in large amounts vinegar ma produce a chronic gastritis, and on one view of the æti logy of cirrhosis this would open the way for bacteria t reach the portal circulation and might lead to cirrho The habit of drinking vinegar is much more common i women than in men, and some women take it a slimming remedy They may perhaps drink enough it to produce a mild gastritis which robs them of the appetite But the chapter is now closed, for slimmi is out of fashion and vinegar is getting as scarce a whisky

WEEK END COURSE IN WAR MEDICINE —A course in w medicine will be held at Shrewsbury Military Hospital Oct 25 and 26 Besides medical and surgical round t course will include lectures and demonstrations on eye injur gastroscopy, *plastic ear nose and throat* surgery, oxy therapy for resuscitation and anæsthesia in the field

MEDICAL CASUALTIES —In recent casualty lists Colo Cyril Popham, L R C P E , R A M C , and W S /Captain E Robertson, M B Glasg , R A M C , were posted as wound Lieutenant J Campbell, M B , R A M C , is reported to b prisoner of war

Appointments

ALLISON, P R , Ch M Leeds, F R C S hon surgeon to the thor surgical department, Leeds General Infirmary

FINE WILFRED, M B Lond R M O at Alcester Hos Warwickshire

SHAND, G E M D Aberd , D P H temp asst M O H Portsmouth

WATSON, H B , M B Birm R S O at Solihull Hospital, Warw shire

WILSON, JOHN, M B Leeds R S O at Grimsby and Di Hospital

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[1] Techniques of Contraception Control By R L Dickinson, M D and W E Morris, M D Baltimore The Williams Wilkins Company Pp 56

ORIGINAL ARTICLES

A PLEA FOR GRADUATION AT AN EARLIER AGE

A SPENCER PATERSON,
MA OXFD, MD EDIN F.R C P E, M.R C P, D PSYCH.

THE purpose of this paper is to discuss certain psychological and sociological aspects of the present system of medical education In what follows I am not referring to any particular medical school for I have had intimate experience of various universities not only in England but on the continent of Europe and America as well

Before this war the authorities were anxious that a medical student before graduation should not only be proficient as a doctor but should also have a good general education and knowledge of the world They therefore decided that the student should start his training late (18–19), have a longer medical course (6–7 years) and later take house jobs (1–2 years) Further, with the growing tendency to specialisation, a trip abroad would take another year, and so finally after perhaps another year or two, he might be able to settle down at the age of about 30 Now while everyone will allow that the highest possible degree of professional efficiency and general culture is desirable in the profession it will I think be apparent that this programme is not the best way of attaining it In the first place it takes not 6 or 7 years to make a good doctor but 30 or 40 years and the real points at issue are at what age we are to allow the boy to become a man, and at what age he is to be given a degree and encouraged to settle down and have a home of his own

The main contention of this article is that the average medical student should begin his university studies at the age of 16, and also to cite several well-recognised psychological and sociological principles in its favour This is nothing new, but a return to a much sounder system which has now been given up for some years It is generally agreed that education in Scotland has always been of a high standard and it is worth while comparing the life of a medical student 12 years ago at Edinburgh with that which appears to hold elsewhere today.

WHEN STUDENTS GRADUATED AT 21

Many youths started their course at 16 Matriculation at such an age ensured that it was the cleverer boys who took up medicine a fact which augured well for the future standing of the profession Again the tremendous number of scholarships coupled with the fact that the youth could graduate at 21 meant that ability rather than the state of the parents finances determined the selection of future doctors The boys had already had a good grounding in biology and often were proficient in at least one foreign language If a real love for learning is to be instilled, this will have occurred long before the age of 16

It is a psychological fact that the intellect of a boy of 16 has already been mature for 2 years and there is nothing that a boy of 18 can learn that is beyond the scope of one of 16 It does not appear that the years from 16 to 18 are very usefully employed for either the student learns the subjects for the first M B which he later re-learns at the university, or else he studies the classics This last subject seems of very little help in any way While it is essential if one is to master the English language that one should learn another as well, that second language ought to be a modern one Demosthenes wrote tolerably good Greek, and Cicero Latin although neither had been made to study Sanskrit I have discussed the value of the classics with others who like myself, have taken Honours Greats at Oxford, and the common view is that however valuable the complete university course a smattering of Latin and Greek is scarcely worth the trouble It does in fact contravene the law of "transfer of training," which states that the learning of one unrelated subject does not make it easier to learn another

On the other hand the student of 16 is much more enthusiastic and pliable If the authorities are afraid that the raw country lad will make an uncouth doctor, the obvious reply is "Send him to college when he is 16 and not 18 and then he will be more susceptible to the cultural influences of the university" These younger students did in fact take advantage of contacts outside medicine They mixed with students of other nations and with those in other faculties Apart from the university union, a student could discuss political and literary topics in the hall of the Speculative Society where Walter Scott and later R L Stevenson had once sat as secretaries, or argue medical problems in the Royal Medical Society, which Darwin and Lister had frequented in earlier days There were especially friendly relations between teachers and students, including a convivial banquet held once a year in the Royal College of Surgeons or Physicians Such cultivation of sentiment and appeal to tradition, counteracted any tendency of the university to become a mere cramming institution

I have often heard it said that no-one would recognise the raw country lad of 16 in the cultured graduate of 21, now hardly distinguishable from his fellow students who had been at Fettes or such other public school In order further to ensure that Scottish medicine should be imbued with culture in the widest sense there were a few scholarships to enable graduates in classics and philosophy or pure science to take up medicine and this practice might well be introduced in England The atmosphere of the university was remarkably free from the parade of pseudo-opulence which surrounds some medical centres My chief a renowned neurologist did not possess a motor-car, while the senior surgeon arrived daily at the university on a push-bicycle

While there is no psychological difference between 16 and 18 except the greater pliability and enthusiasm at the former age, there is a vast difference between 21 and 23 as the best age for graduation The youth who has begun at 16 is more easily absorbed in the activities of the university, and he tends to postpone his interest in affairs of the heart to a later date Under the present-day system however, the student appears to experience a definite sense of frustration after 21 The medical course seems to be endless This leads to emotional conflicts, and to friendships in many cases with women who in personality and status are inferior to those whom he would choose if he were frankly contemplating matrimony These clandestine associations which defy convention and morality, tend to dispel that idealism which is so necessary in the young doctor and substitute an unpleasant brand of cynicism In other cases the sense of frustration leads to a taste for tavern life or may reactivate some latent abnormal sexual trend It is tiresome for psychiatrists to have to treat resultant breakdowns which a more rational system of teaching would obviate

NURSES

An analogous state of affairs exists in the nursing profession The girl of 15 or 16 has already been intellectually mature for one or two years, and there is nothing which a girl of 19 can learn of which her sister of 15 is incapable Many suitable girls of 15 desire to become nurses, but because (in some schools) they have to wait till 19 they go into other occupations and stay there Yet the girl of 15 is so pliable and enthusiastic that the atmosphere of a great nursing college could completely captivate her until she was 20 She will by that time have mastered a profession which will stand her in good stead as an insurance policy against any possible accident to her husband in later years If a girl starts nursing at 19 she feels as if she is taking the veil She will finish her training at 24 or 25 and all this time she has the unhappy feeling that the best years of her life are slipping away. This of course only applies to the average nurse There will always be some excellent women who feel that nursing is their vocation and who have determined to remain as such throughout their whole life

The objection that the public will not have confidence in a young doctor or nurse rests on the most superficial psychological grounds Indeed, the nurse's uniform appears to be designed to make her look 10 years older than her age, a fact which favours the girl of 16 but greatly depresses the girl of 26 A youthful manner results from mental rather than physical factors, and the graduate at 21 who has been treated as a man and not as a boy will feel and look mature

EARLY MARRIAGE AND THE STATE

Up till now the authorities appear to have considered this problem purely from the individual's point of view Yet it is impossible to overestimate its importance from the point of view of the state With the tendency to postpone marriage into the thirties, the medical man is compelled to have a small family The reader will no doubt recall that most doctors of his acquaintance, and particularly specialists, are either bachelors or else have only one or two children If the family of two children comes to be considered normal, the day of England as a world-power is past Any country whose families average four children, given anything like equal conditions, is likely to oust one like ours, whose birth-rate replaces the present population by only 75% There is less incentive to fight to preserve freedom if this is to benefit not our own children but those of immigrants from a neighbouring neutral island or from Eastern Europe Since earlier marriage in the community always means a higher birth-rate, a heavy responsibility rests with any legislating body which encourages late marriage such as at present obtains in the medical and nursing professions

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TRAUMATIC ANEURYSM OF POSTERIOR TIBIAL ARTERY, WITH FOOT-DROP

IAN MACPHERSON, M D LEEDS, M R C P, MAJOR, R A M C, MEDICAL TUTOR, UNIV LEEDS

H S SHUCKSMITH, B SC M B LEEDS, F R C S, MAJOR, R A M C, SENIOR SURGICAL TUTOR

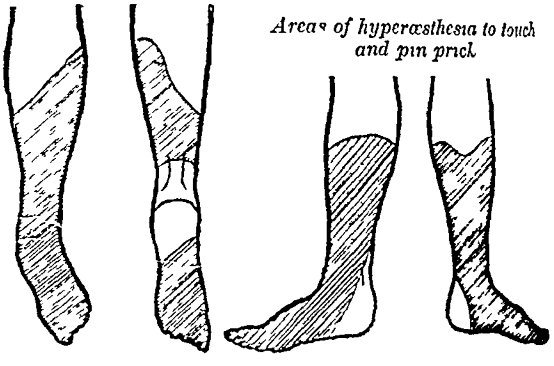
THE case which we are describing followed a bullet wound of the leg and showed not only the features of a traumatic aneurysm but also foot-drop Owing to the proximity of the wound to the external popliteal nerve, trauma to the nerve was at first considered to be the cause of the paralysis Had it been recognised that ischæmia might have damaged the external popliteal nerve the aneurysm might have been found much earlier

The development of an efficient, or more than efficient, circulation in a limb several months after an injury producing an aneurysm has been recorded by Lewis (1940) and Holman (1940) It is well exemplified by the course of this patient immediately after operation when it seemed that in addition to the obvious aneurysm of the posterior tibial artery the anterior tibial artery might also be affected A well-defined area of hyperæsthesia in the leg, distal to the aneurysm, was present before operation and persisted, its genesis is difficult to explain

CASE-RECORD

A man, aged 20, was wounded near Dunkirk on May 27, 1940 The upper part of his right leg was penetrated obliquely by a rifle bullet entering the outer side near the neck of the fibula and emerging in the middle of the calf behind There was considerable arterial bleeding from both wounds and the soldier showed great ingenuity in constructing a tourniquet from his lanyard and jack knife when he found that the first field dressing failed to stop the bleeding Three days elapsed before he reached the base hospital in Britain, and during this time he had considerable pain in the leg and complained of coldness in the foot His wounds were healing satisfactorily and radiography showed a comminuted fracture of the head of the tibia, the leg was immobilised in plaster Attempts to walk in the plaster produced so much pain and cramp in the region of the exit wound that the plaster had to be removed Further attempts at immobilisation in plaster had to be abandoned because of the same symptoms It was now discovered that he could not dorsiflex his foot although some power of dorsiflexion of the great toe remained The dorsum of the foot and the region just above the ankle felt numb Splinting the leg and massage resulted in considerable improvement of the foot drop, but general aching in the leg and foot persisted, and there was occasional slight swelling of the foot He was discharged to duty in September The pain in the leg on walking and standing led to his readmission to hospital At this time, 3½ months after the injury, he noticed an area tender to touch about the size of the palm of the hand just above the outer side of the ankle This region felt bruised and when it was tapped pain like an electric shock shot down to his big toe In addition, the observant patient had noticed for 6 weeks an increasing pulsation at the back of the right knee

On admission under our care in February, 1941, with [illegible] infection of the upper respiratory tract, he mentioned [illegible] aching pain in the right calf and foot on walking and [illegible] occasional sharp pain shooting from the ankle to the big toe while sitting still The right calf was 1½–2 in larger in girth than the opposite leg The healed entrance wound was situated in front and slightly medial to the neck of the fibula and the exit wound was in the middle of the calf about 5 in below the bend of the knee The track had extended downwards, inwards and backwards, passing immediately below the tibiofibular joint through the interosseous membrane Pulsation of the calf was visible just above the exit wound and the veins were more prominent in that leg There was a somewhat localised expansile pulsating swelling 1–1½ in long, extending upwards from the exit wound A thrill clearly felt over the swelling extended to the upper limit of the popliteal space and could be felt in the posterior tibial artery at the ankle Pulsation in the femoral artery at the groin was more easily felt on the right side A loud high pitched murmur, systolic in time, was heard 2 in higher and a little lower than the limits of the thrill It was particularly loud in the popliteal fossa and over the external malleolus, possibly owing to bone conduction in the latter situation. The systolic blood pressure taken at mid thigh was 225 mm. Hg, but the diastolic pressure could not be recorded by auscultation, the pressure in the left thigh was 185/105 mm A sharply demarcated and constant area of hyperæsthesia to touch and pinprick is shown in the figure by shading There was no difference of temperature between the two feet on ordinary examination but the right foot became redder than the left when dependent The right foot could be dorsiflexed almost to a right angle but the power was still diminished There was no cardiac murmur nor enlargement of the heart and the general condition of the patient was good The radiogram showed no evidence of fracture but erosion of bone on the opposing surfaces of the tibia and fibula just below the superior tibiofibular joint



Areas of hyperæsthesia to touch and pin prick

Operation —The limb was exsanguinated and a tourniquet applied across the upper third of the thigh A midline incision from the upper part of the popliteal fossa to the outer margin of the tendo achilles was used The structures of the popliteal fossa were dissected clear and there was no evidence of damage to the nerves The vessels in the posterior compartment of the leg were exposed by dividing gastrocnemius in the line of its fibres and the tendon of plantaris, and by incising soleus A sac, densely adherent to surrounding muscles and to the posterior tibial and the branches of the internal popliteal nerve, was separated This sac, the size of a walnut, interrupted the course of the posterior tibial artery for about 2 in and the posterior tibial vein was obliterated in its wall, the upper extremity was about ½ in distal to the bifurcation of the popliteal artery The anterior and posterior tibial arteries were of equal size In attempting to free the deeper portion of the sac it was soon apparent that a larger part of the aneurysm lay deep to the plane of the interosseous membrane and coincided in site with the erosion of bone seen by X rays The upper border of this deep part lay snugly under the lower fibres of popliteus The posterior tibial vessels were ligated above and below the sac and the hour glass like aneurysm removed Severe hæmorrhage resulted on release of the tourniquet and it was feared that the anterior tibial artery was also affected Bleeding was controlled by pads of gauze stepped up in size and liberally soaked in turpentine The skin was lightly sutured There s an adequate circulation in the limb immediately after ration The wound suppurated but the infection quickly bsided after the removal of the pack and Vaseline gauze inage The wound was closed 21 days after operation

The specimen consisted of two dilated portions connected a narrow neck. The posterior sac was relatively smooth d thick walled but the larger anterior part was friable and in and had relied for its support on direct apposition with ne Histologically the smaller of the sacs was arterial in igin and the larger was purely connective tissue, the whole nforming to the picture of a traumatic arterial aneurysm.

DISCUSSION

The history of arterial bleeding at the time of injury ollowed by coldness of the foot and severe pain, like intermittent claudication, in the calf on walking indicated rterial damage We did not make observations to ifferentiate between traumatic arterial and intravenous neurysm as outlined by Holman (1928) and Porter 1938) The two may be distinguished by measurement f the venous pressure in the limbs, the rate of bloodow and oxygen content in the veins, and observations n the pulse-rate following pressure over the aneurysm ufficient to obliterate the thrill (Branham's phenomenon) The absence of cardiac murmurs and decompensation and the systolic timing of the thrill indicated a traumatic arterial rather than an arteriovenous neurysm (Makins 1919 and Hoover 1924) The blood-pressure readings in the femoral arteries differ widely (right 225/? and left 185/105 mm Hg) It is difficult to see how the systolic pressures can differ on the two sides, the diastolic pressure on the right by auscultaory methods gave a reading of nil The blood-pressure distal to the region was not recorded

Treatment had been directed for many months to the partial external popliteal palsy without the aneurysm being suspected. Although the track of the missile was near branches of the external popliteal nerve it had not directly damaged the nerve nor was the aneurysmal sac in contact with the nerves It is however, well known that nerves may be actually traumatised by the ateral explosive force of a missile Is it possible to xplain the popliteal palsy on the basis of ischæmic damage to the nerve? It is probable that there was schæmia of the leg during the development of the arterial hæmatoma and Lewis (1936) has shown that nerves recover after 12–20 hours ischæmia, the recovery being slow and dependent on regeneration The area of hyperæsthesia of the leg does not correspond to the distribution of somatic nerves and clinically the condition resembled minor causalgia This state is common after injury to blood-vessels (Homan 1940) and is considered to be a reflex phenomenon from the injured segment of artery The hyperæsthesia in this case has persisted after removal of the aneurysm

Holman recommends operation without a tourniquet It is true that one might thus appreciate better the size of the vessels involved but it seems easier to be able o open the aneurysmal sac at once and quickly explore ts limits The method of arresting bleeding in an naccessible part of a limb by using small pieces of gauze graduated in size (Billroth pack) and soaking these in turpentine, as recommended by Grey Turner, probably saved he patient s limb Holman (1940), in reporting 8 successful cases of operation for aneurysm in the limb, noted that provided the aneurysm has been present for some months here is no danger of gangrene after its removal

SUMMARY

A case of traumatic aneurysm of the posterior tibial artery with associated foot-drop is described

We consider that the nerve paralysis resulted either from ischæmia or from the lateral explosive force of the missile The nerves were normal in appearance and well away from the aneurysmal sac

Hyperæsthesia of the leg persisted after removal of he aneurysm

The lapse of 9 months after injury made it certain that there would be an adequate blood-supply after operation

The Billroth pack and turpentine were found to be of value in arresting hæmorrhage

We are indebted to Colonel F Whalley for permission to publish this case

References at foot of next column

EFFECT OF CALCIUM IN A CASE OF AUTOHÆMAGGLUTINATION

H J PARISH, M D EDIN, M R C P E
R G MACFARLANE, M D LOND
(Wellcome Physiological Research Laboratories, Beckenham)

AUTOHÆMAGGLUTINATION is usually regarded as synonymous with non-specific cold agglutination or panagglutination of Mino—i e, the clumping which is sometimes observed when red cells are mixed at 0–5° C. with serum from the same person The use of the word is discussed fully by Wiener (1939) In rare cases this clumping also occurs at room temperature and Boxwell and Bigger (1931) were in favour of restricting the term to agglutination at this higher temperature Their paper included a review of 22 authentic cases of the condition which had been reported before 1931 They were careful to exclude pseudoagglutination or excessive rouleaux formation and the Thomsen phenomenon, which is agglutination caused by bacterial action McCombs and McElroy (1937) obtained records of 38 authentic cases, 5 of the subjects were in normal health, while in many others the condition was associated with either anæmia or some interference with the function of the liver as shown by jaundice and enlargement of the liver Greenwald (1938) described autohæmagglutination in a case of acute hæmolytic anæmia and noted the occurrence of autohæmagglutination in pernicious and other severe anæmias, acholuric jaundice paroxysmal hæmoglobinuria, severe pneumonias and staphylococcal septicæmia Gray Greenfield and Lederer (1940) reported a fatal case of benzene poisoning associated with definite autohæmagglutination which occurred " only at a temperature below that of the body The effect of the autoagglutinin was eliminated by heating the patient's serum and cells to body temperature." Dockeray and Sachs (1941) observed autohæmagglutination in a case of acute megalocytic anæmia

We have recently had a case of autohæmagglutination which differed in some respects from the one described in detail by Boxwell and Bigger and also presented certain features which have not hitherto been reported

CASE-RECORD

A male laboratory assistant, aged 27 Mother died of heart failure Father, two brothers and one sister alive and well One brother had attacks of urticaria during childhood and now suffers from severe hay-fever every summer Neither father (group A) nor one brother (group O) showed autohæmagglutination Patient had been in good health for years, but in childhood had frequent attacks of urticaria, angioneurotic œdema gastro intestinal disturbance and headache Recently had only once suffered from mild urticaria, weals being confined to left leg Last attack of severe abdominal symptoms and headache was in 1938, on account of associated dyspnœa pneumonia was suspected, but none was detected, so symptoms thought to be allergic in origin Responsible allergen not discovered Angioneurotic œdema with swelling of lips, used to occur almost weekly, but only two minor attacks during past year No history of jaundice, hæmaturia or hæmoglobinuria, chilblains, anæmia, asthma or hay-fever

Attention was first directed to condition by chance observation that patient s serum, which belonged to group O, agglutinated not only groups A and B cells, against which group O serum is usually tested, but also group O cells which are seldom used for test purposes with group O serum Altogether, patient's serum was tested against cells of 15 group O subjects and produced agglutination in every instance at room temperature, also agglutinated cells of groups AB, A and B and of patient himself In most instances cells were obtained by taking few drops of blood into 1% sodium citrate solution, and were *unwashed* Less definite clumping occurred when blood was added to patient's serum direct, without use of

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EARLY MARRIAGE AND THE STATE

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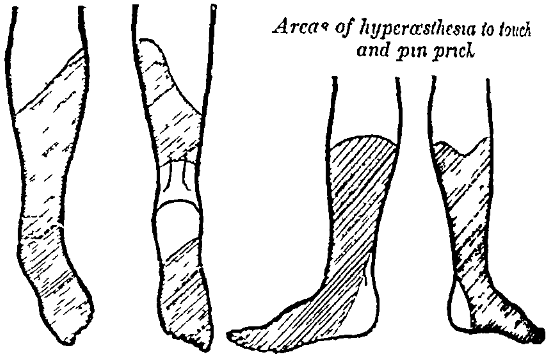
The development of an efficient, or more than efficient, circulation in a limb several months after an injury producing an aneurysm has been recorded by Lewis (1940) and Holman (1940) It is well exemplified by the course of this patient immediately after operation, when it seemed that in addition to the obvious aneurysm of the posterior tibial artery the anterior tibial artery might also be affected A well-defined area of hyperæsthesia in the leg, distal to the aneurysm, was present before operation and persisted, its genesis is difficult to explain

CASE-RECORD

A man, aged 20, was wounded near Dunkirk on May 27, 1940 The upper part of his right leg was penetrated obliquely by a rifle bullet entering the outer side near the neck of the fibula and emerging in the middle of the calf behind There was considerable arterial bleeding from both wounds and the soldier showed great ingenuity in constructing a tourniquet from his lanyard and jack knife when he found that the first field dressing failed to stop the bleeding Three days elapsed before he reached the base hospital in Britain, and during this time he had considerable pain in the leg and complained of coldness in the foot His wounds were healing satisfactorily and radiography showed a comminuted fracture of the head of the tibia, the leg was immobilised in plaster Attempts to walk in the plaster produced so much pain and cramp in the region of the exit wound that the plaster had to be removed Further attempts at immobilisation in plaster had to be abandoned because of the same symptoms It was now discovered that he could not dorsiflex his foot although some power of dorsiflexion of the great toe remained The dorsum of the foot and the region just above the ankle felt numb Splinting the leg and massage resulted in considerable improvement of the foot drop, but general aching in the leg and foot persisted, and there was occasional slight swelling of the foot He was discharged to duty in September The pain in the leg on walking and standing led to his readmission to hospital At this time, 3½ months after the injury, he noticed an area tender to touch about the size of the palm of the hand just above the outer side of the ankle This region felt bruised and when it was tapped pain like an electric shock shot down to his big toe In addition, observant patient had noticed for 6 weeks an increasing pulsation at the back of the right knee

On admission under our care in February, 1941, with a infection of the upper respiratory tract, he mentioned a aching pain in the right calf and foot on walking and a occasional sharp pain shooting from the ankle to the big toe while sitting still The right calf was 1½–2 in larger in girth than the opposite leg The healed entrance wound was situated in front and slightly medial to the neck of the fibula and the exit wound was in the middle of the calf about 5 in below the bend of the knee The track had extended downwards, inwards and backwards, passing immediately below the tibiofibular joint through the interosseous membrane Pulsation of the calf was visible just above the exit wound and the veins were more prominent in that leg There was a somewhat localised expansile pulsating swelling 1-1½ in long, extending upwards from the exit wound A thrill clearly felt over the swelling extended to the upper limit of the popliteal space and could be felt in the posterior tibial artery at the ankle Pulsation in the femoral artery at the groin was more easily felt on the right side A loud high pitched *murmur, systolic in time, was heard* 2 *in* higher and a little lower than the limits of the thrill It was particularly loud in the popliteal fossa and over the external malleolus, possibly owing to bone conduction in the latter situation The systolic blood pressure taken at mid thigh was 225 mm Hg, but the diastolic pressure could not be recorded by auscultation, the pressure in the left thigh was 185/105 mm A sharply demarcated and constant area of hyperæsthesia to touch and pinprick is shown in the figure by shading There was no difference of temperature between the two feet on ordinary examination but the right foot became redder than the left when dependent The right foot could be dorsiflexed almost to a right angle but the power was still diminished There was no cardiac murmur nor enlargement of the heart and the general condition of the patient was good The radiogram showed no evidence of fracture but erosion of bone on the opposing surfaces of the tibia and fibula just below the superior tibiofibular joint



Areas of hyperæsthesia to touch and pin prick

Operation—The limb was exsanguinated and a tourniquet applied across the upper third of the thigh A midline incision from the upper part of the popliteal fossa to the outer margin of the tendo achilles was used The structures of the popliteal fossa were dissected clear and there was no evidence of damage to the nerves The vessels in the posterior compartment of the leg were exposed by dividing gastrocnemius in the line of its fibres and the tendon of plantaris, and by incising soleus A sac, densely adherent to surrounding muscles and to the posterior tibial and the branches of the internal popliteal nerve, was separated This sac, the size of a walnut, interrupted the course of the posterior tibial artery for about 2 in and the posterior tibial vein was obliterated in its wall, the upper extremity was about ½ in distal to the bifurcation of the popliteal artery The anterior and posterior tibial arteries were of equal size In attempting to free the deeper portion of the sac it was soon apparent that a larger part of the aneurysm lay deep to the plane of the interosseous membrane and coincided in site with the erosion of bone seen by X rays The upper border of this deep part lay snugly under the lower fibres of popliteus The posterior tibial vessels were ligated above and below the sac and the hour-glass like aneurysm removed Severe hæmorrhage resulted on release of the tourniquet and it was feared that the anterior tibial artery was also affected Bleeding was controlled by pads of gauze stopped up in size and liberally soaked in turpentine The skin was lightly sutured There

Glandular enlargement increased until May 14, when the pitrochlear, cervical, supraclavicular, axillary and inguinal lands were notably enlarged and the spleen readily palpable aundice deepened until May 12, then faded, and had gone by May 16 (total duration 10 days) Excess urobilin was present n the urine on May 17 but absent on May 23 The temperaure was normal after May 19 and recovery uneventful The man was very well on June 14 before rejoining his unit, only a few shotty glands were felt, Traube's space was partially esonant and the spleen impalpable, Paul Bunnell reaction negative and white cells 5450 per c mm Table I shows the hæmatological and serological changes

TABLE I—FINDINGS IN CASE 1

—	May					June 14
	9 & 10	14	16 & 17	20	31	
White cells per c mm	8800	12,500	18,100	10,100	5200	5450
Polymorphs (all forms) %	20	14	10	12 5	15 5	27
Lymphocytes %	56 5	55 5	44	66	80	66 5
Definite "glandular fever" cells %	22 5	30 5	45 5	19 5	3 5	4
Monocytes %	1	0	0 5	2	1	2 5
Paul Bunnell reaction	Pos 1/640		Pos 1/640			Neg 1/40

CASE 2—A soldier, aged 22, was admitted to an E M S hospital on June 6 complaining of malaise and shivering, painful throat and a lump in the left side of his neck of about 36 hours' duration Temperature 102 6° F, pulse rate 110, flushed but not looking or feeling very ill Enlarged tender glands in both sides of neck, supraclavicular fossæ and left groin Spleen and liver not felt No rash Tonsils large and fleshy, but not obviously infected, no ulceration or exudate on fauces but a throat swab on June 9 showed a heavy growth of hæmolytic streptococci Hæmatological and serological changes are shown in table II By June 13 the spleen was definitely palpable, epitrochlear glands on both sides were enlarged, and more enlarged glands had appeared in the axillæ and neck The temperature, having swung aily between 99° and 102° or 103° F, fell abruptly to normal n May 15, when bile appeared in the urine and slight jaundice as noted in the skin and conjunctivæ Serum from blood aken on the previous day for the Paul Bunnell test was ound to give a quantitative van den Bergh reaction of 3 5 nits (normal range up to 1 unit)

On June 16 skin jaundice was barely visible but the urine till contained a trace of bile On June 17 the skin was clear nd no excess of urobilin could be shown in the urine The otal duration of jaundice was thus about 48 hours By une 21 the patient was feeling well, and he was discharged a week later

TABLE II—FINDINGS IN CASE 2

June	9	13 & 14	19 & 21	27 & 28
White cells per c mm	3900	13 750	6450	5000
Polymorphs (all forms) %	33	11 5	12	27
Lymphocytes %	44 5	54 5	68 5	66 5
Definite "glandular fever" cells %	20	32	17 5	2
Monocytes %	2 5	2	2	4 5
Paul Bunnell reaction	Neg 1/20	? Pos 1/80	Pos 1/160	? Pos 1/80

The sheep cell agglutination test used for both cases was that of Stuart and others (1934), who modified the riginal Paul-Bunnell technique In both cases the heterophile antibody was absorbed by ox-cells and not y guineapig kidney, thus fulfilling the criteria for landular fever antibody as finally laid down by Davidsohn (1937) The strongly positive Paul-Bunnell eaction in case 1 after sulphonamide therapy is interesting in view of the suggestion (*Lancet*, 1941, i, 84) that the ulphonamide drugs might suppress antibody formation, lthough Logan (1941) mentioned a case in which heavy ulphapyridine therapy did not have this effect In case the Paul-Bunnell titre was low despite the fact that no ulphonamide drugs had been given at all

Frequent red cells of the "target" type were seen in blood films from both cases during their periods of jaundice, these cells were described in obstructive jaundice by Barrett (1938)

DISCUSSION

I have found 13 cases of glandular fever with jaundice in the literature (Downey and McKinlay 1923, Mackey and Wakefield 1925, Stuart et al 1934, McKinlay 1935, de Vries 1938, Svaar-Seljesaeter 1939, Fowler and Tidrick 1940) Cathala and others (1939) recorded an alleged case, but the clinical and pathological data were not entirely convincing Tidy (1934), in the Lumleian lectures, said that jaundice was a rare complication of glandular fever, especially in childhood, and that it commonly developed after the glandular enlargement, although it might occur before in the febrile type de Vries (1938) recognised 3 types of jaundice in glandular fever (1) a "forme icterique a debut ganglionnaire" where glandular enlargement was prominent, and jaundice developed during the course of the disease, (2) a "forme a debut icterique" where jaundice was the first symptom and the other features of glandular fever followed, and (3) very rare cases in which jaundice and slight pyrexia were the only symptoms, and the diagnosis of glandular fever rested on hæmatological findings and a positive Paul-Bunnell reaction The first case recorded here appears to be an example of the febrile type of disease "a debut icterique," and the second of "forme icterique a debut ganglionnaire"

In the recorded cases the jaundice seldom lasted longer than a week, and was usually considered to be of obstructive origin rather than due to liver-damage or infection of the biliary passages Few laboratory details were given, but frequent mention of pale stools and dark urine containing bile-pigments, with normal liver-function tests in several cases, supported the general opinion The cause of biliary obstruction was assumed to be pressure from enlarged glands in the liver hilum, by analogy with the mesenteric glands which can be enlarged or palpable and cause abdominal pain The liver is enlarged as a rule whether jaundice is present or not

The main interest of jaundice in glandular fever lies in the diagnostic difficulties raised when it occurs before glandular enlargement is prominent and glandular fever suspected Catarrhal jaundice and cholecystitis are mentioned as diagnostic pitfalls, as well as the pre-eruptive stage of syphilis, because the Wassermann reaction is often positive in glandular fever and thus may be associated with enlarged glands and a subsequent rash de Vries (1938) even advocated examination of a blood film and a Paul-Bunnell test in every case of jaundice, and these investigations are certainly desirable in cases, such as case 1, which present unusual clinical features In this case suspicion was aroused because the patient was not very ill despite a high temperature, and the lack of pain and tenderness excluded an acute gall-bladder lesion, while the absence of nausea, the high temperature and raised pulse-rate were against catarrhal jaundice—yet the deeply bile-stained urine indicated an obstructive jaundice This last feature, coupled with the few palpable glands, the enlarging spleen and recent history of sore throat, suggested the true diagnosis

SUMMARY

In 2 cases jaundice was associated with glandular fever In one case jaundice was prominent and preceded the usual glandular enlargement, while in the other it occurred as a transient feature during the course of an otherwise typical attack of glandular fever Hæmatological findings and positive Paul-Bunnell reactions confirmed the diagnosis in both cases

The jaundice is of obstructive type and probably arises from enlargement of glands in the liver hilum

Examination of a blood film and a Paul-Bunnell test are desirable in cases of obstructive jaundice of obscure causation

My thanks are due to Dr A M Barrett of the pathological department of Cambridge University for his help with the blood examinations and Paul Bunnell tests, and to Dr N R Lawrie, biochemist at Addenbrooke's Hospital, Cambridge, for the biochemical tests

References at foot of next page

normal Through thin, lax abdominal wall edge of spleen can be felt at costal margin At ends of digits there is an extremely soft putty like pulp, over which are bluish spots, and small dry sloughing patches with definite lines of demarcation Immersion in water to 10° C makes fingers turn first blue and then white and starts tingling On warming they turn bright red Peripheral pulsations everywhere good Blood pressure in right brachial artery 112/80 mm Hg, same elsewhere

Urine normal, no blood or staining Blood-films had to be made on warmed slides, or the cells clumped before spreading Examination by Dr A M Barrett showed neutrophils 38 5%, eosinophils 8%, basophils 1%, small lymphocytes 39%, large lymphocytes 13 5% Platelets appear in usual numbers Red cells show slight anisocytosis and slight poikilocytosis Few small mis shapen red cells present Mean diameter of red cells 7 4 μ for 50 cells Hæmoglobin 52% Red and white cell counts not made because of difficulty in preventing clumping, even after dilution with saline or using anticoagulants Fragility tests performed by Dr Barrett's method and carried out at body temperature showed no abnormality Bleeding time, 1¼ min Clotting time 3¼ min (Wright's method) Wassermann reaction negative

Hæmagglutination tests were performed by Dr Taylor and his staff at the Galton laboratory The titre of the agglutinins was 1/4000 for the homologous red cells Heating the serum to 55° C for 25 min did not destroy the agglutinins

HÆMAGGLUTINATION TESTS

Cells	Readings at 4° C and at room temperature				Readings at 37° C			
	Serum			Saline	Serum			Saline
	a	b	Case 2		a	b	Case 2	
O	—	—	C	—	—	—	—	—
A	—	C	C	—	—	C	C	—
B	C	—	C	—	C	—	C	—
Case 2	C	C	C	C	—	—	—	—

C indicates clumping, — indicates no clumping

From the table it can be seen that the patient's blood is group O An agglutinin is present in her serum which clumps cells of all groups in the cold Her cells likewise clump with all sera (including her own) in the cold It would be necessary in grouping this patient's blood for transfusion to perform the tests at 37° C Otherwise the cold agglutinin effective at room temperature would produce an apparent clumping in the cross agglutination test The red cells clump themselves in saline in the colder room (It was also found that six prolonged washings of the cells failed to prevent this) It was further noted that the agglutination which occurs in the cold was reversible when warmed

Apart from the similar vascular changes and the presence of a powerful cold agglutinin in both cases there are other points of similarity in these two cases and some differences Both are married women over 50 following domestic occupations They were in good health until about two years before seeking advice, which they did during or soon after the very cold winter of 1939–40 on account of numbness and tingling of the hands Both showed a moderate secondary anæmia and a definite eosinophilia On the other hand they were physically quite dissimilar one plump and fresh looking and the other wasted and icteric (the former seen some 12 months later however was definitely jaundiced and gave a positive indirect van den Bergh of 1 5 mg per 100 c cm) Their differential white counts were widely different and their blood-groups were different

DISCUSSION

Raynaud's syndrome is characterised by paroxysmal, intermittent colour changes of the extremities, precipitated by cold, and without clinical evidence of blockage of the large peripheral vessels The theory of ætiology commonly brought forward is that of Lewis who postulates an inherent abnormality of the digital arteries rendering them unusually sensitive to cold The fault, according to his demonstrations, seemed to be within the vessel wall rather than in the nerve-supply thereto In the two cases described here the blood also shows the phenomenon of cold-autohæmagglutination We think that so unusual a combination suggests a possible causal relationship Witts (1936) has pointed out that in paroxysmal hæmoglobinuria e frigore, the syphilitic disease in which the well-known Donath-Landsteiner cold-sensitised hæmolysin is present, Raynaud's syndrome sometimes occurs with considerable severity Autohæmagglutination is also known to be associated with anæmias and dysfunction of the liver (Boxwell and Bigger 1931) but latter are not hypersensitive states, it may also appear in otherwise normal persons It is, however, generally recognised that people with one form of hypersensitivity often show others as well, and it seems probable that in our cases cold hypersensitivity played a part in the production of both the agglutination and the Raynaud's syndrome, in the latter the arteriolar musculature would be the sensitive tissue

McCombs and McElroy (1937) have reported a case and have suggested the term reversible autohæmagglutination They have collected further cases from the literature making a total of 38 They quote the Japanese authors Iwai and Mei-Sai who had already demonstrated intracapillary clumping in vitro, and had suggested that this might play a part in the production of Raynaud's syndrome McCombs and McElroy believe that plugging with agglutinated cells would explain all the vascular symptoms in their case, which showed some degree of peripheral arteriosclerosis In our own two cases the spastic element was evidently playing a large part

SUMMARY

In two middle-aged women Raynaud's phenomena were associated with powerful cold agglutinins in their sera

It is suggested that there was a causal relationship between the two conditions Probably cold hypersensitivity played a part in the production of both

We are indebted to Mr Ivor Lewis, medical superintendent of North Middlesex County Hospital, for permission to publish case 1, and to Professor Ryle for permission to publish case 2

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GLANDULAR FEVER WITH JAUNDICE

REPORT ON TWO CASES

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THERE are few recorded cases of jaundice as a complication of glandular fever and little mention of it in most modern textbooks, though brief allusions are made by *Tidy (1937) and Whitby and Britton* (1937) In the first of the following two cases jaundice and fever were presenting symptoms before there was notable glandular enlargement, while in the second case transient jaundice appeared in the course of an otherwise characteristic attack

CASE 1—A soldier, aged 21, was admitted to an E M S hospital on May 7, 1941, having been in a field ambulance since April 30 with headache, sore throat and pyrexia up to 103° F No improvement had followed sulphapyridine (? 1 g) 4 hourly for 48 hours and subsequent sulphanilamide (? 1 g) 4 hourly for 4 days Slight jaundice was noted on May 5 which was deeper on May 6 when splenic enlargement was found

On May 7 he had slight jaundice of the skin and conjunctivæ, no rash was present or had been noted previously Temperature 99 4° F, pulse rate 90 Mouth and tongue dry and glazed, sordes on lips, but no ulceration or exudate on tonsils or fauces No abdominal pain or tenderness, liver not enlarged, Traube's space dull to percussion but spleen not definitely felt A few lymph glands palpable, but not tender or strikingly enlarged, in the left supraclavicular fossa, axillæ and groins Urine contained much bile, but no albumin or blood Van den Bergh reaction delayed direct Throat swab on May 7 a few colonies of hæmolytic streptococci *Hæmatological* and serological findings are shown table I

WELL-LEG TRACTION APPARATUS FOR REDUCING FRACTURED FEMORAL NECK

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THE principle of well-leg traction may be applied with advantage to the reduction of fractures of the neck of the femur prior to their fixation by the insertion of a Smith-Petersen pin, by this method a rapid and atraumatic reduction is obtained in the patient's bed, whether in a hospital or at home, and X-ray confirmation is available before the operation is undertaken When the reduction is satisfactory the patient may be moved in the apparatus without fear of disturbing the fracture The method thus has several advantages over other methods commonly employed Reduction by manipulation immediately before operation is satisfactory in most cases, but occasionally accurate reduction is not btained even after several attempts, and, with the heatre and X-ray teams waiting to proceed, the surgeon may be tempted to accept an imperfect reduction Reduction by weight extension in bed is relatively cer-ain, but movement of the patient to the theatre is difficult and the fracture may be displaced during the process Reduction on a Hawley table overcomes these difficulties, but the method is restricted to those institutions where the necessary equipment is available With egard to the complete-bed technique many surgeons consider that the insertion of a Smith-Petersen pin is not a suitable operation to be performed in bed whatever the advantages of the method

With these points in mind I have made a modification of the Roger-Anderson apparatus to be used with strapping extension The speed with which the fracture is reduced allows of heavy extension (40–50 lb) being used without fear of skin lesions

The splint (fig 1) consists essentially of a long metal stirrup which is incorporated in a thickly padded plaster extending from the foot to the mid-thigh on the sound side The sides of the stirrup are prolonged below the foot and bent inwards so that they run together to a point 18 in below the foot on the injured side A pulley is fixed to the splint at this point, and over this screw traction is applied to the injured limb, a spring balance is interposed between the screw and the strapping extension to measure the amount of traction I have found it convenient to incorporate a cradle attached to the sound limb, from which the injured limb may be suspended Internal rotation of the injured limb is obtained by attaching a broad strip of adhesive strapping to the outer side of the limb and fixing it to the over hanging cradle

With this splint a fracture of the neck of the femur is reduced very quickly, and with the minimum of disturbance to the patient The splint is applied in bed without an anæsthetic, though a sedative will be found of advantage It is best to apply heavy traction (up to 40–50 lb) at first, reducing this to 20–30 lb as soon as the greater trochanter has come down to its normal level Anteroposterior and lateral radiograms are taken, and if reduction is satisfactory the patient is transported to the theatre at leisure If reduction is incomplete traction is continued until the desired result is obtained The operation is performed with the splint in position and the extension on, but as soon as the pin has been inserted the extension is removed so that the fracture may be impacted, after this the apparatus is removed

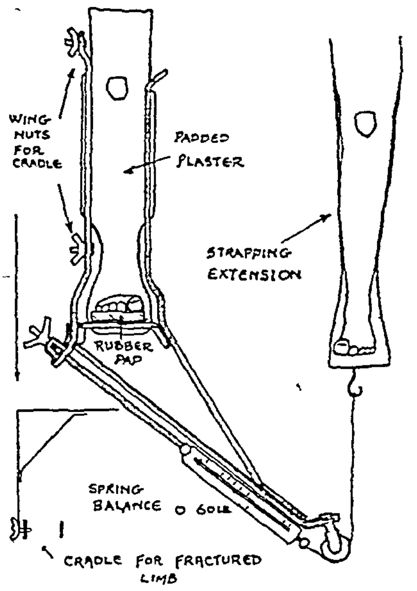

FIG 1—Diagram of well leg traction apparatus

I have treated three cases by this method and in all reduction was obtained within 12 hours The principle of heavy fixed traction is the same as that employed on a Hawley table, and reduction must be very rapid I am satisfied that if it had been convenient to X ray these cases earlier the same result would have been obtained

The fixation of the sound limb necessitates the use of a different technique from that usually employed for the lateral radiogram A cassette is thrust as high up into the perineum as possible so that it faces upwards towards the injured side, and the X-ray tube is directed downwards from the loin on the injured side at a distance of 36 in from the cassette The tilting of the pelvis downwards on the injured side, owing to the pull of the screw-traction, makes a good lateral view of the head and neck of the femur possible Fig 2 illustrates a case treated by this method.

SUMMARY

A method of reducing fractures of the neck of the femur by well-leg traction in a modified Roger-Anderson apparatus is described It ensures a rapid and atraumatic reduction, obtained in the patient's bed and confirmed by X ray before operation The fracture can be immobilised and the patient transferred to the theatre without fear of redisplacement, and the fixation is maintained until the insertion of a Smith-Petersen pin has been completed

I am indebted to Mr A S Blundell Bankart for his help and advice, and to Major Eric Samuel for the development of the X-ray technique The instrument has been made for me by Messrs Down Bros

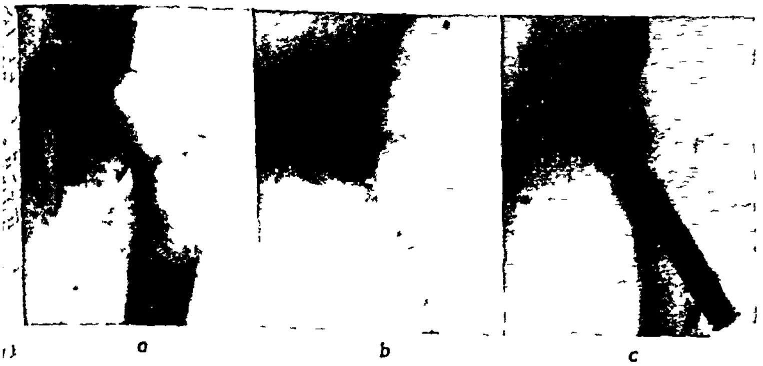

FIG 2—Fractured neck of femur (a) Before reduction (b) After reduction in well leg traction apparatus (c) After insertion of Smith-Petersen pin

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"There are some things worth waiting for even in war, and high among these is the maturity which comes to boys of ability and character after even a brief experience of University life and work. I have found the most convinced and outspoken believers in the value of this academic process even for the purposes of war among the representatives of the Fighting Services I could wish that this fact were better known in the schools, where the natural but mistaken feeling still lingers that a University education, however compressed and accompanied by Service training, is in these days a privilege which the highspirited should perhaps forgo"—G S GORDON, vice chancellor of the University of Oxford in his valedictory oration to convocation on Oct 8

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TETANY FOLLOWING PROLONGED LACTATION ON A DEFICIENT DIET

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A WOMAN of 42 was first seen by one of us on April 23, 1941, as an outpatient She gave a history of recurrent attacks of painful muscle spasm, the first experienced during the night two months previously, and affecting the forearms and hands A week elapsed between this and the second attack in which trunk and limbs were involved The description of the posture produced by the attack left no doubt that the spasms were typical of tetany of unusual severity Major attacks occurred with increasing severity and frequency, and were accompanied by great pain In the later weeks of the illness they were of almost nightly occurrence, varying in duration from a few minutes to two hours At the end of an attack the disappearance of spasm preceded by as much as an hour the disappearance of all discomfort Minor symptoms occurred frequently by day as well as by night, and consisted of paræsthesiæ in the extremities and a feeling of stiffness in the muscles of the limbs Even in the major attacks the higher centres were unaffected Amenorrhœa had been present ever since the last pregnancy until three weeks before admission when uterine bleeding began

She gave a vague history of painful spasms of the hands and feet in childhood, rather similar to the attacks described above After a year's disability the condition subsided, and until the present illness she had been in excellent health She had had 7 children, of whom 1 died at the age of 9 months from bronchopneumonia, the others were alive and well All were normal spontaneous deliveries The first 6 were breast fed for 9 months, but the youngest child at the age of 21 months was still at the breast when the patient was seen by us Questioned about her diet, she said that for breakfast she always took porridge without milk, with an egg once a week Her midday meal consisted mainly of potatoes with occasionally mince or other form of meat A milk pudding was sometimes taken, but she was quite definite that in the week she did not have more than ½ pint milk, except for the small amount of condensed milk she had in her tea Other meals consisted chiefly of bread and tea

The patient was a poorly nourished sallow rachitic female of short stature Though mentally very listless, she presented to an extreme degree the many clinical signs of undue muscle irritability associated with tetany Chvostek's sign was readily elicited, and Trousseau's was uniformly positive within 1–2 minutes of compression of the upper arm Though the peripheral nerves and muscles were hyperexcitable to percussion, the tendon reflexes were all sluggish and the abdominal reflexes, during her stay in hospital, could not be elicited The results of general examination of the patient were in great part negative, though the vaginal bleeding still continued B P 100/60 Red cells 3,300,000, white cells 6400, Hb 9 6 g % The breasts still contained milk

While under observation, and before treatment was begun, she had occasional discomfort and paræsthesia in the extremities Slight localised, but no generalised, tonic spasm occurred spontaneously during these few days most prominent complaint was pain in the lower region

Radiological findings (Dr. R K Harper) —" There are n changes in the skull or pelvis There is thinning of the cortex of the femora and tibiæ with uniform decalcification of the extremities of the long bones Slight decalcification of the fibulæ and bones of the forearms is also seen There i slight bowing of the left tibia which may be due t these changes although the bowing may be old as there i probably insufficient decalcification to account for the recent bowing "

Clinical progress —The patient was admitted to Dr Dav Smith's wards on April 29, 1941, and subsequently transferr on May 3 to the metabolic wards for investigation Lactat was stopped on admission Treatment was begun eight day later and consisted solely of a mixed-diet of 2700 calorie including 1½ pints of milk daily The result was comple relief from muscle spasm and subjective sensory disturbance By May 15 there was no evidence of muscle irritability Th vaginal bleeding was much diminished and by the 20th had ceased entirely She was discharged on May 30, and a mo later was seen as an outpatient She was then still rather pal but her listlessness had gone, there was neither subjective n objective evidence of tetany She was sent to a convalescent home where she received extra milk A scale preparation of iron was prescribed for the anæmia

Biochemical investigation —April 30 and May 6, serum calcium 6 9 mg per 100 c cm May 7, treatment begun May 13, serum calcium 9 4 mg, plasma inorganic phosphoru 2 7 mg per 100 c cm May 25, serum calcium 10 2 mg May 30, discharged June 20, serum calcium 9 0 mg per 100 c cm

Calcium balance —Three day period beginning May 20 Calcium in urine was estimated by the method of Shohl and Pedley (1922), in food and fæces by that of McCrudden (1909–10, 1911–12).

Daily output—Urine	0 075 g	*Daily intake*		1 204 g
Fæces	0 694 g		*Balance*	+ 0 435 g
Total	0 769 g		*Per cent retention*	27

Too great stress cannot be placed on the calcium balance taken for one period of three days But it is obvious that a very considerable retention of calcium was taking place

COMMENT

This case of early " osteomalacia " with tetany present several interesting features The poor diet deficient in calcium combined with the drain of repeated pregnancies and prolonged lactation was sufficient to produce definite clinical, radiological and chemical evidence of gross calcium deficiency Our impression is that such a deficient diet is common in the poorer classes of Glasgow in spite of contrary statements that have been mad To elicit a true account of the average diet requir careful inquiry, only detailed questions as to the actual food eaten day by day will determine the true intake Our patient is a case in point, when first questioned th impression was gained that her diet was adequate and it unsatisfactory nature was discovered only after detailed questioning The rapid recovery from tetany and hypocalcæmia under treatment with a high calcium milk diet assisted by weaning is in striking contrast t the lack of response in tetany due to non-absorption of calcium such as that found in non-tropical sprue, and is comparable to the rapid absorption of calcium in hunger osteopathy reported by Crawford and Cuthbertson (1934)

As Mellanby (1933) says, " It is probable that many women suffer some osteoporotic change owing pregnancy " While this is an extreme case in which calcium deficiency was brought to light by the occur of tetany, there is no doubt that it is an example, only in degree, of general calcium deficiency in lac women living under similar conditions

We are much indebted to Dr David Smith for the tunity to investigate this case

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— (1911–12) *Ibid*, 10, 187
Mellanby, E (1933) *Lancet* 2, 1131
Shohl, A T and Pedley, F G (1922) *J biol Chem* 50, 537

THE LANCET

LONDON: SATURDAY, OCTOBER 25, 1941

LIGHTENING THE LOAD

In January national health insurance will be extended to half a million people with incomes up to £420, and whether or not doctors approve of the extension a number of them will find it brings an additional burden to what was already becoming a harassed life. The addition may not sound numerically large—in 1938 the 16,840,000 insured persons were shared on 16,200 doctors' lists—but there are now fewer doctors in panel practice and the newcomers will not be evenly distributed on the lists. Moreover they are drawn from the income group which have hitherto found the doctor's bill particularly hard to meet and have therefore stinted themselves of medical attendance even beyond the limits of safety. They will now come to the doctor for many ailments which they would previously have treated themselves or left untreated, and some of them, from ignorance of the rules and customs of insurance practice, may give the doctor more trouble than they need and not get as good attention as they might. The insured person, like his doctor, is bound by a code of rules; but, whereas the doctor who breaks his may well find his quarterly cheque reduced by way of fine, the patient's shortcomings are overlooked unless they affect his relations with the approved society. The seven rules which should govern his relations with the doctor are printed on the back of his medical card in type so inconspicuous that few patients read them even if their eyesight allows them to do so. The rules are sound, and if strictly kept would bring ease to the busy practitioner. "He shall," says rule *e*, "whenever his condition permits, attend at the surgery or place of residence of the practitioner attending him on such days and at such hours as may be appointed by the practitioner." "He shall not," says *f*, "summon the practitioner to visit him between the hours of 6 P.M. and 9 A.M. except in cases of serious emergency." "He shall," ends *g*, "when his condition requires a home visit, give notice to the practitioner, if the circumstances of the case permit, before 10 A.M. on the day in which the visit is required." On the whole insured patients are reasonably good about attending the surgery once they have found their way to it and overcome their initial shyness, but the new class of patient may not appreciate the charms of a chat in the waiting-room. Rules *f* and *g*, too, are more often broken by newcomers than by the old hands who have been well trained by the doctor and know his ways. The unnecessary messages at odd hours which lead to double journeys and make the day's visiting-list unending often arise from misapplied kindness of heart in the patient ("I left it as long as I could, Doctor"), though there is a playful East End habit in an emergency of broadcasting appeals to every doctor within reach, so that three have been known to meet on the doorstep. A nice judgment of what constitutes a "serious emergency" may require more levelheadedness and clinical acumen than the general run of patients or their relatives possess, and while the late evening call may appeal to the dramatic sense it is more likely to originate from panic or a faulty diagnosis than from reckless disregard of the doctor's convenience.

What are the remedies? For the very few who treat the doctor as they do all public servants and demand their rights with no thought for the servant's convenience the doctor can in theory seek redress from the insurance committee, but he rarely does. Nearly all will make as little trouble as they can if they are shown the doctor's point of view. The familiar methods of propaganda could here be effectively applied. The extension of insurance seems a fitting occasion for a "Help your Doctor to help You" campaign, the B.B.C. providing a series of five-minute conversations between doctor and patient and the Ministry of Health supporting them with advertisements in the press. This might, in fact, be made part of the large "Health Front" advocated by Dr. BARBER on another page. The doctor should speak his mind on occasion and he can appeal to the patient's better nature by handbills or posters exhibited in his waiting-room as suggested in these columns last year.[1]

IF YOU WANT TO HELP YOUR DOCTOR IN WAR-TIME

Send messages before 10 A.M. if you want him to visit you. Remember that his petrol is rationed and that his travelling expenses have risen, so he doesn't want to cover the ground twice or more on one day, especially during the blackout.

Avoid night calls and Sunday visits whenever possible.

Come to the surgery if you can, rather than ask for a visit, and come during surgery hours, the earlier the better.

In a message state as clearly as you can what is wrong and how long the patient has been ill. Don't exaggerate or the doctor may have to neglect somebody more seriously ill in order to hurry to you.

Before the war the London insurance committee and some others enclosed in each new medical card a list of Don'ts—e.g., "Don't forget your medical card when you want the doctor." Shortage of paper has suspended this custom, but it might well be revived for the January freshmen, who will respond more heartily to the medical Do-this than to the administrative Don't-do-that. The universal consideration for the doctor which such a campaign might bring would do much this winter to offset the trials of blackout and blitz and the tribulations of a changing population and shorthandedness.

PROBLEMS IN HÆMAGGLUTINATION

Two aspects of agglutination phenomena in blood are receiving current attention; the first is the question of autoagglutination. Few experiences are more disturbing than to be asked to provide blood for the urgent transfusion of a gravely anæmic patient and to find that the patient's serum agglutinates the red cells of all available blood; the patient's serum tested against his own cells will be found to agglutinate these as well—hence the phenomenon is called "autoagglutination." It is due to the presence in the serum of a non-specific, cold-sensitive agglutinin; this affects red blood-cells of all blood groups and is most active below 5° C., still active at room temperature, but as a rule inactive at 37° C. The term "autoagglutination" is now applied only when the effect is seen at room temperature or above. Autoagglutination is often associated with severe anæmia and with disease of the liver. It has not been certainly shown to cause any disease but Mr. BENIANS

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[1] *Lancet* 1940, 2, 409.

A CASE OF PRIMARY OVARIAN PREGNANCY

J N MacBean Ross, M C, M D Edin, F R C S E
SURGEON TO SUTTON AND CHEAM GENERAL HOSPITAL

Pathological findings by T N Gledhill, B A Oxfd, M R C S, PATHOLOGIST IN CHARGE, E M S LABORATORY

THE case published in 1899 by Catherine van Tussenbrock[1] of Amsterdam proved that primary ovarian pregnancy was a definite entity Though it is still regarded as rare a number of cases have since been reported, in recent years particularly in America and Germany The usual course is early rupture of the ovary with only moderate bleeding and the exact diagnosis has as a rule been obscure until operation, though in a few cases the pregnancy goes on to full term and in some gives rise to lithopædion formations In the case here recorded hæmorrhage was extremely severe, the diagnosis of a ruptured ectopic gestation was made with certainty before operation, and there was the added complication of a ruptured corpus luteum hæmatoma

A married woman of 26 was sent by Dr H W Bowen of Carshalton on June 10, 1941, to Sutton and Cheam General Hospital as a surgical emergency During 11 months of married life she had taken no contraceptive measures except very occasional douching She had no child, but in January had probably had a very early abortion No history of previous illnesses or operations Menstruation started at 14 years and was of the 28 day type, it lasted 6 days and was always relatively painless Last menstrual period was stated to have been exactly 4 weeks before admission She had had acute symptoms for 11½ hours prior to admission

She was obviously suffering from a very severe internal hæmorrhage and was in extremis A diagnosis of a ruptured ectopic gestation was made though this was expected to be tubal and not ovarian Arrangements were made for immediate laparotomy combined with continuous blood-transfusion both during the operation and afterwards Gas oxygen ether anæsthesia was administered by Dr J H Willis, and Dr A C Anderson gave the drip transfusion The peritoneal cavity was almost completely full of blood and recent blood-clot The actual amount of blood lost can roughly be estimated by the fact that 18 hours after operation, though she had had 3 pints of blood transfused, the red cells numbered only 2,940,000 per c mm, hæmoglobin 56% When the blood and blood clot had been mopped out as thoroughly and quickly as possible it was seen that fairly brisk hæmorrhage was still coming from a rupture in the right ovary This immediately ceased on applying pressure to the ovarian artery and so the vessel was tied and the ovary removed without difficulty The right fallopian tube was found to be normal and unattached to the ovary, it was therefore left alone The left tube and ovary were normal and the uterus was slightly enlarged The patient returned home on July 3 and is now well She had a menstrual period 28 days after operation and has been regular ever since

Pathological report—The ovary is somewhat enlarged and shows rupture of its surface at two places on the superior border near the upper pole, and on the posterior surface near the lower pole Recent blood clot is present around each site of rupture On section it is clear that the hæmorrhage emanated from two ruptured "cysts" each filled with blood-clot The upper "cyst" is 1 cm in diameter and the lower 1 5 cm in diameter The latter is surrounded by a narrow yellow zone There is no connexion between the cysts Microscopically the lower cyst has the structure of a corpus luteum hæmatoma The upper shows, among the recent blood clot, several chorionic villi, mainly near the site of rupture, and scattered small masses of what appear to be decidual cells This is a ruptured primary ovarian pregnancy associated with a ruptured corpus luteum hæmatoma

Clinically this appeared to be a possible case of primary ovarian pregnancy, though a ruptured Graafian follicle with intra-abdominal hæmorrhage could not be excluded without microscopical examination From a pathological standpoint the literature indicates that to clench the diagnosis chorionic villi must be present, and some experts though not by any means all, also demand the finding of decidual cells but none think the finding of an embryo to be essential, though occasionally it has been isolated from either the blood or the blood-clot effused

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[1] *Ann Gynéc Obstét* 1899, 52, 537

Reviews of Books

Medicine versus Invasion

Home Guard Medical Service in Action G B Shirlaw L R C P E, assistant medical officer A R P for Battersea and Clifford Troke, staff officer, Finsbury casualty services London Secker and Warburg Pp 228 7s 6d

READERS have already had a taste of the quality of the book (*Lancet*, Aug 23, 1941, p 225) It is not enough to say of it that all should buy and read it it should be distributed to every Home Guard officer, fighting as well as medical Most people must have thought or wondered just what will be the functions of the Home Guard, the speculation is here given a technical and professional starting-point which is sharply stimulating The first aid section is thoroughly sensible, it is adequate, has no redundancies, and is based on the definition "immediate temporary assistance" The first two sections of the book deal with casualty service tactics and military appreciations The casualty service tactics include the principles of military medicine, the theory of invasion, medical strategy in modern warfare and the part to be played by the Home Guard in town and country Military appreciations include a review of the terrain and descriptions of several hypothetical battles—the battle of Glebeshire, of Barchester, of the Bridgehead and of the Corridor It is these chapters, deliberately drawing a rather dreadful picture of possibilities, which are so important, for unpalatable as the dose may be there is not a single ingredient of which we can say that it might have been left out or that it has been added with an impossibly lavish hand All that is described may happen, and to us "The official view of invasion," say the authors, "is of necessity optimistic (and on the whole justly so), but it is impossible to avoid the suspicion that a nice, neat, comfortable sort of invasion had been pictured and provided for, while the reality will be nasty, untidy and acutely uncomfortable for all concerned"

Diseases of the Nervous System

(2nd ed) F M R Walshe, M D Lond, F R C P Edinburgh E and S Livingstone Pp 325 12s 6d

AN elementary textbook which reaches a second edition within a year has already proved its value Dr Walshe aimed only at producing a simple textbook adapted to the needs of the student and the practitioner, and he was successful because he maintained a delicate balance between the fundamental needs of elementary teaching and the critical selection of material The first edition contained scattered errors of emphasis and statement, of which many have been adjusted, and a number of its briefer sections have been amplified Some clinical photographs and anatomical diagrams have been added, and there is more about the effects of infection and injury upon the central nervous system and peripheral nerves The author's choice of words makes the book a pleasure to read

Roentgen Interpretation

(6th ed) G W Holmes, M D, and H E Ruggles, M D London Henry Kimpton Pp 364 24s

THE sixth edition of this popular book will be welcomed by British radiologists Holmes and Ruggles in their first edition in 1919 did great service by stressing the need for a sound knowledge of pathology and general medicine as a background for accurate radiological interpretation The X-ray diagnosis of bone and joint lesions occupied a large part of the early editions, in those days our knowledge of the radiology of the thorax and abdominal viscera was scanty The study of bones and joints still predominates and occupies half the volume, and there is a 30-page chapter on the spine which is ideal for the student of radiology and indeed the sections on bones and joints maintain this high standard Unfortunately too much has been compressed into the second half of the book The section on the lungs gets 37 pages, that on the heart only 27 and that on the gastro-intestinal tract 44 pages This condensation has led to some dogmatic and unproved statements and we should like the two distinguished American teachers to take more space another time to set out their own experience id had not until recently been given a serious l under controlled conditions McLean[5] at a ic at St Mary's Hospital vaccinated 513 children r a period of 4 years, using three doses of 4000 lion organisms at 3–7 day intervals followed by a rth dose a month later, and he reported no cases of ooping-cough among 46 known and 45 suspected osures, whereas in a control group of 154 children, cases followed 115 exposures Schütze[6] showed erimentally that the combination of diphtheria m-precipitated toxoid and pertussis vaccine had no ibitory action on the immunising property of her antigen, and the idea of combined immunisan, against these two diseases has been gaining ound A single dose of an alum-precipitated rtussis vaccine was given a clinical trial in Maryland S A, in 1936–37, and although the evidence of otection was not such as to justify recommendation the 'one-shot' vaccine there were no severe actions

A large-scale investigation in Norfolk, Virginia was erefore planned to find if two doses of the alumecipitated vaccine at a month's interval would give al protection against pertussis The first report[7] i this investigation is largely concerned with the anning of the experiment so as to obtain (1) an jected group identical in all essentials with a control ninjected group, (2) the uniform observation of both roups over an adequate period of time and (3) a efinition of pertussis as a clinical entity which could e uniformly recognised The difficulties encountered need not be enumerated, the manner in which hey were tackled and largely overcome should be arefully studied by any team of workers likely to ndertake similar field studies in this country Two c cm doses of an alum-precipitated vaccine containing 10 000 million organisms per c cm were njected subcutaneously in the deltoid region of first ne arm and then the other at a month's interval ery few children had any systemic reaction, there as some local tenderness and stiffness, but if the accine was not injected too superficially the firm odule which usually developed was not noticed by the parents After various discards there remained or analysis 641 vaccinated (V) and 571 non-vaccinated N) children, and these were divided into two agegroups according as they were born (A) before and (B) fter July 1, 1937 The table, taken from a larger able illustrating the comparative incidence of measles, hickenpox and mumps in the two groups, shows the cidence of pertussis in vaccinated and unvaccinated hildren before June 1, 1938, when vaccination was egun, and for 34 months after that date The results are not very different from those obtained in their large-scale and carefully controlled experiment by Kendrick and Elderling[8] who used a total of 70 000 million organisms given in four weekly doses, and reported an *annual* attack-rate of 2 3% in the inoculated and 15 1% in the controls As usually happens, it was noted in the Virginia series that pertussis when it did occur in a vaccinated child was milder and of shorter duration than the attack in the uninoculated children These results with alum-precipitated pertussis vaccine should encourage health authorities to combine the pertussis vaccine with diphtheria A P T, in which case it would seem advisable to start the double immunisation during the second six months of life, for at that age pertussis takes a heavy toll of infected children

Age- roup	Vacc (V) for non vacc (N)	Pertussis before June 1, 1938			Pertussis in the 34 months after June 1, 1938		
		No of children	No of cases	Attacked (%)	No of children	No of cases	Attacked (%)
A	V	344	52	15 1	259	29	11 2
	N	304	45	14 8	280	90	39 1
	Total	648	97	15 0	489	119	24 3
B	V	297	17	5 7	234	22	9 4
	N	267	23	8 6	202	60	29 7
	Total	564	40	7 1	436	82	18 8

Passive protection against the infection by the use of human blood or serum has been claimed to be effective (Meader)[9] Using the method of intranasal infection of mice, North and others[10] found that the serum of child convalescents or of immunised children protected against large infecting doses whereas pooled adult serum protected only irregularly against sublethal mouse infections Fortunately pertussis has not the high infectivity of measles or chickenpox when it is introduced into a hospital ward so that the need for passive protection is less urgent But in the home any child under two years who has been exposed to infection might with advantage be given a protective dose of human serum For this purpose panels of immunised donors could with a little organisation be made available

Annotations

THE HEN AS MIDDLEMAN

FOR years we have been taught that as a middleman between vegetable products (particularly grain "offals") and human food the hen, of all domestic animals, is the most wasteful and the cow the least Some publicists even went so far as to give figures for the relative merit of cow pig, bullock and hen, and the hen, as converter of fodder into food, was invariably placed last The cow was reckoned to be five times as efficient as the hen and the pig ranked next to the cow Thus it was considered uneconomical to use offals in producing beef, eggs and fowls (roasters and boilers), and the Government gave priority in feeding stuffs to dairy cows, both in the war of 1914–18 and in the present war and rated hens last It is not clear whether these assessments were based on the total dry constituents produced from (say) 100 lb of fodder, or on the calories or the protein, and it is essential in assessing the efficiency of cow and hen that we should know what we are aiming at It is possible and indeed likely, that the order of merit would need revision if we considered the protein derivable by hen power from a given weight of fodder protein This is clear from a recent article by E T Halnan[11] of the Animal Nutrition Institute at Cambridge Halnan, being an authority on poultry naturally defends the animal of his choice from the obloquy cast on it by agriculturists and dietitians It seems that she has been maligned as a manufacturer of first-class protein from the proteins of lower biological value in offals According to Halnan's estimates the hen converts 100 lb of digestible fodder protein into 31 6 lb and Captain Feasby, who report in this issue the combination of Raynaud's syndrome and autoagglutination, regard them both as caused by chilling in a cold-sensitive patient The blood of outwardly normal people may also show it, an example is provided on another page by Dr Parish and Dr Macfarlane's report of an unusual case in which ionised calcium played a part, and it is noteworthy that, though their patient was an allergic subject with angioneurotic œdema, the autoagglutination was not connected with any allergic attacks Autoagglutination is not common, but among the large numbers of people now being grouped by the transfusion services some are bound to show it, and since the ordinary grouping tests will not detect them the effects of possible misgrouping are worth examination

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[5] McLean, I H *Proc R Soc Med* 1940 33 425
[6] Schütze H *Lancet* 1940 2 192
[7] Bell J A *Publ Hlth Rep Wash* 1941, 56, 1535
[8] Kendrick P and Elderling G *Amer J Hyg* 1939, 29 133
[9] Meader F H *Amer J Dis Child* 1937, 53, 760
[10] North, E A Keogh E V, Anderson G and Williams S *Aust J exp Biol med Sci* 1939 17, 275 North and Anderson, *Med J Aust* 1941, 1, 754
[11] *Nature, Lond* 1941, 148 335

When blood is taken for the grouping test sufficient plasma is carried over to agglutinate the red cells even in the presence of test sera, the autoagglutinator will therefore be recorded as group AB when in fact he might be any of the other groups If his blood is taken for transfusing a group AB patient unexpected agglutination will take place when his cells are tested against the patient's serum The next step is usually to try another specimen of blood, so that as long as cross-matching is possible no harm will be done, and in emergencies when time does not permit cross-matching group O blood—never group AB—is used If the autoagglutinator's blood is turned into serum or plasma the results are again unlikely to be serious since the abnormal agglutinin is usually inactive at 37° C, and with the large batches of pooled plasma now used the abnormal agglutinin will be much diluted The true group of an autoagglutinator can usually be determined by repeating the tests at 37° C or by washing the red cells in saline before testing If the incorrectly grouped autoagglutinator is himself to receive blood he will be safe so long as cross-matching is properly done, when unexpected agglutination should indicate the necessity for repeating the grouping test at 37° C The drip method is undoubtedly the safest way of giving blood to such a patient The mass-production tactics of the transfusion services make it difficult for every group AB donor to be regrouped using precautions to detect autoagglutinators, and such regrouping is not vital On the other hand, when patients in need of transfusion for severe anæmia are found to be group AB, it is worth while to exclude autoagglutination

The second problem, involving group-specific isoagglutinins, arises in connexion with the use of serum for transfusion Just as the blood-banks store group O blood for emergency use because its red cells contain no agglutinogens, so from a theoretical standpoint group AB serum is the ideal since it contains no agglutinins But only 3–7% of donors are group AB, much of the plasma and serum comes necessarily from the 40–46% of donors who are group O and therefore contains both anti-A and anti-B agglutinins Bryce and Jakobowicz,[1] who made a quantitative examination of a large number of group O sera, found that 31 2% had an anti-A titre and 10 1% an anti-B titre of over 1 in 100 It is generally thought desirable that plasma or serum, especially concentrated serum, should be freed from these isoagglutinins, and the fact that it is more difficult for serum to be so freed has been made a point against its use of group A and group B blood before separating the plasma, so that the A cells absorb the anti A isoagglutinins of group B blood and vice versa, has been one method, but this again limits the donors to about 50% of those available Della Vida and Dyke[2] utilised the fact that agglutinogens are not limited to the red blood-cells but also occur in body fluids including plasma and serum, so that group A serum can be used to absorb the anti-A isoagglutinins of group B serum and vice versa They showed how with group O serum the agglutinin titre could be considerably reduced, even if not completely absorbed, by mixing in suitable proportions with group A and B sera so that the blood of all groups could be used A third method is suggested by Witebsky, Klendshoj and Swanson[3] They point out that the group speci substances (agglutinogens) are complex carbohydrat like bodies resembling the capsular substance of pneumococci Group A substance can be prepared from commercial pepsin, mucin or peptone, but group B substance has so far only been isolated from the gastric juice of group B persons By adding these two group-specific substances to group O blood they are able to reduce the titre of the anti A and anti B agglutinins in the plasma to a safe level This method is an interesting application of our increasing knowlegdge of the nature of the blood groups but is hardly suitable as yet for large-scale work Clinical reports of reactions after the transfusion of group O serum into patients of other groups are scanty, and it is not yet clear how far the presence of anti A and anti B isoagglutinins is really detrimental The definition of safe limits for the titres of these agglutinins in pooled serum should not be too difficult and would provide the transfusion services with a useful standard

PERTUSSIS PROPHYLAXIS

The present prevalence of whooping-cough remind us how little has been attempted in this country towards the prevention of this preventable disease Too many of us still regard pertussis and measles as the inescapable and not very serious afflictions of childhood But in London these two rank fourth and fifth among the causes of death in children under five years, and in hospital practice the case-fatality from pertussis exceeds that of both measles and diphtheria (L C C Annual Report, 1935) Moreover, about a tenth of the cases and two-fifths of the deaths from pertussis occur in the first year of life[4] while Stock estimated that 44% of London children developed the disease before their fifth birthday Prophylaxis of so prevalent a respiratory infection could only be possible by specific vaccination, and this method of prevention has been shown, particularly in America to be a practical possibility Unfortunately, four or five weekly injections of large doses (10–30 thousand million organisms) of a carefully prepared smooth phase vaccine are apparently necessary to secure an effective immunity, which for large-scale immunisation introduces serious problems in production and administration The possibility of protecting the child by fewer doses of the vaccine spaced at longer intervals, as has been proved effective with diphtheria is diagnosis seems hardly warranted, the sensation ing typical neither of effort angina nor of infarction gina With the collapse, cold extremities and brady- rdia which may accompany the thoracic distress the cture seems identical with that of the vasovagal attack Gowers s syndrome This is presumably what Zondek fers to when he mentions "angina pectoris vaso- otoria" as entering into the differential diagnosis of is cases A therapeutic test with thyroid extract is commended for confirming the diagnosis and while this valuable it should not be forgotten that thyroid extract ay be of help in some conditions other than hypo- hyroidism through one or more of the physiological ctions of the hormone Two other signs described by ondek are narrowing of the skin capillaries and enlarge- ent of the left ventricle, though only one of the three ases described showed this enlargement and this patient ad systolic murmurs in all areas The effects of thyroid eficiency deserve closer study, especially in its mild orms, and a critical examination of Zondek s cases shows ow difficult the diagnosis may be The thoracic distress n these cases is usually of a type which does not permit he diagnosis of angina pectoris but when cardiac pain s encountered in frank myxœdema it is essential that hyroid extract be given with caution This is especially if there is reason to think that cardiac infarction has urred The initial dose of the extract should not eed gr ½ daily and the effect should be observed for east a week before increasing it Any aggravation he pain would of course demand a reduced dose or plete withdrawal of the drug

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[1] Bryce, L M, and Jakobowicz, R *Med J Aust* 1941 1, 290.

[2] Della Vida, B L and Dyke, S C *Lancet*, 1941, 1, 564

[3] Witebsky, E Klendshoj, N C and Swanson, P *J Amer med Ass* 1941, 116, 2654

[4] Zamkin, H O *Amer J publ Hlth*, 1940, 30, 394

HEALTH OF GERMAN TROOPS IN FRANCE

N a lecture given to German army doctors in Nancy the spring of this year, Gänsslen[1] reviews the health one of the German armies during the preceding 9 nths The general sickness-rate was low, this was ributed partly to favourable weather and partly to unexpectedly rapid conclusion of the French cam- ign, which allowed the troops to settle soon into arters almost as comfortable as those of peace time e chief epidemic diseases were those of the alimentary ct Outbreaks of gastro-enteritis occurred often ceable to contaminated food, sometimes organisms the salmonella group were responsible, but in the most pandemic outbreak in the summer of 1940 cteriological investigation was inconclusive Dysen- ry occurred fairly often, usually in mild form Flexner s cillus being commonest and Shiga s rare Two small nical points in its recognition are noted that labial rpes, occurring in 20–30% of cases of non-dysenteric stro enteritis, is rare in dysentery, and that 'to him ho has a fine nose the stale semen-like smell of the stool ll suggest dysentery' Among the sequels of dysen- ry the familiar arthritis was met with, arising in almost y joint, and attention is drawn to urethritis and con- nctivitis, both of which are naturally liable to be attri- ited to other causes A controlled observation of the fect of anti dysentery serum on alternate cases (Shiga fections being excluded) showed that it had no clear eneficial action Hypertonic saline given intravenously nd blood-transfusions were valuable measures in the verest cases A trial of sulphanilamide was begun but ot concluded Dysentery was largely confined to the w-lying or flat country in northern France and landers, from the troops and prison camps in the well- ained, more thinly populated uplands of the Vosges was almost absent The German army in question as apparently not free from enteric fever, though cases ere not numerous, paratyphoid occurred oftener than phoid No mention is made of the extent of preventive oculation Small epidemics of catarrhal jaundice curred without ascertainable cause Cerebrospinal ver reached the peak of its incidence in the spring, and then almost subsided, its fatality was probably under 20% Sulphanilamide or its derivatives is credited with influencing the severity and mortality of the disease, but Gänsslen is surprisingly lukewarm in his approval of it There is no mention of chronic meningococcal septicæmia A small outbreak of zinc poisoning —not new to the Germans, who had already experienced it on the Westwall—with acute gastro intestinal symptoms was caused by the preparation and serving of salads in zinc vessels

MIDDLE-CLASS PROVIDENCE

THERE is a wide gap between even a heavy bill from a family doctor and the cost of a serious illness or operation involving nursing-home and surgeon s fees, and many people with moderate incomes who are well able to pay for ordinary medical treatment are stumped when faced with an expensive emergency Since 1921 the British Provident Association has been tempering the wind to these semi-shorn sheep lately Bristol has launched its Intermediate Contributory Scheme for them, King Edward s Hospital Fund is sponsoring a provident scheme for London,[1] and now Lord Nuffield has given £150,000 to set up a Provident Guarantee Fund to encourage the formation of many more insurance schemes of this kind The new fund will guarantee the solvency of contributory schemes set up in the provinces in Scotland and in Northern Ireland to cover the cost of specialists and surgical treatment in hospital pay-beds and nursing-homes for the middle and professional classes It is hoped that these provincial schemes will work alongside the hospital councils with which the Nuffield Provincial Trust is associated The guarantee will be conditional on the scheme s approval by the trustees of the fund and this benevolent supervision will enable the associations to offer their members a uniformity of benefit and facilities for transfer which are unusual in local enterprises The address of the fund is 16, King Edward Street, Oxford

ECONOMY IN PHENOL AND ASPIRIN

THERE is need for economy in phenol and certain allied substances which have so far been readily available In a circular letter to hospitals and medical officers of health the Ministry of Health asks that phenol salicylic acid acetylsalicylic acid, sodium and methyl salicylate and phenolphthalein should be used sparingly It should not be difficult to devise substitutes for carbolic acid itself and for phenolphthalein but the salicylates and especially aspirin, will be difficult to cut down To be fully effective an appeal for reduction in the consumption of aspirin will have to be made to the public direct, for only a small proportion is now sold on prescription Nothing will presumably be gained by giving phenacetin or phenazone instead, for these are also derivatives of phenol Doctors can no doubt help by prescribing aspirin and the salicylates only when there is a definite indication for them, and where aspirin must be given repeatedly it may be found that a smaller dose suspended with tragacanth is as effective as a larger in tablet form

PECTIN AS A BLOOD SUBSTITUTE

THE provision of enough whole blood and serum or plasma for use in shock or hæmorrhage is not always easy, and new materials are being tried out as substitutes Of the older substitutes, gum acacia accumulates in the liver and may depress protein regeneration, while gelatin is antigenic More recently isinglass has been used with success,[2] but this awaits confirmation Meanwhile Hartman and his associates[3] suggest pectin solution

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; diagnosis seems hardly warranted, the sensation ag typical neither of effort angina nor of infarction gina With the collapse, cold extremities and brady-dia which may accompany the thoracic distress the ture seems identical with that of the vasovagal attack Gowers's syndrome This is presumably what Zondek ers to when he mentions "angina pectoris vaso-toria" as entering into the differential diagnosis of ; cases A therapeutic test with thyroid extract is commended for confirming the diagnosis and while this valuable it should not be forgotten that thyroid extract ay be of help in some conditions other than hypo-yroidism through one or more of the physiological tions of the hormone Two other signs described by ndek are narrowing of the skin capillaries and enlarge-ent of the left ventricle, though only one of the three ses described showed this enlargement and this patient d systolic murmurs in all areas The effects of thyroid ficiency deserve closer study, especially in its mild rms, and a critical examination of Zondek's cases shows w difficult the diagnosis may be The thoracic distress these cases is usually of a type which does not permit e diagnosis of angina pectoris, but when cardiac pain encountered in frank myxœdema it is essential that yroid extract be given with caution This is especially if there is reason to think that cardiac infarction has ccurred The initial dose of the extract should not xceed gr $\frac{1}{4}$ daily and the effect should be observed for t least a week before increasing it Any aggravation f the pain would of course demand a reduced dose or omplete withdrawal of the drug

HEALTH OF GERMAN TROOPS IN FRANCE

IN a lecture given to German army doctors in Nancy n the spring of this year, Gansslen[1] reviews the health f one of the German armies during the preceding 9 nonths The general sickness rate was low, this was ttributed partly to favourable weather and partly to he unexpectedly rapid conclusion of the French cam-paign, which allowed the troops to settle soon into uarters almost as comfortable as those of peace-time The chief epidemic diseases were those of the alimentary ract Outbreaks of gastro enteritis occurred, often raceable to contaminated food, sometimes organisms f the salmonella group were responsible, but in the lmost pandemic outbreak in the summer of 1940 acteriological investigation was inconclusive Dysen-ery occurred fairly often, usually in mild form, Flexner's acillus being commonest and Shiga's rare Two small linical points in its recognition are noted that labial erpes, occurring in 20–30% of cases of non-dysenteric astro enteritis, is rare in dysentery, and that "to him ho has a fine nose the stale semen like smell of the stool ill suggest dysentery" Among the sequels of dysen-ery the familiar arthritis was met with, arising in almost ny joint, and attention is drawn to urethritis and con-unctivitis, both of which are naturally liable to be attri-uted to other causes A controlled observation of the ffect of anti dysentery serum on alternate cases (Shiga ifections being excluded) showed that it had no clear eneficial action Hypertonic saline given intravenously nd blood transfusions were valuable measures in the everest cases A trial of sulphanilamide was begun but ot concluded Dysentery was largely confined to the ow-lying or flat country in northern France and landers, from the troops and prison camps in the well-rained, more thinly populated uplands of the Vosges was almost absent The German army in question as apparently not free from enteric fever, though cases ere not numerous, paratyphoid occurred oftener than phoid No mention is made of the extent of preventive oculation Small epidemics of catarrhal jaundice curred without ascertainable cause Cerebrospinal ver reached the peak of its incidence in the spring, and then almost subsided, its fatality was probably under 20% Sulphanilamide or its derivatives is credited with influencing the severity and mortality of the disease, but Gänsslen is surprisingly lukewarm in his approval of it There is no mention of chronic meningo-coccal septicæmia A small outbreak of zinc poisoning —not new to the Germans, who had already experienced it on the Westwall—with acute gastro-intestinal symp-toms was caused by the preparation and serving of salads in zinc vessels

MIDDLE-CLASS PROVIDENCE

THERE is a wide gap between even a heavy bill from a family doctor and the cost of a serious illness or opera-tion involving nursing-home and surgeon's fees, and many people with moderate incomes who are well able to pay for ordinary medical treatment are stumped when faced with an expensive emergency Since 1921 the British Provident Association has been tempering the wind to these semi-shorn sheep, lately Bristol has launched its Intermediate Contributory Scheme for them, King Edward's Hospital Fund is sponsoring a provident scheme for London,[1] and now Lord Nuffield has given £150,000 to set up a Provident Guarantee Fund to encourage the formation of many more insurance schemes of this kind The new fund will guarantee the solvency of contributory schemes set up in the provinces, in Scotland, and in Northern Ireland to cover the cost of specialists and surgical treatment in hospital pay-beds and nursing homes for the middle and professional classes It is hoped that these provincial schemes will work alongside the hospital councils with which the Nuffield Provincial Trust is associated The guarantee will be conditional on the scheme's approval by the trustees of the fund, and this benevolent supervision will enable the associations to offer their members a uniformity of benefit and facilities for transfer which are unusual in local enterprises The address of the fund is 16, King Edward Street, Oxford

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Its advantage, apart from ease in preparation, is that a 0·5% solution has about the same viscosity and osmotic pressure as whole blood. A simple solution is too acid and requires buffering to the correct pH. Good results were obtained in animal experiments and the substance was found not to be antigenic, neither did it depress liver function. Preliminary trials on human subjects showed that it was capable of raising the blood-pressure in shock and the rise was maintained during the time of the experiment. Though pectin is retained for a short time in the blood and liver it is rapidly excreted by the kidneys. It remains to be seen whether it will stay in the circulation long enough to overcome all tendency to shock.

SULPHADIAZINE AND SULPHONAMIDE E O S

THE observant physician has been learning in the past few years when and how to use each of the available sulphonamide compounds to the best advantage of the patient—sulphanilamide for streptococcal and coliform infections, sulphapyridine for pneumococcal, sulphathiazole for staphylococcal, and one of the last two for meningococcal and gonococcal infections. But many doctors are not so discriminating, and use sulphanilamide or sulphapyridine for all manner of infections without regard to the fact that the treatment may be more harmful than the malady. Sulphapyridine in particular needs to be used with care for not only may it upset the patient's stomach and appetite but it also tends to form crystals in the urinary tract unless the fluid intake is liberal, a tendency which it shares with sulphathiazole. Again, these drugs are often given in inadequate doses, and if this practice continues we may be faced with drug-fast strains of the common pathogens and infections which are entirely resistant to sulphonamide therapy. Sulphathiazole seemed to have advantages over the earlier preparations, being effective against most of the pathogens and much less irritating to the stomach than sulphapyridine. It has two disadvantages, however, for it is very quickly excreted, so that a high concentration in the blood is difficult to maintain and at present supplies are limited.

The maintenance of an adequate blood level of the drug chosen without too frequent dosage (ill patients should not have to be wakened in the middle of the night) is most important, and sulphadiazine, the pyrimidine analogue of sulphapyridine, is endowed with the valuable property of producing a higher sustained blood-level than sulphapyridine and sulphathiazole[1] with the same dosage. Moreover, it does not easily upset the stomach, and apparently is not concentrated in the kidney, as sulphapyridine and sulphathiazole are, so that there is less risk of kidney damage. Finland, Strauss and Peterson[2] have lately reported the results obtained with sulphadiazine in a variety of clinical infections among 446 adults. In the largest group of 316 cases of pneumonia there were 178 cases of primary pneumococcal pneumonia, of whom 19 (10·7%) died, which may be compared with a fatality of 16·3% among 687 patients treated the previous year with sulphapyridine or sulphathiazole with or without specific antiserum. Of the 19 patients who died, 8 were moribund on admission and 9 of the others were old people who died after the pneumonic infection had apparently been overcome. Complications were relatively few and three-quarters of those who recovered were afebrile within 36 hours of beginning treatment. There were 29 cases of staphylococcal pneumonia, occurring mostly as a complication of influenza. Some of these responded promptly to sulphadiazine, others ran a more chronic course with abscess formation and pleural effusion, 6 of them died. The usual course for adult patients with pneumonia was an initial dose of 2–4 g follow 1 g 4-hourly until the patient had been afebrile for days, which usually meant treatment for 6 days with total dosage of 40 g or less.[2] Finland and his co thought the results compared favourably with th obtained with the earlier sulphonamide preparation with serum. They were also impressed with the ef of the drug in tonsillitis, erysipelas and acute, but chronic, urinary infections. Their 4 cases of pn coccal meningitis treated with the drug all died. T symptoms were of the kind which other drugs of sulphonamide series produce but were on the whole and infrequent. One patient developed ureteric with hæmaturia followed by anuria which was relieved ureteral catheterisation. Sulphadiazine was also used w good results by Dingle, Thomas and Morton[3] in the ment of 13 cases of meningococcal meningitis and 1 c of meningococcal septicæmia. 1 patient with mening died ten hours after admission. Dowling and others[4] employed much the same dosage as Finland in the 115 patients with pneumococcal pneumonia, thou lately they have raised the initial dose from 2 g to 4 or even 6 g. In their whole series the fatality was 11·3%—the same figure as in their previous series on sulphapyridine, but it was only 6·3% in the 64 patient in whom sulphadiazine was begun within the first four days. Serum in addition was given in 16 older patients, of whom 2 died. Toxic effects were very slight, and never made it necessary *to stop* giving the drug by mouth.

Mutch[5] has lately described his experience with sulphonamide ethyl-σ-sulphonate, prepared by Imperial Chemical Industries. This compound is freely soluble in water, is of low toxicity and is hydrolysed in the body with the liberation of sulphanilamide. Mutch has used it in a variety of infections and he reports a representative series of 34 cases of meningococcal meningitis with a fatality of 9% and few unpleasant side effects. The molecular weight of Sulphonamide E O S is nearly twice that of sulphanilamide, so that larger doses must be given, but Mutch suggests that since it can be administered in an almost tasteless solution it may prove particularly useful for infants and fastidious, vomiting or comatose patients.

HEALTH OF THE INDUSTRIAL COMMUNITY

IN years to come 1940 will count as a significant c in the long struggle for improved labour conditions. War has acted as a catalyst and brought about large scale organic changes which in peace time would have seemed impossible. It would be facile to call these changes a bloodless revolution, for there was at the same time an increase in industrial accidents as well as an intensification of aerial bombardment of the industrial towns. One side of this great story can be read in the annual report of the Chief Inspector of Factories summarised on another page. The report which has l its familiar blue cover and its statistical tables contains an account of all the important developments during the year leading to improved welfare conditions, the term "welfare" being used in a broad sense to connote not only the comfort but also the well-being of the workers and to include measures to prevent accidents and to maintain health. As far as it goes the report is satisfying, but medical readers will regret the omission of anything helpful about industrial diseases and poisonings, which is peculiarly unfortunate when so many of them are facing for the first time some of the major problems of factory life. Steps should be taken to circulate a fuller version of Dr J C Bridge's report among the doctors whom it so closely concerns.

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1 See *Lancet* 1941 1 217

2 Finland, M, Strauss, E and Peterson, O L 1941, *J Amer med Ass* 116, 2641

3 Dingle, J H Thomas, L and Morton, A R *Ibid*, p 2666

4 Dowling, H F Hackman, C R, Sugar, S J and Feldman H A *Ibid*, 117, 824

5 Mutch, N *Brit med J* Oct 11, 1941, p 503,

Special Articles

TOWARDS A NATIONAL SERVICE IN CLINICAL PATHOLOGY

S C DYKE, D M OXFD, F R C P
DIRECTOR OF THE PATHOLOGICAL DEPARTMENT, THE ROYAL HOSPITAL, WOLVERHAMPTON

THE present war must bring about great changes in the organisation and practice of medicine in this country, and by general consent many changes are long overdue In face of this prospect it is the business of all those interested to take counsel with a view to directing developments into proper channels Not least important is the place of pathology and the function to be filled by laboratories and laboratory workers

The standard of academic teaching and research maintained by the medical schools and research institutions of this country is high, but clinical practice has for more than a generation been slow in embodying the full possibilities of laboratory work Only recently pathology, bacteriology and biochemistry and their allied studies were being referred to as "ancillary" to clinical medicine The war of 1914–18 revealed a similar schism between the clinical practice of medicine and its basic sciences in this country, and clinical units were established in certain of the London teaching hospitals to restore unity within the body of medicine How far the gap still remains open can be judged by all who have been in contact with the graduates of the medical schools over the last twenty years The clinician by the bedside may now ask for more laboratory tests than his predecessor of a generation ago, but increasing demands on his time make it difficult for him to keep sufficiently in touch with the many possible lines of investigation to enable him to select the most appropriate and gauge correctly the values to be attached to the bare results of laboratory procedures The laboratory worker on his side has often chosen this branch of medicine because of lack of interest in the clinical side Purely academic research, in the long run of deep importance, has been and will continue to be done by workers not interested in and divorced from clinical medicine, but for the immediate treatment of the sick there is required a body of medical men and women fully acquainted with all the details of laboratory technique in its application to clinical medicine, and interested equally both in clinical and laboratory work Only those so trained and equipped are in a position to direct, or help to direct, both the laboratory investigation of clinical problems and the interpretation of results

The field to be covered by such workers may for lack of a better term be described as clinical pathology This term has been regarded with some disfavour in academic circles in this country, partly because it is something of a hybrid including all the basic sciences of medicine which form, in academic institutions, the subjects of separate departments or even professorial chairs, and partly because of the misguided activities of some of its earlier practitioners

THE PLACE TO BE FILLED

Clinical pathologists are now attached to all the larger non-teaching hospitals and even before the war the demand was increasing, the development of the E M S hospital service has led to a call for many more than are now available and inducements are being offered to promising young medical men and women to take up this branch of work The E M S is a living and growing concern and it is clear that it cannot remain merely "emergency", it is developing and will continue to develop as an integral part of the nation's medical service and in so doing must profoundly affect the whole future of medical practice It is proper at this time to consider the role of clinical pathology in the nation's medical organisation, and the future status of its practitioners Naturally it can only properly be practised by those in close and continuing touch with clinical medicine From this it follows that its seat must be in laboratories forming an integral part of large and active hospitals Neither the laboratory established by a local authority for the purpose of dealing with public health pathology and bacteriology, the university laboratory maintained for the purpose of teaching and research, nor the isolated laboratory of any sort is fitted for the proper pursuit of clinical pathology It can only function efficiently in a laboratory which is part of an institution for the care of the sick

Clinical pathology must, then, be closely bound to the national hospital service, in the E M S it is already so bound It is evident that the national hospital service is even now entering on a phase of rapid evolutionary change and it seems likely that this change will proceed along the lines of regionalisation The British Hospitals Association has long been working for the regional grouping of the voluntary hospitals, for E M S purposes such regional grouping of hospitals is already in being, the work of the Nuffield Provincial Hospitals Trust is, with the support of the Minister of Health, already beginning to make itself felt, and there is reason to hope that there will in due course appear a hospital service calculated to meet all the hospital requirements of the nation and including without distinction all hospitals—voluntary (both teaching and non-teaching) and municipal The country will for hospital purposes be divided into a number of regions and these again into divisions, each centring round a key hospital Most of the regions will contain a teaching hospital, this will serve as the key hospital of its own division and should occupy a unique position among the key hospitals of the whole region Its position, however, must depend on its own merits and be that of "primus inter pares" rather than one of unquestioned supremacy All key hospitals will require their own departments of clinical pathology and around these will centre the work of their divisions, including work for the hospital itself and for the area covered by the hospital

The proper functioning of the clinical pathological department of an active hospital must bring it into contact with every department of the clinical work of the hospital It should not merely be a place where specimens are examined and reports on them issued The place of the clinical pathologist is in the wards as well as in the laboratory It is his business in consultation with the clinical staff to assist in determining the lines to be pursued in the investigation of clinical problems and the interpretation of results Much of the work at the bench must be performed by skilled technicians, but it is his duty to see that it is properly done, and it is he who must introduce new techniques as they become available and generally see that the work of his laboratory is kept at a due pitch of efficiency, and he must ensure that full and proper use is made of the facilities of his department This entails close touch with the clinical staff He must also be vigilant against the clogging of the laboratory by specimens sent down as a matter of unthinking routine, the examination of which can have no real bearing on investigation or treatment

A DOMICILIARY SERVICE

The needs of the division, apart from those of the hospital, can to some extent be met by the delivery at the laboratory of specimens for examination Such an impersonal service, however, can no more meet the needs of the community as a whole than it can that of the hospital The clinical pathologist must be available in person to assist, in consultation, in the investigation of clinical problems outside as well as inside the hospital The clinical pathological service must be domiciliary as well as institutional As matters now stand such domiciliary consultations with the clinical pathologist are available only to those in a position to pay consultants' fees A national service must minister to the needs of the whole community, not excluding its less prosperous members The provision of such a domiciliary service offers no insuperable difficulties The details of its constitution may well differ from region to region and from division to division In some key hospitals certain of the clinical pathological staff might elect to serve on a part-time basis, devoting some of their time to private practice, these might possibly be those sojourning only temporarily in the service with the intention of proceeding later to purely clinical work Alternatively the domiciliary work might be undertaken by the whole-time staff and the fees accruing from it be placed to the credit of the service There are advantages and disadvantages in both systems and it would be desirable that for a time both should work side by side, the course of events would show the system most worthy of adoption Early standardisation is not desirable and might prove never to be desirable events might well show the same system not to be equally suitable to all areas

Any hasty and ill-considered attempt to impose a rigid uniformity on the clinical pathological (as on any other) part of the national hospital service would be disastrous The national hospital service even as now existing offers one of the best examples of our traditional genius for devising and maintaining locally institutions suited to local needs It is accepted that the national hospital service must receive financial assistance from the state and the acceptance of financial assistance naturally carries with it certain obligations, the fulfilment of these obligations must not entail the sacrifice of local effort and initiative and its replacement by bureaucratic rule It is a wise saying that "it is an injustice a grave evil and a disturbance of right order for a larger and higher organisation to arrogate to itself functions which can be efficiently performed by smaller and lower bodies" The national hospital service of the future must allow to its component hospitals a degree of autonomy subject only to the general direction of divisional and regional hospital councils, on both of which the hospitals should be able to make their voices heard

CLINICAL PATHOLOGY AND PUBLIC HEALTH

Clinical pathology must necessarily have contacts with what is usually described as public-health pathology The concern of clinical pathology is the individual case and that of public-health pathology the community as a whole The two spheres impinge on each other and it is neither possible nor desirable to draw any exact frontier between the two Much confusion has resulted from the habit of regarding the sphere of public health as comprising anything ordained or governed by administrative statutes Because there is a statutory obligation on local authorities to arrange for the examination of throat swabs for diphtheria this is regarded as coming within the scope of public health It may and usually does so, but it also falls within the sphere of clinical pathology The same thing applies to all forms of examinations in connexion with disease epidemic or likely to become so From the standpoint of the individual patient these examinations fall within the scope of clinical pathology, from the standpoint of the epidemiologist they fall within the scope of public-health pathology

The matter is further complicated by the fact that the laboratories of many hospitals throughout the country undertake the public-health work for their areas This is not the primary business of the hospital laboratory but the work brings much-needed financial assistance to the laboratory—in many cases it is its main source of income, without which it would never have been established and could not be maintained Under the regionalised system envisaged by the Nuffield Trust the hospital would be free of the necessity of seeking extraneous sources of income for the maintenance of its laboratory The laboratory and its service would become a part of the regional (and through it of the national) hospital service and would be in a position to extend its full energies within its proper field of clinical pathology

With the development of municipal hospitals, local authorities have found themselves under the necessity of arranging for much pathological work for individual patients in their charge, because performed under statutory sanction or obligation this work has also come to be regarded as falling within the definition of public health The fact that it is performed under statutory sanction, however, does not alter the fact that such work for hospital patients falls within the scope of clinical and not of public-health pathology In many instances local authorities have established laboratories in the hospitals under their charge This is the right and proper course, such hospitals with their laboratories occupy a place in the hospital service of their region In other areas, in which local authorities have in the past established central laboratories for dealing with the pathology and bacteriology of epidemic disease, the clinical pathology of all the municipal hospitals has centred on these laboratories This entails the port of specimens from the hospitals to the c laboratory, and renders impossible that close and tinuing touch with clinical work on the part of the laboratory staff essential for the proper practice clinical pathology These central laboratories have an important function to fulfil in the national medical service that function, in fact, for which they were established—to deal with the mass control of epidemic diseases At present their work is largely confined within their own walls Measures for the full control and investigation of epidemic disease must extend into the field, and must take the staff outside the laboratory into the hospitals and the homes of the people, not primarily for the purpose of investigating the individual case but to control the spread of epidemic disease The field laboratory unit until lately did not exist in this country Some are now fully embodied and others exist in a skeleton form, workers in one such unit have testified to me with enthusiasm about the value and the interest of the work In such units the public health pathologist and the clinical pathologist must work side by side, but the control of such units would fall to the central public-health laboratory of the region concerned

PERSONNEL

The clinical pathological service must be the concern of the key hospital, among these will be both those with and without medical schools In addition to their other functions the departments of the teaching hospitals will be concerned also with the teaching of students, their staffs will on this account require to be larger than those of non-teaching hospitals

In the medical schools of teaching key hospitals there may be departments of pathology, bacteriology and biochemistry each under the direction of a separate head and each with its own laboratories The existence of such departments, whether separately or under one head, will not obviate the need for a hospital department of clinical pathology under its own director Whether in teaching or non-teaching hospital the director will require to be one of sound clinical training, well grounded in physiology and thoroughly acquainted with all branches of laboratory work in relation to clinical medicine, though not necessarily equally adept in all The director of clinical pathology in a teaching hospital will have the immense advantage of ready access for assistance and advice to the staff of the academic departments, and such posts will naturally attract the best workers in the field In both teaching and non-teaching hospitals the director will require the assistance of a staff varying in size with the size and activity of the department

From the assistants in the department of key hospital will be drawn the future directors of the national hospital laboratory service Not every medical graduate has that taste and aptitude for the combination of clinical and laboratory work which must go to the vocation to clinical pathology No assistant should be admitted to the staff of the department of clinical pathology until he or she has done at least one year in house posts, in the course of which evidence of the vocation should have shown itself A period as assistant in the laborator of one or more of the special departments of a teachi key hospital would be a valuable part of the training of the assistant clinical pathologist, this period might be taken at any time after he had done his resident hou course, preferably after a term of apprenticeship as junio assistant in the department of clinical pathology, b it should by no means serve as a substitute for such a junior assistantship

The most junior assistants in the department of clinical pathology would be on the same footing as the resident house-officers For one year at least, and possibly longer, they should live in the hospital This is essential for the sake of both the hospital and the officer for the hospital because the services of the hospital must be available throughout the twenty-four hours, and for the officer because by living in the hospital as a member of the residents' mess he can best attain that close and continuing touch with clinical medicine which is so necessary a part of his training While resident the salary and emoluments of the assistant clinical pathologist uld be at the same rate as that of other house-officers comparable seniority and such posts would be whole-ne

The remuneration of the heads and non-resident sistants of the clinical pathological staffs of the key spitals remains to be determined As things are, the nical pathologist attached to a voluntary hospital epends partly on remuneration by the hospital and rtly on private work The remuneration from the ospital may be financial or may take the form of the ght to use the hospital laboratory for private work, or oth In the municipal hospitals the post of pathologist usually salaried, pensionable and whole-time There something to be said for and against both systems f remuneration For partial remuneration with the ght to private practice it can be urged that this system nables the hospital to get the services of a pathologist nore cheaply than if it had to pay in salary his full narket value, under a regionalised hospital system ith financial assistance from the state this argument vould largely lose its cogency But the contacts with atients and medical practitioners attained in the course f private practice are valuable in the development of he pathologist Against the system is the objection hat where the treasure is there will the heart be also, nd that the temptations of private practice may seduce he pathologist into neglecting his hospital work The alaried whole-time system makes it possible for the athologist to give the whole of his time and energies o the work of his hospital It suffers from the disadvantage that whole-time posts may attract the unambitious and unenterprising, and that even the most promising once ensconced in a safe job with reasonable salary and the sure and certain hope of a comfortable pension may lapse into lethargy and desuetude Ideally it should be possible to devise a system under which merit would ensure advancement and its absence elimination, but experience shows how difficult this may be under the terms of human institutions

Advocates of both systems of remuneration are to be found among clinical pathologists of all degrees of experience and seniority Granting that the terms of remuneration are reasonable I have heard both senior workers of long and varied experience and juniors only recently entered on the field unite to speak in favour of a whole-time service The subject calls for wide discussion and exchange of views Good work has been and can be done under both systems and a hasty decision in favour of the universal application of either would be highly undesirable Arrangements suitable to one type of hospital or to one group of hospitals are not necessarily so to all

Under a regionalised hospital service clinical pathology would form part of the regional and national hospital services Under a system of modified individual autonomy on the part of the key hospitals the terms of employment offered to clinical pathologists by individual hospitals might, at any rate in the earlier stages of development of the system, differ to some extent The most desirable terms would in time become apparent The establishment of clinical pathology within the national hospital service would make this branch of medicine far more attractive to future generations of medical men and women Up to the present the beginner, n attaching himself to a non-teaching hospital, has ad to face the realisation that in so doing he has stablished himself in a post from which there is little ikelihood of his translation In a regionalised national ervice the beginner would be starting at the foot of a adder which might bring him eventually to the highest places in the national service Further, instead of aving to work in comparative isolation the clinical athologist attached to a key hospital would be in a position to maintain constant touch with other workers n his region, to specialise in any subject of particular nterest to himself, to assist others in this and to receive rom others help and advice in their own specialties

Such a national service in clinical pathology could not ail to become a great force in the advancement of medicine The need for it is shown by the repeated epresentations of practitioners under the National Health Insurance Acts for the inclusion of facilities for aboratory investigations in the panel benefit, and by imilar demands by the British Medical Association That the need has not before now become so apparent and urgent as to force Governmental action is due to the efforts of the voluntary hospitals which have made a partial service available through their outpatient departments It is right that further developments should continue along these lines with the national service in clinical pathology embodied in the national hospital service In the development of both it is essential for safety to steer a course between over-centralisation and laissez faire For development to proceed along the proper channels guidance must come not by edict from above but through the united effort of all those concerned

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MEDICINE AND THE LAW

Refusing Consent to Amputation

A PARENT who " wilfully neglects " a child by failing to provide adequate medical aid commits a misdemeanour It was held in Oakey *v* Jackson in 1914 that the refusal to allow an operation for adenoids might amount to neglect Recently a father was indicted at Glamorgan quarter sessions for neglecting his six-year-old son (who was suffering from tuberculosis of the left knee) by refusing to allow amputation of the limb (R *v* Imms) The prosecution offered medical evidence that, while the operation might prove fatal, the boy would die if no operation was performed Dr Alex Brownlee medical superintendent of the Glan Ely hospital, gave the history of the case The patient had been most carefully nursed for 14 months, he was able to walk when he was discharged Last April, however, he was readmitted to hospital His condition was progressively deteriorating; he was beginning to suffer from chronic poisoning of the system due to the diseased knee " If the life of the child is to be saved " said the witness, " this amputation should be performed " It was impossible to save the limb, operation was the only hope of saving the boy's life, the patient's condition was becoming so serious that it would soon be too late to operate. ' I think he will die if it is not done " A consulting surgeon confirmed this view The father explained that he refused because he was afraid that the shock of the amputation would kill his boy; even if he recovered, he would be a cripple for life, " if I consented to the amputation and Terence died, I should have signed his death warrant, if I thought he would recover, I would consent at once " His counsel took the points that the father had never been told of the boy's life being in danger and that the refusal was not absolute—not " I will never consent " but merely " I will not consent at this stage ' The jury returned a verdict of " not guilty " without leaving the box

After a long series of enactments and re-enactments the law is now to be found in section 1 of the Children and Young Persons Act, 1933 Judges have construed " wilfully " as done deliberately and not by inadvertence " neglect " as the absence of such reasonable care as an ordinary parent would reasonably use for the care and protection of the child So said Lord Russell of Killowen in R *v* Senior (1899) where a nine-months-old infant died of diarrhœa and pneumonia and the prosecution proved that life would certainly have been prolonged and in all probability saved if medical assistance had been provided R *v* Morby (1882) where the child suffered from confluent smallpox, had shown that the parent could not be convicted unless it was proved that death was caused or accelerated by the omission to call in medical aid Subsequent prosecutions of persons holding the faith of the Peculiar People, who refused to call in a doctor because they bona fide believed such a course to be wrong established that the fact of conscientious objection was no defence to a charge of manslaughter if the neglect to call in medical aid accelerated the death of a child in the care or custody of the accused The Senior case showed conclusively that honest religious belief did not avail the accused It is one thing however, for judges to lay down the law and another thing for juries to convict a father whose obvious affection for his son has placed him in a tragic dilemma The almost superstitious reluctance to allow surgical operations is a survival of which practitioners cannot fail to be aware

AN UNDERGROUND EMERGENCY HOSPITAL FOR AIR-RAID CASUALTIES

BY THE COMMANDANT OF A GENERAL HOSPITAL

WHEN he has completed the organisation and equipment of his hospital for war service the first duty of a commandant is to decide what he will do if it becomes unusable in consequence of explosion, fire interruption of water-supplies or the presence of delayed-action bombs Theoretically such a situation is met by switching casualties to another hospital but in heavy raids this may prove impracticable for many reasons—it may be impossible to communicate immediately with the officer in control of ambulances and roads may be so blocked that alternative routes to other hospitals are not easy to find In any event, by prolonging the journeys of the wounded, and by condemning to inactivity the staff of a hospital when its services are most required, switching is not an ideal solution of the problem I therefore decided to find and equip premises as a sort of reserve or second line to which staff and casualties might rapidly be transferred so that surgical work might continue during a blitz if the hospital was damaged or overcrowded

CHOICE OF A SITE

From every point of view it was desirable that such reserve accommodation should be safer than that of a civilian hospital built to let in light and not to keep out bomb splinters, that it should be as far as possible immune from the nuisances of breaking windows and noise, and that its provision should not involve heavy initial cost or constant expense in overhead charges during quiet periods, or an idle staff permanently in residence for its care Eventually I approached the general manager of a large store This steel and concrete building is within 300 yards of my hospital and has an island site There are nine floors and two of them are underground, the lowest is used for storage and has a subterranean passage for the delivery of merchandise The passage slopes away from the shop and would protect it from serious flooding The next floor—the basement—is used for shopping, and contains a kitchen and a restaurant in which thousands of light meals are served daily, there are numerous lavatories and several lifts, two of which are designed for heavy goods and communicate directly with a covered bay and a loading platform for lorries There are also several wide staircases In another part of England similar premises belonging to the same firm suffered several direct hits in one night from heavy high explosive and were set on fire by oil bombs Great damage was done and the lowest floor was flooded but the basement remained intact

With the consent of the hospital officer I proposed that space in the basement might be set aside for the construction of an efficient operating-theatre, an X-ray room and the installation of sterilising equipment, that arrangements should be made for the rapid clearance of goods from the floor in an emergency, so that h beds could be set up as space became available, and that the kitchen should be used for feeding patients Access to the basement during an air-raid was to be by the covered lorry bay which was well adapted for the unloading of ambulances and by the heavy goods lift which would take stretchers These proposals were approved by the board of the store, who generously decided not only to make no charge for the use of these valuable premises but also to provide similar facilities in other large towns if the arrangement proved useful With the skilful and enthusiastic cooperation of the staff all the structural alterations, plumbing, painting and wiring were completed in three weeks The total cost (exclusive of equipment) was about £1000, though it would have been larger but for the generosity of the firm Later the mayor collected funds privately for the provision of an engine and apparatus to generate an independent electrical supply for light and X-ray work if the city mains were cut

SCOPE AND EQUIPMENT

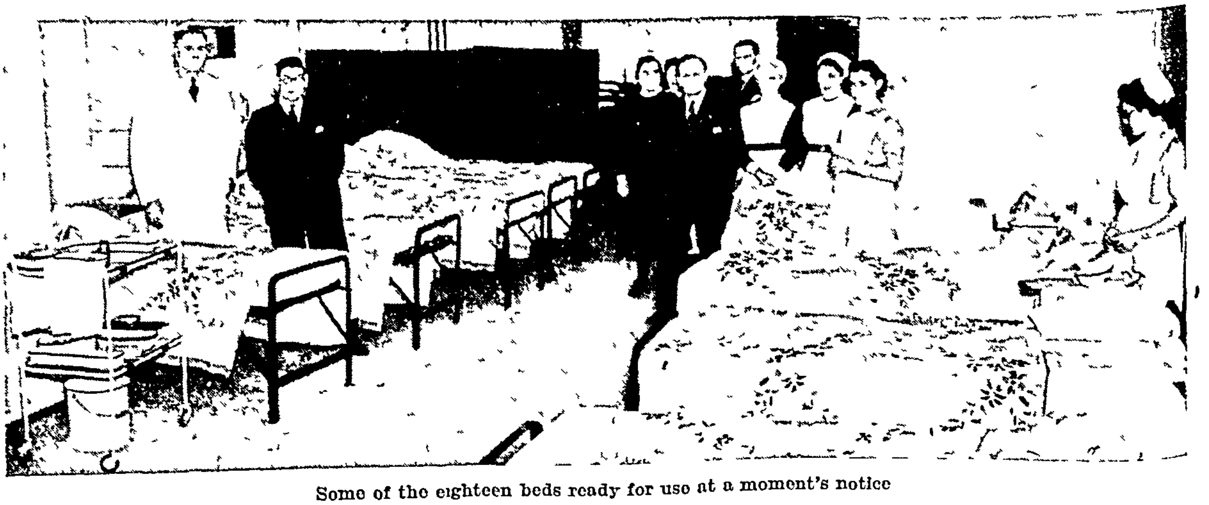
In its final form the nucleus of the underground emergency hospital had a floor space of 2867 sq ft, which could be extended to nearly 8000 sq ft It is separated from a busy shop by interlocking wooden screens The theatre measures 620 sq ft, and is designed for three tables, but it will take four when necessary It is ventilated by forced draught through fine gauze screens To test its efficiency several operations were done in it (including a bone case) before it was used in a raid No sepsis occurred Sterilising is done by electrical heating If the current fails there are gas boilers in the kitchen and as a last resort oil stoves Eighteen beds are kept ready for use On each of these five extra mattresses (with sheets and blankets spread and tied to them with string) are placed to be carried to other bedsteads as they are put up Within an hour, space in the shopping area can be cleared for fifty beds and within two hours a hundred and twenty beds are ready for use The important work of clearing goods is carried out by the store night staff when they receive warning from the hospital, and the speed and efficiency with which it is done is astonishing Standing orders for the use of the basement are now as follows —

1 When 25 casualties have been admitted to the general hospital the store will be warned and will assemble their clearing staff

2 When 50 casualties have been admitted to the general hospital, the basement will be cleared and nursing and registration staff will be transferred to it

3 When 75 casualties have been admitted to the general hospital, ambulances will be sent to the store until 75 cases have been admitted, thereafter the casualties will be divided equally At this stage medical and surgical staffs go to the basement

The bed space is enclosed by interlocking screens and can always be adjusted to the number of patients—th

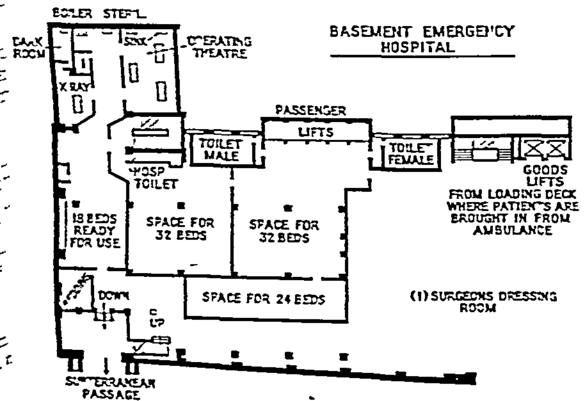


Some of the eighteen beds ready for use at a moment's notice spital expands and contracts like a gigantic concertina r the separation of sexes light ward screens are used refrigerator and equipment for the blood-transfusion vice have been installed, and supplies are changed gularly A bed-pan washer has been connected to e lavatory drain

IN ACTION

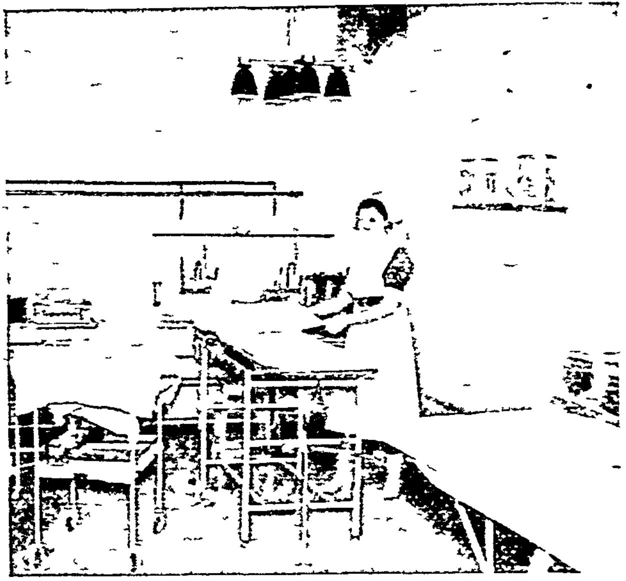
The most severe test of this new model hospital curred early this year One night, when switching on became impossible a large number of casualties were ought to the general hospital One-third of these ere sent on to the store and were admitted within an our Work in the theatre began shortly after midnight 5 minutes after the first admission) and by 9,30 next orning over 70 cases had been dealt with (including veral abdominal wounds) and most of these had been rayed The remainder did not require or were unfit r, urgent surgery The general hospital later became nusable and was evacuated; for a week while repairs ere carried out, the underground hospital remained lly extended and dealt with casualties in the centre of e city Most of the patients admitted to the basement ere evacuated within 24 hours, all of them within days

The X-ray department contains a 4-valve shock-proof nit with tilting couch and screening apparatus It cost 1000 and was provided by the hospitals of the city in the ope that the Ministry of Health would reimburse them or it later It has been suggested that we have been xtravagant and should work with a smaller mobile set do not agree In my hospital we have dealt with over 500 air-raid casualties and experience of them has aught me that efficient radiology is indispensable For fficiency the X-ray room must be easy of access from he theatre and its plant must be capable of continuous se Localisation of foreign bodies and the treatment f fractures is controlled by screening We use very ew films and they are mostly required for dubious bdominal perforations in fat people and for possible enetrations of the skull No light set I am informed ill long survive the amount of screening that we have everal times employed The work is mostly done by he sisters, technicians and students of the radiological epartment, since there are not enough expert radiologists or blitz work Fortunately the technique is simple—ven a physician can learn it in quite a short time



BASEMENT EMERGENCY HOSPITAL

I have read much about the organisation of staffs of ospitals, the writers have been concerned to define xactly the proper functions of a surgeon and a physician n times of stress Most of them seem to miss the ssential point—that the best organisation of any staff that which is best adapted to the capacity of the dividuals that compose it I find it difficult to think f any of my colleagues as a surgeon or a physician ossibly it is the rude air and manners of the provinces hat keep my friends from neatly falling into patterns rthodox and convenient for classification, they main peculiarly, distressingly, and sometimes emphatically individual With material so unruly I have yielded the belief that organisation of staffs should vary from ospital to hospital and that the organisation of a particular hospital should be elastic enough to permit ariation of routine to suit the individuals who are doing



Part of theatre 17 ft below ground

the work at a particular time Matron assures me that the same is true of nurses This digression is not entirely irrelevant to our underground annexe The first essential to the successful working of such a place is a supply of nurses capable of taking the theatre This can only be obtained by rapid and intensive training which involves frequent changes in the staffs of theatres and interferes with their normal slick civilian routine The surgeon who will tolerate this for the larger good is above rubies

I have reached two other conclusions first that the place for a skilled and active surgeon in a blitz is in the theatre There he may well supervise juniors at two or three tables, but he should not leave the theatre except to visit the X-ray room Secondly competent physicians are well able to decide the best order in which cases should go to the theatre and to supervise resuscitation In general they should work with the same surgeons but this should not be a rigid rule

Our aim in a heavy raid is to keep six to eight tables going (three or four in the main hospital and three or four in the underground annexe) as long as casualties require treatment in the theatre We have found that by keeping the surgeons in the theatres, by arranging for X-ray work close by by training larger numbers of nurses for theatre work and by using physicians for sorting and resuscitation we can deal with two or three patients every hour at each table over a long period

CONCLUSION

This experimental underground hospital has shown that it is possible to provide a reserve of theatre accommodation X-ray facilities and beds in large cities at very small capital cost There are no running costs in quiet times since all fire-watching and caretaking are included in that of the main building in which it lies. Daily dusting and cleaning parties only are required In view of the destruction of civilian hospitals our experience may prove to be important, but I want to draw particular attention to another aspect The basement during a blitz has a great appearance of safety, the noise of bombs and barrage is hardly audible and there is no flying glass As a group patients admitted to it recovered more rapidly from shock than did those who went to the parent hospital and the strain on the staff was less and the work was more easily done From an administrative point of view it was convenient to have only one class of case—air-raid casualties—to care for In the parent hospital when rapid evacuation of some wards was necessary there was inevitable confusion and delay in the corridors where the staff tried to sort out by the light of a torch "the perforated gastric done yesterday" from "the abdominal from resuscitation wanted in the theatre" We have been so impressed by the value of the basement that with the approval of the Ministry of Health, another has been prepared with the help of a brewery The firm has gratuitously put at the disposal of the general hospital a large cellar (empty for the sad reason that there is no bottled beer to store in it) 30 ft below ground, with an immensely strong building above it Hot and cold water from artesian wells is laid on and it is centrally heated there is an air-conditioning plant and an automatic electrical pump to raise sewage from a sump A theatre for 4 tables an X-ray room and the other equipment will soon be ready There will be accommodation for seventy beds and there is space for at least another thirty if necessary This cellar will always be available, its main function will be to enable casualties from the densely populated area in which it lies to get effective treatment earlier and to avoid the strain of long ambulance journeys The exact organisation of the staff has not yet been decided This basement differs from the first in being always ready it is not necessary to clear it before it can be used as a hospital In addition to surgical teams and nurses to deal with casualties as occasion requires I would like to try the experiment of staffing it with general practitioners from the neighbourhood (it is about a mile from my hospital) It could then be used as a centre for the ordinary civilian nightwork of the district I would like two general practitioners to be at the basement nightly whose duties would be to go out and visit local sick patients (their own or anybody else's) when called, to bring in and deal with emergencies of civilian practice, to go out with bearers if necessary, to local incidents in air-raids and to help in the work of the basement hospital when air-raid casualties are being treated there The basement would thus serve as a centre for civilian medical service for the local sick, and would help to solve the difficulty of the shortage of doctors in the target areas

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WELFARE OF INDUSTRIAL WORKERS

IN May, 1940 the Home Office called an interdepartmental conference to consider the working hours and welfare of women and young persons in factories and raised the question of their welfare under war conditions outside the factories During the last war outside welfare work was organised by the Ministry of Munitions, and it was suggested that this time the Ministry of Labour and National Service should coordinate the various activities which go to make up outside welfare Shortly afterwards as a war measure the administration of the Factories Act was transferred from the Home Office to the Ministry of Labour A new factory and welfare department was established in the ministry and the factory inspectorate was attached to it to continue its work for safety, health and welfare within the factories In addition a new body of welfare officers was appointed to deal outside the factories with such matters as board and lodging transport, day nurseries and the reception of transferred workers The report of the Chief Inspector of Factories for 1940[1] describes how these and other changes have affected factory conditions

CANTEENS AND FOOD

The war of 1914–18 drew increased attention to the human side of industry Preliminary work in this connexion was undertaken by the factory inspectorate and was afterwards developed on the advice of the Health of Munition Workers Committee In the interval between the two wars factory conditions have improved under the influence of voluntary societies and also under the stimulus of legal orders For example the order requiring mess-rooms in certain trades has resulted in the establishment of canteens in some of the larger factories and welfare orders have brought about improvements in first-aid washing accommodation and seating arrangements In many cases though still a minority the standard of these amenities was better than that legally required and the Chief Inspector's report pays a tribute to those employers who have thus gone farther than the law requires By early in 1940 canteens had been established in 61% of those works engaged in munition-making which employed over 500 people In parts of the south of England the figure as high as 90%, but the percentage fell as one north where the canteen habit, for various reasons, never been popular with the workers To in canteen facilities still further the Factories Ca Order 1940 (No 1993) was made, under which occupier of any factory employing more than 250 and doing work on behalf of the Crown must provi canteen where hot meals can be bought This wa first legal order requiring canteens in factories, althou many previous orders had stipulated that mess roo should be provided A mess-room is a place where mea brought in can be eaten and there is a supply of ho water and arrangements for heating food brought fro home by the worker In a canteen, on the other han meals are sold It was clearly necessary to establi canteens in factories because rationing made it difficu to obtain portable food for a midday meal, and becau (as Napoleon was aware) a man will work better if h is well fed Other factors which called for increased feeding facilities were the extension of night work and the shift systems, the employment of A R P and fire-watching staff, and the destruction by enemy action of the workers' houses and many public restaurants Difficulties arose because materials were controlled and limited, but the Factory Department has had sympathetic help from the departments controlling supplies and no further difficulty is to be anticipated in the erection and equipment of essential canteens Efforts to provide hot meals for workers in the smaller factories have not been so successful The idea of providing joint canteens for a number of small factories met with little response from either the employers or the workers, and the possibility is now being considered of using the community feeding arrangements of the Ministry of Food and the local authorities It is hoped that in many cases food will be sent from the communal centres to the mess rooms of the smaller factories The feeding of dock workers became a pressing problem and the Factory Department was given the job of solving the administrative details The minister issued an order (No 222 of 1941) under which the dock authorities can be required to provide canteens and permanent ones are now bein built to supplement the existing feeding arrangements In the meantime excellent work has been done on th docks by the mobile canteens of the Women's Voluntar Service and other voluntary bodies but the repo points out that the voluntary organisations deal on with emergencies and are not to be used as an exc for not providing permanent canteen facilities

BUILDING SITES

It had never been the custom in peace time to provid much in the way of amenities for workers on building and engineering construction sites, partly because the contractors would normally have ample time to consid their plans and partly because the British navvy wa thought to be able to look after himself But the gr extension of the Government building of new munit factories aerodromes and camps led to difficulties o labour, housing, feeding sanitary accommodation a transport The Ministry had to give earnest conside tion to the conditions at the building camps, and th factory inspectors were given the duty of improvi welfare conditions At the same time the mini announced his intention of making an order und which better organisation on the sites could be leg required The order (No 66) was issued in Janua 1941 and at about the same time a pamphlet[2] contain detailed recommendations to contractors was also pu lished In the early days of the war conditions we bad on many of these sites and on a few they we deplorable mainly because the work had to be carri out at great speed but also because there was usually no-one on the contractors staff whose duty it was to look after the workers Contractors have been ur to appoint welfare officers and where this has been do their services have been of great value The lat reports show that conditions on building sites are rapidly improving

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[1] Cmd 6316 H.M Stationery Office 4d

[2] Factory Form 1892 Memorandum issued by the Ministry of Labour and National Service in connexion with the Buil Operations and Works of Engineering Construction (We and Provisions) Order 1941

MEDICAL, NURSING AND WELFARE SUPERVISION

Previous reference has been made in these columns[3] the order issued in July, 1940, by the Minister of bour empowering the Chief Inspector of Factories to for the appointment of doctors, nurses and welfare pervisors in any factory doing work on behalf of the own. Dr Bridge in his short report refers to the anifold difficulties of developing a comprehensive dical service in factories—for instance, the limited mber of doctors available for and interested in the ork. and the doubts which medical supervision of the orker raises in the minds of the workers, employers d the doctors themselves Some have doubts whether man should be asked to submit to medical examination a doctor other than one of his own choice, others onder whether any need exists for a medical service yond that already provided under National Health nsurance Nevertheless progress has been made and n increasing number of whole- or part-time medical ficers continue to be appointed to factories It has ways been apparent, Dr Bridge says, that unless the odwill and coöperation of both employers and em-loyees is forthcoming the work of a medical officer, hole-time or part-time, is unlikely to be of real value Much still remains to be done, and it may be that in a ew cases use will have to be made of the compulsory owers provided by the order Fully trained nurses re entering industry in increasing numbers and special ourses on the industrial aspects of nursing are being eld by the Royal College of Nursing by arrangement ith the ministry, which in some cases gives financial ssistance to nurses selected for training

PRAISE FROM THE ARGENTINE

THE Argentine Pro-Allies Commission has been distributing as a pamphlet the presidential address given o the Argentine Association of English Culture by Prof Mariano Castex,[4] head of the department of clinical medicine in Buenos Aires University, who received an honorary M D Oxfd last year Professor Castex took as his theme the debt of science and humanity to British medicine, and he gives a concise but perspicacious urvey of the outstanding figures from Linacre to our living Nobel prizemen It is inspiring to read this stimate of our national achievement by a representative of the great Spanish tradition writing from Buenos Aires, which is now, as Cajal points out, the real centre of that radition Professor Castex sees in the English spirit a reative originality based on a will to knowledge, and notes the singular flavour of modernity in Sydenham's work He links the name of Harvey, in whom "every rue doctor must rejoice," with those of Sir James Mackenzie and Sir Thomas Lewis, he connects the urrent interest in biophysics at Buenos Aires with the pioneer work of Stephen Hales He attributes the rise f preventive medicine to eighteenth-century England, and sees in Jenner the triumphant vindicator of English methods and perseverance He points out Britain's re-eminent contributions in the last century to physi-logy, cardiology, tropical medicine and surgery astex praises the men as well as their work, quoting ith warm approval Lister's precept "Put yourself in he patient's place" Coming to our own day, he con-ludes that the twentieth century exceeds its pre-ecessors in brilliance "British scientists are endowed ith a spirit of asceticism and high moral purpose, so hat their outstanding achievements in practice and esearch have been made in an atmosphere of idealism, bnegation and humanity" He concludes that our uccessful union of tradition and progress makes British edicine worthy of the virtues which he attributes to us as nation, a list too shy-making to repeat in plain English

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[3] *Lancet* 1940 2 233

[4] Castex M R *Prensa med argent* 1941, 28 no 2

WINCHESTER AND DISTRICT MILITARY MEDICAL SOCIETY —A meeting of this society will be held at the Royal Victoria Hospital, Netley, on Monday, Oct 27, at 3 P M, when urgeon Lieut Commander John Bunyan, L D S will give an address on the treatment of burns and wounds by the envelope method

In England Now

A Running Commentary by Peripatetic Correspondents

As I follow my molluscan life, mow the lawn or sit in surgeries I often think what tales they'll have to tell those lads from whom our thoughts are rarely absent—*tales of Tobruk, epics from Crete and the Epirus sagas* of the skies Then I'm not so sure I remember going several times to an Armistice Day tea in an English village given by the local lady, Lady Pouncey It was an excellent meal and the Hodges threw out from time to time cheerful remarks of *chaff or crops or cricket—all* current affairs Then Lady Pouncey would sail along with cakes or sandwiches "Talking of the good old times, boys? That's right Those were the days" She was right, they were for her Her husband had been made a knight for doing something to munitions and she had had ample scope for her bossy benevolence As she passed along with her cakes and cheery remarks an awful silence fell on those wooden benches Those memories had been packed up and she was tearing the brown paper off the parcel "Dear Liz, don't let the children forget me We're orlrite so far Kiss baby We move up tomorrow" The captions were simple enough, but a wise censor had suppressed the vivid and squalid film Yes great tales will be told but probably second-hand by some house-loving Homer, who'll catch the glamour but not the lice, feel the thrill without the fear, supply sustained suspense in many chapters ignorant of its raw material, the twisting of souls the carking awl of tedium, the crude smell of butchered men They'll probably give the book as a school prize—"An absolute classic, my dear boy"

* * *

When our phlebotomy team is invited to visit the manor house we are nearly always assured of willing subjects Sometimes we are billed as being 'at home" to volunteers "Bleeding 7 30–10 P M Refreshments in the gun-room afterwards" However, in a small rural community one has to be sure that those who attend are genuine volunteers It may be very difficult to refuse a pressing invitation from the vicar's wife to take part in the Upper Woople and Lesser Slugsbury Combined Blood-transfusion Drive, and the number of press-ganged victims may be quite noticeable A brief analysis of the facies of the local organiser will usually give the clue as to what to expect Once we were received in a lovely old house situated on top of a hill overlooking a valley Our hostess was elderly and too frail for her blood to be of service to us She had therefore begged that she might entertain the local donors and help the doctors and nurses In the drawing-room only one couch was available for our use early Victorian in design Spartan in its discomfort and very low on the ground, phlebotomy was slow going and backbreaking The dining-room was set aside for coffee and home-made oatcakes As we knelt down to insert the needle a Rockingham unicorn grinned down on us from a tallboy and as the list progressed and the twilight of an early spring evening advanced candles were lit and held near us by the frail old lady As the evening wore on the unicorn's gaze seemed to become less fixed and he, like us betrayed ingravescent somnolence The night was pitchblack and stormy as we carried away our crates of blood to the car by the aid of our hostess's hurricane lamp Within four days a neighbouring town suffered a severe raid, and we were glad the blood was there

Bleeding on the lawn is a recent innovation with us We discussed the pros and cons around the tea-table and decided that the dangers of chill, sunstroke and spore-bearing organisms were outweighed by the bactericidal advantages of sunlight, and the heartening effects of fresh air and the song of the skylark. The skylark did in fact prove most helpful and when he went off duty a small brown owl elected to take his place and see the list through An unforeseen complication was a hæmatoma at the site of venepuncture, due to an aggressive horsefly who alighted maliciously on the dorsum of the hand steadying the needle But there is undoubtedly much to be said for bleeding out of doors, and we have yet to see a volunteer so bled turn faint.

The value of music in phlebotomy was later investigated at a barracks, as the logical development of the important part played by the skylark Half the ward was set aside for bleeding operations, the rest being occupied by Service sick and convalescents The Forces programme was on and we were able to compare the relative influence of "Salut d'Amour" and "The Washington Post" The rate of flow was distinctly *rubato* with the former, but it came along nicely with the latter, while the "Boston Two-Step" caused the bottles to fill at an almost alarming rate The ideal tempo for a blut-motif is *allegro ma non troppo*, but the temperamentally difficult vein of the stout middle-aged blonde donor reacts well to *allegretto grazioso* The thin, small, fussy and good-natured elderly housewife is quite at home with *vivace* and she will fill her bottle faster than any But on no account should the hypertensive general be bled to *allegro con fuoco* while anything in the nature of a *galop de concert* should be shunned, for this gentleman's time is strictly *lento*, or at the most *allegretto con poco rallentando* One advantage of music-while-you-bleed is that it becomes wellnigh impossible for the donor to hear his blood pouring into the bottle, a sound usually not well tolerated It saves the doctor from having to keep up a continuous conversation and from the monotony of reproducing parrot-wise, in answer to questions, certain elementary principles of immunology not normally comprehendable by the bleeding public (this is not a disrespectful remark)

Our donors at the barracks had all given up their off-duty time to make their donation Moreover, practically all the convalescents, who had been nonchalantly eating boiled eggs during the proceedings (pre-June, 1941, you will note), offered themselves as volunteers On several of our country excursions we have been assisted by rural district ambulance teams who have supported their stretchers on kitchen or other (on one occasion they were Adam) chairs on the lawn The able officer-in-charge, the well-waxed discipline of whose moustache was reflected in the alertness and efficiency of his team, sent his pretty stretcher-bearers to help us Mary, a lithe, blonde milkmaid from a neighbouring farm, brought her three-legged stool with her and squatted down beside the donor holding the bottle in her lap Early on in the transfusion campaign we had established a bond of sympathy with the dairyman, the provision of aluminium crates for transport being an important link The advent of Mary and her little stool seemed to complete the analogy between the milk and the blood businesses, and we decided to anticipate trouble and institute a Blood Marketing Board for the fairer distribution of plasma in the various hospitals in the area At one of our out-of-door parties we noticed a curious form of local gossip On this occasion the blood, after collection, had been placed in the shade under a beech hedge When the number of completed bottles had exceeded twenty we noticed the late comers and some who "didn't think they would this time but would like to be tested" filing past the bottles on all fours "Mrs S didn't give much, did she? I thought she hadn't it in her" "Oh and fancy, here's Mrs B's, her with all them rheumatics and who's no sooner out of one quinsey than she's into another, I'd never 'ave thought they'd have taken off her They'll be taking Ted's next" "I wouldn't like to have some of this blood put into me"

* * *

The late Bishop Welldon, when Metropolitan of India, knew a man whose three professions conferred on him the title of "the reverend doctor colonel" Moreover, it is said that the matrons of some hospitals are today preferring to call themselves "lady superintendents" And who has forgotten Mr Jack Warner's "bunger-up of rat-holes"? The first and the last tell what a man's job is, the second is an example of the petty pride which makes everyone love a title, be he peer, churchwarden or acting unpaid lance-corporal Both in the primitive tribal society of darkest Africa and in the more backward society of blacked-out Europe men seek for a label that they may stand apart from their fellows and say, "Thank God I am not as others" And a very good thing it is How drab would be life without a Deputy Chairman of Ways and Means, how dull without a Master of Foxhounds

We are taught in medicine to treat the patient, not the disease, and our teachers beg us to have always before us the human relationship between patient and relationship of privilege shared, perhaps, only by men To the patient his doctor is his own au whom he places his trust In this relationship the no officialdom The patient is an individual, so is doctor The average man, particularly of the class, has a healthy distrust of anyone "authorities" He expects his doctor to be *his* and different from the man who reads the meter, landlord's rent collector, or the clerk at the exchange, all of whom are officials Now wherever state takes a hand it brings its own jargon In medic it brings health officers, tuberculosis officers, medi officers grades I and II, group officers, sector offic officers of all sorts If only because of this unimagina terminology, gone is that relationship between patient doctor, it is replaced by that between citizen and offic

To be justified, a title must be well chosen and suit affixed Why cannot the state and municipal authori have plain doctors physicians and surgeons? The "doctor" is honourable enough, having the author learning and the sanction of history, though presum not the approval of the Ministry of Health or the To Hall "Physician" and "surgeon" mean what th say It is no distinction for a house man to be called medical officer, even if he is grade A, like an unobtainab egg Anyway, he will soon be in the only place where the term is justified—with the forces

* * *

The sartorial habits of our students in their new rural surroundings are indeed striking Flannel trousers and sports jackets have ascended the fashion scale at a phenomenal speed In the prewar days (already being referred to affectionately as the "old days") these articles, while worn extensively in the preclinical period, were considered démodé in the clinical period, except possibly on Saturday mornings Now they are the acme of fashion, while some of the outfits worn have to be seen to be believed Shorts are extremely popular, sandals are considered rather smart, slippers are often worn if day should be fine shirts are as varied in hue as th dragon-flies which flourish in our neighbourhood whil ties have almost disappeared The return of the blaz would warm the hearts of all good Edwardians C duroy trousers spring up like mushrooms overnight, I am dreading the atmosphere of my laboratory in th coming winter when, with every door and window seal in an attempt to maintain a reasonable temperatu the room is filled with a mob of corduroy embellished occupants fresh from a damp journey I only trust th "stinks" may not become the medical students', a well as the schoolboys', synonym for my subject H of course, do not exist—a reform which has my compl support Since I was evacuated I have never sported not even on my weekly visits to town What the effe of clothes rationing on all this will be remains to be se

* * *

To me it is always sad to read, as I did not long a of a great circus closing down Difficulties in black out the Big Top and in getting animal feeding st were blamed Musing disconsolately upon the f reaching effects of war I was a little comforted to ob a notice hung in the front hall of my *home* which as follows

A CIRCUS WILL BE HELD AT 3 A M ON WEDNESDAY ON T PEICE OF GROUND IN FRONT OF THE SCULERY WINDO ADMISSION CHILDREN A PENNY, GROWN UPS TWOPEN PERSONS UNDER 5 FREE THE MAJORITY OF THE MONEY WI BE SENT TO THE HOSPITAL ANYONE CAN COME

There were six performers, four human and th others nearly so, if I may say as much without giv offence to the patient pony and elderly neuter go who had a good deal to put up with and cooperated the most friendly fashion There were seven turn all, and, good as the acrobats and trapeze artists were, I personally liked best the pogo horse whose brown contrasted strikingly with his greenish tinted b curiously reminiscent of a groundsheet I also en the undressing tramp and the clowns and their tr with animals As to what is to happen to the minor of the money contributed by a large and enthusi audience I have not yet dared to inquire The question has given trouble enough in the past few

Parliament

Civil Defence Progress

the House of Lords on Oct 15 the Bishop of CHESTER asked the Government what steps had been n against the coming winter to improve our air-raid ters, to give immediate help to the homeless and to vide accommodation for the aged and infirm in ibed areas Lord SNELL, who replied, agreed that as the responsibility of the Government to meet the ple's heroism with foresight and preparation and it ild be foolish to say that everything was satisfactory, it was some comfort that about 20 million people ld now be sheltered The aim of the Government to provide shelters at or near their homes for all h an income of less than about £350 a year Some ,000 Morrison table shelters had been allocated in nerable areas and 20,000 additional tables were being de each week Deep shelters were being developed ough the London tube system, and last June a nphlet was issued laying down standards of sanitation ating, lighting, ventilation, bunking and cleansing ntrol and supervision based on the recommenda- ns of Lord Horder's committee, and on London's actical experience of last winter Further recommen- tions about amenities in shelters by the Horder com- ttee had been dealt with by a new Defence Regulation ving powers to the regional commissioner to undertake ch matters as undesirable people in shelters and rminous bedding In England and Wales, Lord Snell ntinued, 11,500 first-line rest centres had been estab- hed with accommodation for over a million people ere was accommodation for a further million in second- e centres By July of this year 2167 shelters in London d been supplied with canteens, at which 100,000 people re served with food Mobile canteens were used erever possible The Ministry of Food, through the cal authorities, had emergency stocks of food in the fferent localities The Government realised the need r tackling the question of providing safety for the aged d infirm They present a very human problem, but tural reluctance to go and live among strange people ten conflicted with the needs of the nation

Service Dependants

In the debate on Oct 16 on the new scheme for allow- ces to service men's dependants members made it ar that what the Government described as a White per was more like an ungenerous tangle of red tape, d not even Sir WALTER WOMERSLEY's sympathetic position could reconcile the House to it Indeed it is felt that the Service departments had left him with a ge and unhealthy baby to hold, suffering—Mr LLACHER suggested—from malnutrition The most portant change in the new system is that a minimum ndard for *maintenance*, after providing for rent and her commitments, has now been fixed For an adult e figure is 16*s*, and two children under school-leaving e count as one unit The maximum grant that can made has been raised from £2 to £3 Where there was sickness in a Service man's family allowance up to £10 will be made, and if this does not ver the position Sir Walter said that he would ask authority to give more Amounts of £2 and below ll not be taken into account Where there is a death the family a payment of £7 10*s* will be made The esent cost of war service grants is about £5,500,000 per num, and it is estimated that the new concessions will st another £6,000,000, while extra publicity will probably sult in extra claims which might be expected to amount some £2,000,000, making a total of £13,500,000 The Treasury had vetoed the possibility of a flat rate grounds of expense, but the House was riled that se concessions should still be based on what Mr OBBII described as the mean contemptuous means ts, and Dr HADEN GUEST voiced a general fear that practice the scheme was likely to prove neither efficient r economical The House agreed that adequate pay d allowances would spare both personal feelings and the bour and paper involved in sifting innumerable claims

Supplies of liquid milk are made available for operational A F crews when recommended by station medical officers r ARCHIBALD SINCLAIR replying to Sir ROBERT GOWER.)

QUESTION TIME

Nurses' Salaries

Replying to Miss M LLOYD GEORGE, the MINISTER OF HEALTH stated that he had appointed Lord Rushcliffe as chairman of the committee which he had formed to draw up, as soon as possible, agreed scales of salaries and emoluments for state-registered nurses employed in England and Wales in hospitals and in the public health services, including the service of district nursing, and for student nurses in hospitals approved as training schools by the General Nursing Council The committee will consist of two panels, one representing employers and the other representing employees, of equal numbers Mr Brown said he hoped to announce the names of the committee in about a fortnight Miss I WARD Will the committee have powers to make recommendations with regard to nurses employed in industry —Mr BROWN No It would not, in my view, be appropriate to refer to this committee the salaries of this class of nurse

Mr T JOHNSTON also announced that he is setting up a similar committee for Scotland under the chairmanship of Lord Craigmyle

Alien Doctors

Sir HENRY MORRIS JONES asked the Minister how many friendly alien doctors were now employed in their own work in our war effort, giving the different spheres of employment, whether any were in our services, whether any further avenue of war service was being offered to them, and how many alien doctors of all nationalities, except the United States of America, were still available —Mr BROWN replied The number of alien doctors registered under the Medical Register (Temporary Registration) Orders, 1941, by virtue of employment in approved services is 470, apart from American doctors who have been dealt with under the order of 1940 Of the total of 470, 385 are employed in hospitals, 33 in public health appointments, and 52 as ships' surgeons or in other miscellaneous posts In addition 24 have received commissions in our Services, apart from those serving in Allied Forces The order made on Sept 23 last provides an avenue of service in general practice by enabling alien doctors to be registered by virtue of employment as assistants to doctors already on the permanent Medical Register The number of doctors still available is approximately 500, including those who have only recently become eligible for registration under the amended Defence Regulation 32 B

Treatment for Soldiers' Families

In answer to Major HADEN GUEST, Captain H D R MARGESSON said that the extension to the families of soldiers enlisted since the war of the facilities for medical and dental treatment at present enjoyed by the families of pre war regular soldiers or reservists now serving would involve an enormous increase in the numbers of Army medical and dental officers which could only be effected at the expense of the civil medical services Moreover, the families of pre war regular soldiers are not eligible for medical attendance in their homes unless they live within a mile of certain fixed points, and, if the concession were extended to the families of war time soldiers, its value would therefore vary according to the family's domicile

Grass as a Source of Protein

Dr SUMMERSKILL asked the parliamentary secretary to the Ministry of Food whether he proposed to use grass as a source of protein —Major LLOYD GEORGE replied Research work on the production of edible protein from young grass is proceeding There are however considerable technical difficulties to be overcome before any large scale production can be contemplated A sort of greyish material looking like cheese had been discovered, but only on an experimental scale

War-time Nurseries

In reply to a question Mr BROWN said that 156 maternity and child welfare authorities have submitted plans for war-time nurseries, 221 nurseries have now been approved. Of these 163 were in operation at the end of September It is not possible to say the exact number of children in attendance at these nurseries but the nurseries approved provide places for about 4250 children

Hygiene in Air-raid Shelters

In answer to a question Mr BROWN said substantial improvements have been made in dormitory air raid shelters throughout the country Progress is continuing but shortage of materials and labour has unfortunately prevented complete provision to the standards I have laid down Canteens are available in over 2000 shelters in the London region Schemes have been agreed with 90 local authorities in provincial vulnerable areas and many canteens have already been provided In the London region 257 medical aid posts have been set up, and over 100 in the provinces Plans have been made for setting up further posts should the dormitory shelter population increase

Increase of Tuberculosis

Mr F MESSER asked the Minister of Health what had been the percentage increase in pulmonary tuberculosis during the war, in what age groups the increase was most marked, and if it was proposed to take any special steps to deal with this problem —Mr BROWN replied On the basis of provisional mortality figures for the years 1939 and 1940, the rate in England and Wales for the population as a was 9 7% higher than in 1939, the highest rate among women between the ages of 15 and 25 In the quarter of 1941 there was, however, a reduction of 7 the population as a whole, and of 4% for women the ages of 15 and 25 With the cooperation of the Research Council I have arranged for an expert inve into the causes of increase Everything possible is being to maintain the tuberculosis service

Milk Scheme in Scotland

The total number of beneficiaries under the National Scheme for Scotland on Sept 27 was 358,200 The annual cost of the scheme in Scotland is estimat £1,540,000, including an allowance for admini expenses (Major LLOYD GEORGE replying to M BOOTHBY)

Letters to the Editor

ANÆSTHETIST AND SURGEON

SIR,—The position of the anæsthetist in the scheme of things surgical has altered sensibly during the past few years He is no longer to be regarded as a pure technician whose work begins and ends with the administration of the anæsthetic during the operation Enthusiasts like Hewitt, Shipway, Boyle and Hewer gradually raised the standard of anæsthesia, until, with the introduction of a high-standard diploma in anæsthetics, it finally achieved the status of a specialty The anæsthetist of today should actively embrace in his field of work problems of pre- and post-anæsthetic care that are complementary to those of the surgeon The latter should feel, and it must be granted that many surgeons want to feel, that in the anæsthetist he has a pillar of support, and a colleague whose opinion he will seek and value

The nature of the operation may be decided by the report of the anæsthetist on the patient's pre-anæsthetic condition, while after the operation he is ready with his experience in the administration and handling of gases, to help and advise with such things as oxygen therapy In the theatre, without doubt, the surgeon must be the captain But the anæsthetist is his chief engineer, supreme in his own sphere, whose reports are vital if the ship is to be brought safely to port During the operation, the anæsthetist must make himself responsible, not only for the administration of the anæsthetic and the observation of the patient, but also for the administration of resuscitative measures like transfusion This has been recently stressed by Jarman and Evans in a discussion of factors which make for safety in the operative treatment of carcinoma of the rectum (*Proc R Soc Med* 1941, 34, 711) They insist on the control of the blood-pressure being in the hands of the anæsthetist

If however the anæsthetist is to take his place in the surgical team, he must be a clinician as well as an applied physiologist Hospital authorities should realise the necessity for the anæsthetist having sufficient time away from the theatre so that, like his surgical colleagues, he can visit his patients both before and after the operation All too often, anæsthetists, especially those in full-time service, spend all their working time in the operating theatre, a state of affairs due largely to the lack of junior assistants Were more junior posts created, the harassed senior could spend more time in the wards—to the advantage of the patient, himself, and his specialty—and new recruits to a most important field of work would be given a chance to gain experience

Dartford, Kent W W MUSHIN

MEDICAL ASPECTS OF BOXING

SIR,—I was very interested in your review of Dr Jokl's book and the correspondence ensuing from his deductions As a boxer with experience of over 52 contests, and the good fortune to win many titles in the ring, mostly by knock-outs, I would like to express my own view My contact with boxers, both amateur and professional, has extended over 20 years, and I must honestly say that I have never come across the direct injuries or sequelæ described by Dr Jokl I realise, of course, that Dr Jokl has made a wide-world study of this subject, and do not doubt that injuries such as he has described occur if the contestants are unevenly matched, untr neglect to procure a medical examination before a test, and above all are not under competent instru or medical supervision The only direct injuries I h encountered have been broken nasal septums, abra of the skin and cauliflower ears, while black eyes lo teeth and laceration of the eyebrows were very commo Sprains, especially of the ligaments of the hands, a numerous but I have never seen a Bennett's fractu in either a professional or an amateur boxer Fouls such as kidney punches, wrestling hitting below the belt, and so on, are well controlled by competent refere and therefore do not cause much injury Concussion delivered by the closed glove or by the occiput hitting the ring is only momentary and I have never seen it leave any after effects, except in a few cases a brief headache I have been knocked out myself and knocked down on many occasions with none of the results or sequelæ described by Dr Jokl Blows on the abdomen above the belt, or over the heart, do cause a momentary los of consciousness, but the effects in a properly traine individual are negligible I have never seen any accrue from body blows as approved by a referee, althou I agree that loss of consciousness is due to inhibition the heart for a few seconds

The sequelæ that Dr Jokl mentions may indeed o when the fight has not been under proper contr medical supervision, and in those boxers who ag medical advice, allow themselves to be used as chop blocks Punch-drunkenness is a very rare condi found in second-rate sparring partners Some of th have a history of syphilitic disease which accentua the symptoms I have never seen punch drunken in first-class amateur or professional boxers In cranial hæmorrhage due to direct injury by the g is also very rare, and I have never seen any nerv lesion such as peripheral or central paralysis, ca by a punch Injuries to the superficial tissues of t eye can stop a boxing career, but that is all, they h no permanent effect A deflected nasal septum wh has not been treated may in later life lead to sinu in tion, while injuries to the ligaments of the hand c cause arthritic changes Boxers who have had a l boxing career and have not consulted a doctor develop retinal hæmorrhage or even a detached r but these cases again are exceptional Pulmo tuberculosis is another sequel of boxing and one I w like to stress I have seen many boxers in their p and after the close of their careers become victi galloping pulmonary tuberculosis If only they been screened in the early stages (or indeed in some c in the later stages) much could have been done for th I have noticed in some cases that the tubercul infection was latent until exercise, the dust of the with its attendant grit, and perhaps the trauma of gloves on the chest, have sent them into gallop tuberculosis For this reason I have always ad boxers with a history of T B in their family or sympt of bronchial trouble to be X rayed before participat in this sport, and have advocated training and spa in the open away from a dusty gym

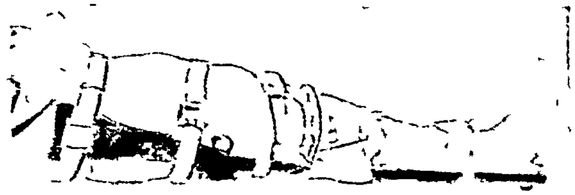
From my experience and from Dr Jokl's finding think that given proper medical supervision, prope matched opponents, and control under competent refe and instructors, boxing would lose any stigma whic attached to it and much of the æsthetic antagonism h many people undoubtedly have against boxing d be mitigated I cannot agree with Dr Jokl that a game that should be barred from the physical ation of the young men of the nation and armed s Fighting is man s natural heritage and under rules of true sportsmanship the noble art instead of ging out the bad qualities brings out the good, teaching us to give and take to stand on our own feet to play game and above all to appreciate the ups and downs ur fellow men Dr Jokl has given us much food for ught but he has painted only one side of the picture ncy that if he had given full weight to the safeguards ch now exist (and which can easily be intensified in Services if necessary) his strictures on the noble art ıld have been much less severe I have fought some is countrymen—good boxers they were too—and I feel e that those of them who are medical men in South ıca will agree with me that

Boxing is a manly game
'Tis Britain s recreation,
By boxing we shall raise our fame
Above every other nation

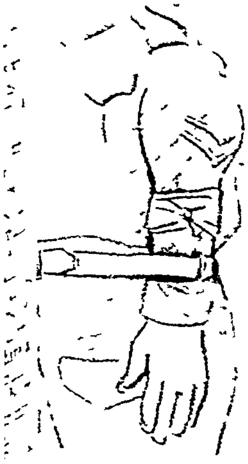
unbridge Wells E F St John Lyburn

HOME GUARD PROBLEMS

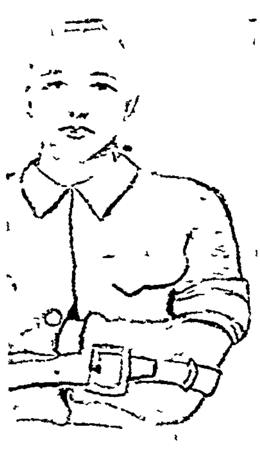
ɔIR —To what extent medical equipment should be ued to the Home Guard is a problem which affects al areas more than urban ones, for the reasons already en by Mr Lawrence Abel In a rural area, such as medical equipment must be dispersed But should ask either the War Office or the Canadian Red Cross supply our needs ? The E M S is now an established ttress of our social structure It already shares with litary hospitals the responsibility for giving institunal treatment to Home Guard as well as Service ıalties It has undertaken the task of decentralising spital facilities and it could therefore correlate the rochial problem of the Home Guard casualty scheme ch its own Costing the Government sixteen million unds a year the E M S might reasonably be made ponsible for the expenditure of the other half million unds which Mr Lawrence Abel assures us would be ent once only—to equip 50,000 posts Lastly, the M S has a personnel of 1700 full-time doctors, colleagues whom harassed battalion M O s should find more approachable than the nebulous authors of incoherent "A C I s"



llinting of fractured femur using sound leg, rifle two belts two ield dressings two anklets handkerchief and boot laces tied ogether

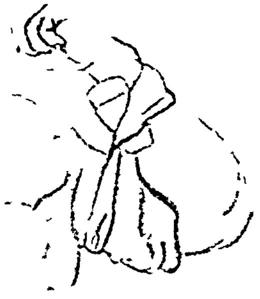


Fracture at elbow



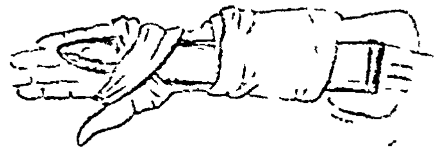
Compound fracture of humerus

Most correspondents have been concerned with the inadequacies of medical equipment As the M O of a well-dressed city battalion may I stress with diagrams the usefulness of the equipment which every volunteer carries on his person ? His leather belt and anklets squeak when he is paratrapping but they make excellent first-aid equipment when he is a casualty , as also do his rifle, bayonet-scabbard bootlaces, haversack-straps and pocket handkerchief If necessary, this equipment can be duplicated by the "pal" attending the casualty In addition, Mr Lawrence Abel says that each man should carry an 18 ft by 3 in roller bandage, and a thick piece of cord attached to his mackintosh-cape ground-sheet As the official issue of the latter is one to four volunteers, and the actual issue considerably less than that, the second part of his suggestion is not universally applicable Moreover when it is remembered that the casualty and his pal between them carry 16 ft of bandage attached to their first-field dressings is the additional roller bandage necessary ? My own fancy is for a triangular bandage I have advised every volunteer to buy one and to carry it in a pocket of his haversack—and nowhere else The most urgent use for it would be as a comparatively harmless tourniquet



Hæmorrhage from forearm controlled by rolled sleeve and field dressing tied as figure of eight

My own special problem has been the difficulties of instruction Like the War Office itself platoon commanders are not unnaturally obsessed with the importance of guns, and combatants are not encouraged to learn the implications of my motto *festina lenter* and the gentle art of splinting fractures and minimising shock In a city supplied with full-time A R P first-aid parties, it is not easy to convince Home Guards that thorough knowledge of a little first-aid is the duty of every fighting man A recent field exercise has indicated that demonstration of first-aid to a company en masse is a waste of time In order to learn the "Woodford and Wanstead" method of blanketing for example, men must themselves handle the stretcher and fold the blankets They must practise it not once but several times This can be done only by individual instruction and therefore cannot be attempted by the battalion M O Each company commander has therefore appointed a medical orderly whose combatant duties are nominal, and who has since been trained to teach the elementary first-aid and stretcher drill required The medical orderlies have been given the rank of corporal and are responsible to the battalion M O , with whom they constitute a committee which meets once a fortnight In each company a rota for instruction has been arranged so that each section (12 to 15 men) will in turn be taught by the company medical orderly on the weekly "platoon night" When practised in their "stretcher-bearer" duties, men are inspected in squads of four by the M O , who tests their knowledge of the following syllabus —



Splinting of fractured forearm using bayonet scabbard, handkerchief and field dressing

The control of bleeding and the dangers of a tourniquet The handling of fractures, and the use which can be made of first field dressings and personal equipment Carrying blankets in the closed stretcher Blanketing of casualties and the importance of warmth Stretcher drill and the importance of gentleness

The proficient volunteers are given "S.B" brassards [illegible] company commanders of materials and labour has unfortunately prevented complete provision to the standards I have laid down   Canteens are available in over 2000 shelters in the London region   Schemes have been agreed with 90 local authorities in provincial vulnerable areas and many canteens have already been provided   In the London region 257 medical aid posts have been set up, and over 100 in the provinces   Plans have been made for setting up further posts should the dormitory shelter population increase

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Sir,—The position of the anæsthetist in the scheme of things surgical has altered sensibly during the past few years   He is no longer to be regarded as a pure technician whose work begins and ends with the administration of the anæsthetic during the operation   Enthusiasts like Hewitt, Shipway, Boyle and Hewer gradually raised the standard of anæsthesia, until, with the introduction of a high-standard diploma in anæsthetics, it finally achieved the status of a specialty   The anæsthetist of today should actively embrace in his field of work problems of pre- and post-anæsthetic care that are complementary to those of the surgeon   The latter should feel, and it must be granted that many surgeons want to feel, that in the anæsthetist he has a pillar of support, and a colleague whose opinion he will seek and value

The nature of the operation may be decided by the report of the anæsthetist on the patient's pre-anæsthetic condition, while after the operation he is ready with his experience in the administration and handling of gases, to help and advise with such things as oxygen therapy   In the theatre, without doubt, the surgeon must be the captain   But the anæsthetist is his chief engineer, supreme in his own sphere, whose reports are vital if the ship is to be brought safely to port   During the operation, the anæsthetist must make himself responsible, not only for the administration of the anæsthetic and the observation of the patient, but also for the administration of resuscitative measures like transfusion   This has been recently stressed by Jarman and Evans in a discussion of factors which make for safety in the operative treatment of carcinoma of the rectum (*Proc R Soc Med* 1941, 34, 711)   They insist on the control of the blood-pressure being in the hands of the anæsthetist

If however the anæsthetist is to take his place in the surgical team, he must be a clinician as well as an applied physiologist   Hospital authorities should realise the necessity for the anæsthetist having sufficient time away from the theatre so that, like his surgical colleagues, he can visit his patients both before and after the operation   All too often, anæsthetists, especially those in full-time service, spend all their working time in the operating theatre, a state of affairs due largely to the lack of junior assistants   Were more junior posts created, the harassed senior could spend more time in the wards—to the advantage of the patient, himself, and his specialty—and new recruits to a most important field of work would be given a chance to gain experience

Dartford, Kent W W Mushin

MEDICAL ASPECTS OF BOXING

Sir,—I was very interested in your review of Dr Jokl's book and the correspondence ensuing from his deductions   As a boxer with experience of over 52 contests, and the good fortune to win many titles in the ring, mostly by knock-outs, I would like to express my own view   My contact with boxers, both amateur and professional, has extended over 20 years, and I must honestly say that I have never come across the direct injuries or sequelæ described by Dr Jokl   I realise, of course, that Dr Jokl has made a wide-world study of this subject, and do not doubt that injuries such as he has described occur if the contestants are unevenly matched, untra neglect to procure a medical examination before a c test, and above all are not under competent instru or medical supervision   The only direct injuries I h encountered have been broken nasal septums, abras of the skin and cauliflower ears, while black eyes, lo teeth and laceration of the eyebrows were very commo Sprains, especially of the ligaments of the hands, numerous but I have never seen a Bennett's fract in either a professional or an amateur boxer   Fouls such as kidney punches, wrestling hitting below belt, and so on, are well controlled by competent referees and therefore do not cause much injury   Concussion delivered by the closed glove or by the occiput hitting the ring is only momentary and I have never seen it leave any after effects, except in a few cases a brief headache I have been knocked out myself and knocked down on many occasions with none of the results or sequelæ described by Dr Jokl   Blows on the abdomen above the belt, or over the heart, do cause a momentary los of consciousness, but the effects in a properly trained individual are negligible   I have never seen any accrue from body blows as approved by a referee, alth I agree that loss of consciousness is due to inhibition the heart for a few seconds

The sequelæ that Dr Jokl mentions may indeed c when the fight has not been under proper contr medical supervision, and in those boxers who, ag medical advice, allow themselves to be used as chop blocks   Punch-drunkenness is a very rare condit found in second-rate sparring partners   Some of t have a history of syphilitic disease which accent the symptoms   I have never seen punch drunker in first-class amateur or professional boxers   I cranial hæmorrhage due to direct injury by the d is also very rare, and I have never seen any nerv lesion, such as peripheral or central paralysis, ca by a punch   Injuries to the superficial tissues of t eye can stop a boxing career, but that is all, they h no permanent effect   A deflected nasal septum w has not been treated may in later life lead to sinu tion, while injuries to the ligaments of the hand cause arthritic changes   Boxers who have had a boxing career and have not consulted a doctor develop retinal hæmorrhage or even a detached r but these cases again are exceptional   Pulm tuberculosis is another sequel of boxing and one I w like to stress   I have seen many boxers in their and after the close of their careers become victi galloping pulmonary tuberculosis   If only they been screened in the early stages (or indeed in some in the later stages) much could have been done for t I have noticed in some cases that the tuberc infection was latent until exercise, the dust of the with its attendant grit, and perhaps the trauma of gloves on the chest, have sent them into gall tuberculosis   For this reason I have always ad boxers with a history of T B in their family or symp of bronchial trouble to be X rayed before partici in this sport, and have advocated training and sp in the open away from a dusty gym

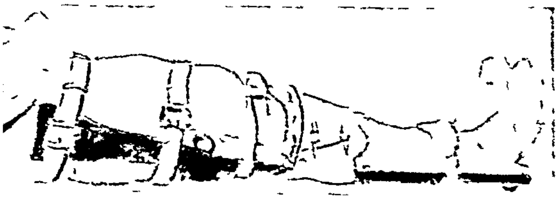
From my experience and from Dr Jokl's findings think that given proper medical supervision, pro matched opponents, and control under competent ref and instructors, boxing would lose which ttached to it and much of the æsthetic antagonism many people undoubtedly have against boxing be mitigated I cannot agree with Dr Jokl that a game that should be barred from the physical tion of the young men of the nation and armed Fighting is man's natural heritage and under iles of true sportsmanship the noble art instead of ing out the bad qualities brings out the good, teachs to give and take to stand on our own feet to play ame and above all to appreciate the ups and downs r fellow men Dr Jokl has given us much food for ght, but he has painted only one side of the picture cy that if he had given full weight to the safeguards h now exist (and which can easily be intensified in Services if necessary) his strictures on the noble art d have been much less severe I have fought some s countrymen—good boxers they were too—and I feel that those of them who are medical men in South ca will agree with me that

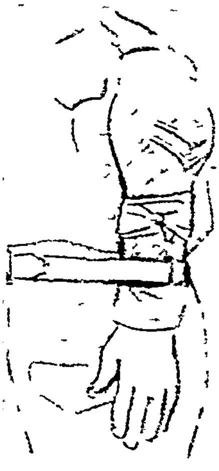
Boxing is a manly game,
 'Tis Britain's recreation,
By boxing we shall raise our fame
 Above every other nation

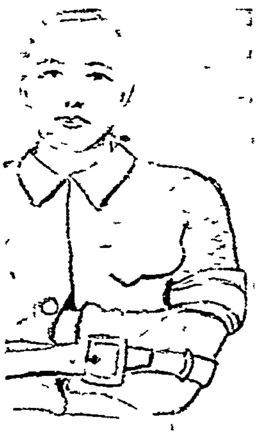
inbridge Wells   E F ST JOHN LYBURN.

HOME GUARD PROBLEMS

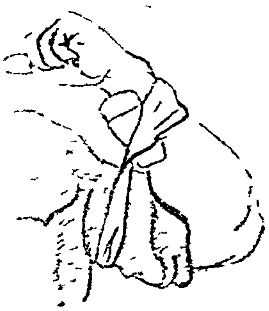
IR —To what extent medical equipment should be ed to the Home Guard is a problem which affects l areas more than urban ones, for the reasons already n by Mr Lawrence Abel In a rural area such as medical equipment must be dispersed But should ısk either the War Office or the Canadian Red Cross upply our needs ? The E M S is now an established tress of our social structure It already shares with itary hospitals the responsibility for giving institutial treatment to Home Guard as well as Service ualties It has undertaken the task of decentralising pital facilities and it could therefore correlate the ochial problem of the Home Guard casualty scheme h its own Costing the Government sixteen million inds a year the E M S might reasonably be made ponsible for the expenditure of the other half million inds which Mr Lawrence Abel assures us would be nt once only—to equip 50,000 posts Lastly, the M S has a personnel of 1700 full-time doctors, colleagues whom harassed battalion M O s should find more approachable than the nebulous authors of incoherent "A C I s"


nting of fractured femur using sound leg, rifle two belts, two eld dressings, two anklets, handkerchief, and boot-laces tied gether

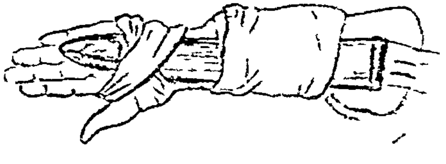

Fracture at elbow


Compound fracture of humerus

Most correspondents have been concerned with the inadequacies of medical equipment As the M O of a well-dressed city battalion may I stress with diagrams the usefulness of the equipment which every volunteer carries on his person ? His leather belt and anklets squeak when he is paratrapping but they make excellent first-aid equipment when he is a casualty, as also do his rifle, bayonet-scabbard boot-laces, haversack-straps and pocket handkerchief If necessary, this equipment can be duplicated by the "pal" attending the casualty In addition, Mr Lawrence Abel says that each man should carry an 18 ft by 3 in roller bandage, and a thick piece of cord attached to his mackintosh-cape ground-sheet As the official issue of the latter is one to four volunteers, and the actual issue considerably less than that, the second part of his suggestion is not universally applicable Moreover, when it is remembered that the casualty and his pal between them carry 16 ft of bandage attached to their first-field dressings, is the additional roller bandage necessary ? My own fancy is for a triangular bandage I have advised every volunteer to buy one and to carry it in a pocket of his haversack—and nowhere else The most urgent use for it would be as a comparatively harmless tourniquet


Hæmorrhage from forearm controlled by rolled sleeve and field dressing tied as figure of eight

My own special problem has been the difficulties of instruction Like the War Office itself, platoon commanders are not unnaturally obsessed with the importance of guns, and combatants are not encouraged to learn the implications of my motto *festina lente*, and the gentle art of splinting fractures and minimising shock In a city supplied with full-time A R P first-aid parties, it is not easy to convince Home Guards that thorough knowledge of a little first-aid is the duty of every fighting man A recent field exercise has indicated that demonstration of first-aid to a company en masse is a waste of time In order to learn the "Woodford and Wanstead" method of blanketing, for example, men must themselves handle the stretcher and fold the blankets They must practise it not once but several times This can be done only by individual instruction and therefore cannot be attempted by the battalion M O Each company commander has therefore appointed a medical orderly whose combatant duties are nominal, and who has since been trained to teach the elementary first-aid and stretcher drill required The medical orderlies have been given the rank of corporal and are responsible to the battalion M O, with whom they constitute a committee which meets once a fortnight In each company a rota for instruction has been arranged so that each section (12 to 15 men) will in turn be taught by the company medical orderly on the weekly "platoon night" When practised in their "stretcher-bearer" duties, men are inspected in squads of four by the M O, who tests their knowledge of the following syllabus —


Splinting of fractured forearm using bayonet scabbard, handkerchief and field dressing

The control of bleeding and the dangers of a tourniquet The handling of fractures, and the use which can be made of first field dressings and personal equipment Carrying blankets in the closed stretcher Blanketing of casualties and the importance of warmth Stretcher drill and the importance of gentleness

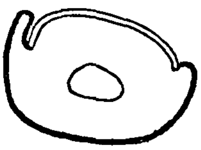
The proficient volunteers are given "S.B" brassards [illegible] the [illegible] company commanders have encouraged efficiency by making first-aid a subject for inter-section competitions By limiting first-aid equipment and the ambitions of enthusiasts it is hoped to diffuse throughout the battalion the little learning which is not a dangerous thing It may even be life-saving if circumstances should make the unofficial assistance of A R P parties unavailable

I wish to thank Mr C Du Pontet for drawing the diagrams

Oxford H C HARLEY

INGROWING TOENAIL

SIR,—I suggest the following explanations of Mr Ridley Smith's difficulties in accepting the view that tight shoes are the only cause of this condition The big toenail which is curved in the horizontal plane is doubtless an hereditary peculiarity It is the tight shoes, the inner margins of which slope to a point, which increase the natural curvature of the nail by pressure It is this pressure which folds the inner margin of the nail downwards The outer margin of the nail is usually less affected From the front the appearance is as shown (see figure) The frequency of the condition in young adults can be explained by the peculiar vanity of youth They are prepared to suffer to be—as they think—beautiful Though medical men see more cases in males, it is probable that chiropodists see more cases in females I suggest that Mr Radley Smith's case of bilateral double-sided ingrowing toenails in a youth after 11 months rest in bed can be explained by the absence of the normal upward pressure on the ball of the toe in walking This would allow the toenail to assume an exaggerated downward curve I presume that this man's toe and fingernails are of the curved variety



Bridlington P D H CHAPMAN

PLUMP TYPE OF GRAVES'S DISEASE

SIR,—May I add a word in support of Mr Geoffrey Keynes regarding the impossibility of distinguishing the plump type of Graves's disease described by Dr Trotter and Mr Eden Not all patients with Graves's disease lose weight and some are plump in spite of a raised metabolism, but the suggestion that this is especially apt to occur in young women with a particular combination of physical signs is largely hypothetical and might lead to serious misapprehension if taken for gospel, in view of the authors' claim regarding prognosis and treatment A progressive decrease in body weight is, of course, one of the best indications that the patient with thyrotoxicosis is losing ground and usually indicates the need for thyroidectomy Conversely gain in weight suggests that there is little immediate risk of physical exhaustion, but it can hardly be over-emphasised that when prognosis and treatment are under consideration such changes in body weight must be interpreted in relation to all the other clinical data available In this assessment of the case skill and judgment are required no less than in thyroidectomy In view of Mr Keynes's final remark it seems worth stating that a high mortality is not a necessary accompaniment of a surgeon's early efforts at thyroidectomy

Westminster Hospital FRANCIS F RUNDLE

STUDENTS ADVISE THE PRIME MINISTER

SIR,—I received the following telegram at the House of Commons on Oct 11 —

> We are seriously disturbed at the present military situation in Russia and are alarmed at the absence of effective British intervention We urge the Government to take immediate armed action to relieve the pressure on our Russian Allies, believing that the battle for Russia and the battle for Britain are inseparable —63 U C H STUDENTS

I understand from notices in the press, which has given the incident wide publicity, that the same telegram was sent to the Prime Minister and to the Secretary of State for War The signatories are presumably, present or prospective constituents of mine, and I would like to thank them for the compliment they pay me in addressing me The telegram is unsigned, so that a direct acknowledgment is difficult The primary pur the telegram is obviously to exert pressure upon Prime Minister to take action which seems desi the signatories, unacquainted as they must be with the considerations that are weighing with the Minister May I suggest an analogy which will I persuade the signatories that their intervention is advised ? Let us suppose that the operating thea a great hospital school is filled with first year m students, assembled to watch the most famous sur of his generation perform an exceptionally cr abdominal operation The surgeon on opening abdomen finds conditions in which, his unique ex ence tells him, completion of his operation may b immediately fatal results The surgeon paus reconsider the situation, and the students unable to what he sees or to gauge its significance, shout at "For goodness' sake, man *do something*, if only to re our unbearable suspense" The Prime Minister r the position of this surgeon, and I submit that decision for which he and not his critics, is respo should be left to his unfettered and consummate j ment

House of Commons E GRAHAM LITTLE

"FIRST-AID TO THE INJURED"

Dr JOHN C HODGSON, battalion medical officer to Kent Home Guard, has sent the following letter to the secretary of St John Ambulance Association —

SIR,—For the last fourteen years it has been my pleasure and privilege to lecture and to examine on behalf of your association While I have always thought that your authorised textbook "First Aid to the Injured" is extremely satisfactory as a training manual in time of peace, my studied opinion during the last three years has been that it is inadequate in time of war, when the basis of first aid must b simplicity, flexibility and improvisation

In peace the interval between the accident and the casualt receiving professional attention has been measured in minutes, in war, and more particularly during a period of invasion, the interval may be one of days This is especia true in the rural areas, where the only skilled help availa for casualties, even for as long as ten days, may be St J and Red Cross personnel, working in isolated houses with any surgical supplies, or in the casualty collecting po the Home Guard, and A R P points and posts, with li supplies of dressings

I would therefore appeal to your association to con whether a supplementary pamphlet on "First Aid in Wa time" should not be considered an urgent and imme necessity My tentative suggestions would be that hæm rhage, shock, wounds, fractures, pain and burns, and t evacuation and removal of casualties are the necessary jects for reconsideration, with particular emphasis on the and abuse of the tourniquet The immediate reaction of t first aid student to the treatment of bleeding should r the tourniquet—it is not a foolproof weapon

*** In a leading article in THE LANCET of Jan 25, 1 it was pointed out that the St John and Red Cross t books were neither of them designed to meet the type problem presented by air-raids and the former is dire to peace-time conditions First-aid is unsatisfac at present because it is badly taught and an es support of teaching is a textbook based on re conditions —ED L

TWO NEW GLAXO PRODUCTS —Glaxo Laborato have sent us particulars of their two new produ In NICORBIN tablets 1 mg aneurine hydrochlor 25 mg ascorbic acid and 10 mg nicotine acid are c bined for treatment of subclinical multiple defici states and for protection against beri-beri, pellagra scurvy Nicorbin is designed as a therapeutic a and except in gross undernourishment is not inten as a dietetic supplement

High-potency OSTELIN capsules each contain 100,0 international units of vitamin D (calciferol) in veget oil solution This strength allows small-bulk ad tration of the massive doses (e g 150,000–600 000 daily) used in Stoss therapy (*Lancet*, 1938, 1, 6 High-potency Ostelin tablets containing 50,000 i u continue to be available for the time being

Obituary

ROBERT BRIGGS WILD

M D LOND , M SC MANC , F R C P

death of Dr Robert Wild, formerly Leech pro- of materia medica and therapeutics, will bring memories of old times and old friendship to genera- of Manchester medical students He was a ning examiner, and nervous students must often have been grateful to him for friendly encouragement and for keeping enthusiastic external examiners within bounds In the last war he was a general favourite in the 2nd Western General Hospital, mixing well with the officers who were continually joining and leaving the staff and always willing to tackle any job that came his way

Coming from Holcombe, near Bury, Wild joined the medical school in 1880 and from that time till his retirement in 1927 was connected with it in one way or another er serving as house-physician and pathological regis- at the Royal Infirmary he worked in the department pharmacology with D J Leech, and on his death ceeded him in the chair He wrote many useful icles which illustrated his practical experience with gs and he was specially interested in ointments and in gs which deaden pain The layman was grateful his willingness to try out every remedy that had a uted action for good on cancer To both the nchester and Salford Skin Hospital and the Christie ncer) Hospital he was a devoted servant In the versity he held, in addition to his professorship, the ntions of pro-vice-chancellor and dean of the medical ulty He also represented it on the General Medical ncil for five years On his retirement he presented the university £250 for endowment of a prize in rmacology and at the same time received from his old dical friends his portrait by Francis Dodd reproduced e , this he passed on to the medical school Wild s a keen antiquarian, and he and his wife, who was laughter of Colonel Hillkirk of Withington, gave to etham's Hospital an old street cross, Hyde's cross, which one time stood in one of Manchester's busiest spots Lately Wild had lived in Buxton, where his wife parently in fair health died suddenly seven days fore his own death on Oct 7 He was nearly 80 They d been married fifty-four years They leave two ughters, the elder one a doctor who married Dr E R gger of Burton-on-Trent

OTFRID FOERSTER

IT will be a grief to many to learn that they will not et Otfrid Foerster again He was the best German neral neurologist since Oppenheim, but he was more— was the most important neurophysiologist that rmany has ever had and would have been regarded a great acquisition by any university in the world lucated at Kiel he went eventually to Breslau to serve der Wernicke He was early interested in muscle nus and this led him to his well-known work on izotomy This work illustrated his power to extract fullest number of facts from a single happening, for addition to his studies on the resulting hypotonus he served segmental flushing from stimulation of the inal roots, and years later published the best documented per on the extent of the spinal dermatomes that has peared For many years he was a spectator in sur- al procedures, many of his early operations being ne by Küttner The war of 1914–18 brought him portunities to operate himself, and some of his best ysiological work also came out of it—his observations peripheral nerve and spinal injuries During the last years he became more and more interested in brain echanisms in cortical stimulation, in the surgical eatment of epilepsy, and in intracranial tumours operating himself The book which exhibits his qualities at their best is that on the pain pathways Recently in collaboration with Bumke he edited the great "Handbuch der Neurologie," to which he contributed several important sections, notably those on the motor and sensory cortex The Rockefeller Foundation built for him in 1934 an institute for brain research in the Wenzel Hanke Hospital, where much of his work had been done

All of Foerster's work showed a strong physiological bent , he was probably a better experimentalist than doctor Patients were to him damaged units needing repair, but he preferred them to repay him by contributing to the knowledge of nervous mechanisms He had good reason to demand it, for few clinicians have had more penetrating insight or chosen with greater acumen the methods that would best resolve a problem The mark of a scientific mind is to see a problem, to estimate whether it is complex, and then to devise means of solving it None of these is easy Foerster had a gift for them all A striking feature of all his work is the excellence of his illustrations, betokening his insight into requiredness as well as his artistry He was an intensely interesting man, a good talker, with a memory highly retentive of difficult facts, and a kind and hospitable man who loved to have his pupils to his house once or twice a week, where they sat till late drinking his special brands of Rhine wine and pink champagne while he talked of everything—neurology history, poetry, even politics He had been selected by the German government to attend Lenin in 1920 (a fact that a later government thought discreditable) and found him an extremely interesting personality Foerster had inherited from his father, who was professor of rhetoric in Breslau, considerable histrionic gifts and a love of literature, especially of Goethe, pages of whose poetry he knew by heart He was an admirable speaker, and his sense of timing and of the fitness of certain words and gestures for special occasions made his public appearances always remarkable His spare figure, his pale features, his carriage, all combined with his words to make his hearers realise they were in the presence of a great man Those who knew him more intimately felt at once the emotional warmth which his keen scientific mind half obscured They will deeply regret the ending of their friendship with a rare character, and a distinguished man

G J

WILLIAM KERR RUSSELL

M D DURH

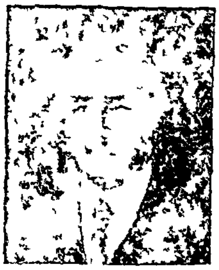
Dr Kerr Russell, who died on Oct 4 in hospital at Oxford after a short illness, was the son of Dr Frank Russell of Heaton, Newcastle-on-Tyne He went to Quaker schools at Ackworth and York and then to the Durham school of medicine from which he graduated with first-class honours in 1914, being awarded the Goyder scholarship After serving four years with the R A M C he had good surgical experience under Rutherford Morison in orthopædic work before entering general practice in an industrial district of Newcastle where he was joined by Eleanor Wylam, a fellow Durham graduate, whom he married in 1923 Their bent was towards physical methods and Russell founded the Sun Ray Clinic of which he was honorary director until he left Newcastle for London in 1928 to take up specialist practice in physical medicine He was given charge of the light and electrical departments of the Miller Hospital and in 1934 became hon physician to the National Temperance Hospital where he reorganised the physiotherapy department At Harrow where they lived he and his wife were joint hon physiotherapists to the local hospital He was at once shy and sincere, with that sort of enthusiasm for his job which makes for experiment and advance His shyness may have been coupled with his slight deafness but colleagues who came to know him well learned

to value his good humour and his skilful collaboration in treatment, as well as his vitality and vision At the Miller where some 75,000 treatments were given in the year, he was co-director of the Almeric Paget school, lecturing to students of massage This considerable clinical work did not prevent him from making a world-wide study of physical treatment, reflected in the *British Journal of Physical Medicine* of which he ultimately became editor, and in two popular books on ultra-violet radiation, one written in collaboration with his wife In June 1940 Russell left London to take over single-handed a country practice at Ross-on-Wye and after a strenuous twelve months there had the first premonition of the deep-seated glioma which so rapidly proved fatal He was in his 51st year and is survived by his wife a son and a daughter

ALEXANDER GOODALL

M D EDIN F R C P E

Dr Alexander Goodall, senior physician to the Royal Infirmary, and past president of the Royal College of Physicians of Edinburgh, died at his home on Oct 7 Dr Goodall, who was a son of the manse, was born at Barr in Ayrshire in 1876 and educated at George Watson's and at Edinburgh University where he graduated M B in 1898 and M D with high commendation in 1901 He became an assistant physician to the Royal Infirmary in 1913 and physician in 1928 on the retiral of G L Gulland, with whom he collaborated in his book on " The Blood " In his early days Goodall worked with Noel Paton and from 1906 till his death he was lecturer in physiology in the School of Medicine of the Royal Colleges He had been elected to the fellowship of the Royal College of Physicians of Edinburgh in 1904, and from 1937 to 1940 he was their president For many years he was one of the busiest consultants in Edinburgh, and he maintained his close interest in hæmatology on which he continued to give postgraduate lectures after he had retired from his lectureship on clinical medicine at the university During the last war Goodall served in the R A M C as major in charge of a medical division at Salonika, and he often spoke of the value of this clinical experience Dr Goodall is survived by his widow, two sons, and three daughters


Swan Watson Edinburgh

Dr Fergus Hewat, who shared with Dr Goodall for seven years a ward in the Infirmary, writes Goodall was a shy man and disliked medical committee work where discussions are apt to be prolonged and tedious, and he was happier teaching and looking after his patients

He loved his home and his children, and for some years was proud to be the only grandfather on the staff of the Royal Infirmary He found time for shooting, and on his day he was an excellent shot He loved the country and all its associations He always tried to see the humorous side of a situation, and this outlook at times led him to be misunderstood by those who were more formal in their demeanour, but the big occasion made no appeal to him

JAMES RUSSELL McWHIRTER

M B BELF , ACTING SQUADRON LEADER R A F

Dr McWhirter was born in 1909 and educated in Belfast, where he qualified in 1934 After holding house-appointments at the Royal Infirmary, Bristol St Luke's Hospital, Chelsea, and Archway Hospital, Highgate, he was appointed to a short-service commission in the Royal Air Force in 1937 During the next two years he served at various flying training schools and qualified as a pilot in 1939 Early in 1940 he was posted to Middle East Command, and shortly afterwards he was transferred to the reserve on completion of his initial service on the active list He remained employed as a reserve officer, and he was serving in the Coral Zone when he was killed in a motor accident on Aug 31

NAVAL HONOUR —The D S C has been awarded to Surgeon Lieutenant E A. Penn, M R C S , R N , H M S *Ladybird*, for courage and coolness when his ship was sunk by enemy aircraft

Public Health

From the School Reports

CUMBERLAND

Dr Kenneth Fraser in his school report for 1 that the evacuees were better nourished, especi school-leavers, but less clean than the native children of the second large evacuation in mid 1940 were less unclean than those of the first eva in 1939 and gave little difficulty in billeting. Of native children 5% were ill nourished in infants, i intermediates, and 5% in leavers Amongst the ev the percentages were 3, 3 and 1 Whatever may value of the standard adopted it was uniform, so the sets are comparable There may have been selection in the evacuees , or it may be that the diff is partly racial—e g , that the evacuated children come from the cities develop more quickly than country folk—and it is not possible, especially in leavers, to distinguish malnutrition from the r growth which occurs about puberty But there always been something to explain about the nut of the children of Cumberland The cleanliness of 1940 evacuees compared with those of 1939 is exp by " the commotion incidental to the outbreak of war the one hand and the prepared evacuation of 1940 Owing to the widespread reservoir of the head louse, heads of school-children can be kept free from ve only by constant action In the upset at the start of t war supervision was much more faulty in the evacuat than in the receiving areas and this accounts in part for the high infestation of children on reception

LEICESTERSHIRE

Dr J A Fairer tells us that in the routine inspection of 12,303 children during 1930 441 were referred for treatment for tonsils alone, 118 for adenoids alone 361 for both tonsils and adenoids This incidence is lo The percentage of children referred for tonsillectomy varied enormously in different places and at diffe times, but that referred for adenoids has declined ste The fluctuations of tonsil cases may vary with f or individual opinion, but the incidence of adenoids which fashion has played no part and opinion is divided, must reflect a true decline of the ad syndrome which has been obvious in recent y Indeed the running nose, both a cause and a symptom adenoids, is now seldom seen This is probably due improved nutrition and is one explanation of the droplet infections in circumstances otherwise favo to a high incidence. Among the inspected children two cases of crippling rickets were detected '

Infectious Disease in England and Wales

WEEK ENDED OCT 11

Notifications —The following cases of infectious di were notified during the week smallpox 0, sca fever, 1336 , whooping-cough, 1970 , diphtheria, 10 paratyphoid, 64 , typhoid, 23 , measles (exclu rubella), 787 , pneumonia (primary or influenzal), puerperal pyrexia, 145 , cerebrospinal fever, 1 poliomyelitis, 38 , polio-encephalitis, 4 , enceph lethargica, 2 , dysentery, 207 , ophthalmia neonato 89 No case of cholera, plague or typhus fever notified during the week

The number of civilian and service sick in the Infectious Ho of the London County Council on Oct 8 was 1304 , inc scarlet fever, 160 diphtheria 270 measles, 23 , whooping- 524 , enteritis, 27 , chicken pox 17 , erysipelas 29 , mump poliomyelitis, 7 dysentery, 16 cerebrospinal fever, 17 , pu sepsis 12 , enteric fevers 48 malaria, 1 , other disea infectious) 45 , not yet diagnosed 97

Deaths —In 126 great towns there were no de from scarlet fever, 1 (0) from enteric fever, 3 (0) fr measles, 9 (3) from whooping-cough, 34 (0) from di theria, 42 (3) from diarrhœa and enteritis under 2 ye and 11 (0) from influenza The figures in parenth are those for London itself

Preston reported a fatal case of enteric fever There w deaths from diphtheria at Birmingham In the same week Bi had 30 deaths from diarrhœa

The number of stillbirths notified during the week 207 (corresponding to a rate of 39 per thousand t births), including 11 in London

Notes, Comments and Abstracts

ALTH EDUCATION BY PROPAGANDA

GEOFFREY BARBER, M B CAMB

announcement by the Chief Medical Officer of a -wide campaign against the common cold comes spur to those who have already been planning an wider campaign against all diseases which can be prevented or lessened by fairly simple measures uccess of the Ministry of Food in teaching the public t economy in the kitchen, and the essentials of hy feeding, through what is called the Food Front, prompted the question whether a similar Health t might not be equally successful The same iods could be employed—posters to draw attention lvertisements in the press, and a daily short broad- at a popular time All three would be used in t collaboration, being planned by one source to rtise and fit in with the other two The posters the press would use slogans and cartoons, such as on't belong to the sixth column of disease" and the ices of Fougasse for cartoons of the German leaders arious unhealthy rôles could be relied on to fix the ular imagination where it is wanted

roadcasting on health is at present limited to a t talk on Fridays at 10 45 A M, and this is not ugh, besides being at a time when few can listen eed, it is shown to have only 6% of listeners These s are independent of the few sporadic press articles advertisements which do appear from time to time, reas a short daily talk at a popular time, advertised he press and led up to by cartoons, could do powerful k The talks would have to be very carefully nned, and there are many errors and pitfalls to be ided It is difficult to talk on medical subjects and p one's language simple and free from technicality, l the speakers would have to arrange not to contend h or contradict each other Above all, the talks ld have to avoid suggestions which might encourage hypochondriac and fusser The subjects of the short adcasts might be as follows

he scope of medicine, preventive and curative

iseases which are definitely preventable—smallpox, hoid, diphtheria, tetanus

iseases which *may* be prevented—bovine tuberculosis, oping cough, impetigo

hose which may be lessened, chiefly because they are ried by droplet infection or by dust—tuberculosis, sillitis, scarlet fever, influenza, colds and coughs

he natural history of the house fly and its bearing on some esses

The influence of crowds, sneezing and coughing in public a form of sabotage Cinemas and tubes

What the public has a right to expect of medicine, from eral practitioners, clinics, specialists and hospitals, and to help them to help the public (There is a good oppor- uty here to mould opinion towards necessary reforms)

The home medicine chest, and simple first aid to minor cuts, ns and sprains What a disinfectant aims at, when to it, and when to leave well alone

During illness, nursing, prevention of spread of infection

Popular fallacies, hypochondriacs and pessimists

A further series of subjects could be drawn from akespeare's seven ages of man The mewling infant m before birth, through feeding (natural and artificial), far as teething (The kitchen front has already given del talks on this, and Dr Charles Hill might well be ought back to the health front to continue right ough) There follows the schoolchild—bow legs and ock-knees, rickets, teeth—on to adolescence and berty The difficult child, and the parents share, uld be very helpful to some, particularly in small nilies Infectious fevers, and common sense in rsing them, would help parents and doctors alike emarriage and the wild-oats stage would need cautious ndling for the more prudish listeners, but if the talks l away with the present ostrich-like attitude of many rents they would prevent much hidden mental worry d suffering, venereal disease will not grow less until is treated in a more matter of fact way The need of reation for the worker, both the wage-earner and the usewife, would help the family doctor as well as the workers themselves, merely by reiterating the advice which we have to give so often; and the same applies to the many problems of middle age, obesity, rheumatism, D A H, septic teeth, and "40–50" Finally a sane word or two might be said on the stages of "slowing down," and "packing up," to try to instil a reasonable attitude to death and comfort the cancerphobe

Facility in broadcasting does not always go hand in hand with the best knowledge on a subject, and it would be wise to coordinate the efforts of all the speakers by making them prepare their talks in the same way, so as to ensure an easy style The following routine has something to commend it First write down all your ideas on the subject; classify and arrange them and make them into a short continuous essay Then make a precis of your essay, with headings and notes, and finally use this as a basis for a conversational talk to your shorthand typist This method will often produce a fluent and unstilted talk from a man who thinks more easily than he speaks

MILK FOR INVALIDS

THE arrangements for the supply of fresh milk on a priority basis to certain classes of invalids have now been completed Lord Horder, as medical adviser to the Minister of Food, has sent a personal letter to each registered medical practitioner enclosing a confidential statement regarding the issue of medical certificates for the supply of milk on a priority basis under the milk supply scheme These two documents explain the reasons for the special arrangements and detail the conditions and procedure governing the issue of certificates for liquid milk to people suffering from any of the prescribed medical conditions Under the arrangements as finally agreed, the doctor will insert on the certificate the class number and letter of the medical condition according to the schedule in the confidential statement, otherwise no diagnosis appears on the certificate In this form the certificate will fully preserve the *confidential relationship of patient and doctor* The certificate passes direct to the local food office, which issues the necessary documents to permit the supply and purchase of the prescribed quantity of milk for the period authorised These arrangements impose on members of the medical profession sole responsibility for the issue of medical certificates for milk in accordance with the Milk (Scheme of Supply) Order The conditions qualifying for priority cover a wide range, and Lord Horder urges that a certificate should only be given where genuinely necessary "If the maximum allowance is prescribed in every case of illness," he says, "the total consumed in this way may seriously curtail the supply of milk available for able-bodied adults, and even prejudice the quantities needed by mothers, children and adolescents"

CHILDBIRTH IN DUBLIN

THE reports [1] of the Dublin maternity hospitals (the Rotunda, Coombe Lying-In, and National Maternity) for 1940 cover records of over 11,000 patients The cases are tabulated without the familiar division into booked and unbooked, which is usually made to show the benefit of antenatal care Certainly the cases "from the country" include the bulk of those in poor condition, bad subjects for necessary operative interference At the Rotunda, 80% of the patients made antenatal visits and Coombe Hospital reports 2 6 visits per patient Delivery was per vaginam in 10 Rotunda patients who had previously had cæsarean section; 2 of the babies died, 4 similar cases were successful at the Coombe That there is a danger of rupture of the scar is shown by the record of a case treated by hysterotomy for hyperemesis, she had mild albuminuria in a subsequent pregnancy and was given three doses of pituitrin, 0 25 c cm, with resultant rupture treated by immediate cæsarean and repair One case of ruptured scar at the Coombe Hospital was treated by cæsarean hysterectomy In another case a premeditated repeat cæsarean revealed a scar deficient for 1½ in, covered only by peritoneum, which had remained intact in the absence of labour pains

Local anæsthesia is used for some cases of cæsarean section, 4 of the 63 operations at the Rotunda were by this method, and 8 of the 41 at the Coombe Upper

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[1] *Irish J med Sci* August, 1941 p 273

and lower segment operations were performed in the ratio of 14 to 49 at the Rotunda, 16 to 25 at the Coombe, and 3 to 34 at the National Maternity Cæsarean hysterectomy was twice considered necessary at the Coombe—for ruptured scar, and toxic accidental hæmorrhage After 3 of the 63 cæsareans at the Rotunda "burst abdomen" followed on within 7–10 days, one case proving fatal The 3 patients were suffering from concealed accidental hæmorrhage, hæmatoma of the rectus sheath, and pre-eclampsia At the Rotunda, 2 successful cases of pubiotomy are recorded In both the pelvis was contracted, and the operation was performed to facilitate delivery with Kielland's forceps, the operator having been unsuccessful without it The patients were discharged walking, on the 10th and 16th days, and both infants survived

Cases classed as eclampsism in the Rotunda report seem to include chronic nephritis The group consists of 7 multiparæ and 3 primigravidæ, 4 of the 10 cases had a blood-pressure of over 200 mm Hg with albuminuric retinitis, and were less than 30 weeks' pregnant The eclampsia group, on the other hand, contained 9 primigravidæ and 2 multiparæ, only one case being less than 37 weeks pregnant In the treatment of eclampsia the Coombe Hospital uses lumbar puncture, and the intravenous injection of 50% glucose, while the National Maternity uses magnesium sulphate injections, details of the methods are not given The three hospitals treated 42 cases with 2 deaths Flourishing gynæcological and pædiatric clinics are attached to the hospitals, and are an asset for teaching purposes In following up mothers and babies the student sees just the kind of case he will have to deal with in practice Of the hysterectomies performed, 50% at the Rotunda were by the vaginal route, but only 1 in 30 at the Coombe, and 9 in 59 at the National Maternity

C S M M G SALARIES —In a recent issue (Oct 11, p 441) it was stated, on the authority of the secretary of the Chartered Society, that the new scale of salaries recommended by the council for members of the society working in E M S hospitals had been approved by the Ministry of Health We understand that this approval has not gone beyond the readiness of the Ministry (set out in E M S Gen 330) to reimburse these hospitals for the usual proportion of the work done there by auxiliary medical services

Medical News

University of Cambridge

On Oct 17 the following degrees were conferred by proxy —

M B, B Chir —J S Johnstone, D E Marmion D S Cadman J M Stansfeld, Rees Jenkins, I G Wickes, R C Southern, and *O L Scarborough

M B —J R Griffith and W S Nutt

* In person

University of Wales

Dr D T Thomas has passed the examination for part II of the D P H

Royal College of Surgeons of Edinburgh

At a meeting of the college on Oct 15, with Dr H M Traquair, the president, in the chair, the following were admitted to the fellowship —

W V Beach, M R C S, D W Bracey, M B Lpool, M S Campbell, M B Lond, Iqbal Chand, M B Punjab, C D Coode, B M Oxfd H K Dastur, M R C S, Hiren De M R C S J C Dick, L R C P E, H L Duncan, M B Edin M G el Din, M B Cairo Thomas Gibson, M B Glasg, W H Kirkaldy Willis M B Camb, M A M Labib, M B Cairo, H A McDonald, M R C S, W C McGuire, M D Ontario, George MacKay, M D Manitoba, J W Morgenthal, M B Edin and J M H Ross, M B Edin

The following office bearers were elected for the ensuing year president, Mr J W Struthers, vice president, Dr H M Traquair, secretary and treasurer, Mr K Paterson Brown, members of president's council, Mr James M Graham, Prof R W Johnstone, Sir John Fraser, Mr A Pirie Watson, Dr G Ewart Martin and Mr Francis E Jardine, representative on the G M C, Mr Alexander Miles, convener of museum committee, Mr W Quarry Wood, and librarian, Dr Douglas Guthrie

CORRIGENDA —For M D Edin read M B Edin in the title to Mr Winsbury-White's article (Sept 20, p 331) —On p 453 (Oct 18), fourth line from the end, read *saline* for *normal-saline*

Radiology under Social Security

A New Zealand correspondent writes In August di services in the X ray departments of public hospitals made free to all, as therapeutic services had already been This cleared up the anomaly that existed since hospital fits were introduced, namely that it cost a patient say guineas as an outpatient of a public hospital to have his or stomach X-rayed, whereas if he got himself admitted a inpatient for a few days the whole cost him nothing T expected flood of work has not fully materialised though quite clear that the volume will be considerably increa Particularly in the larger hospitals, staff, room and are not nearly adequate for present needs, working under conditions, let alone extra demands Radiologists in priv practice are to be allowed to claim from the Government same sums per service that are paid to the hospitals for X work These are detailed in a Schedule and are expecte under N Z conditions in private practice, to cover costs o Radiologists will require to be recognised for the purpo the Government and will be allowed to charge further to the patient over and above the sums mentioned F details of the Government allowances, and extras charges remain to be fixed The arrangements were passed in Parl ment before the radiologists commented on them It believed that a firm of dealers in radiological equipment and hospital secretary advised the Government The radiologis met soon after the enactment, and are now conducti negotiations with the Government

Royal Society of Medicine

On Monday, Oct 27, at 2 30 P M, Mr *Harold Round* M D S, will give his presidential address to the section of odontology He will speak on the value of a dental depart ment in a general hospital On Saturday, Nov 1, the section of physical medicine will meet at Bath There will be clinical demonstrations at the Royal National Hospital for Rheumatic Diseases at midday, and in the afternoon a demonstration of hydrotherapy in the Royal Baths followed by a discussion on its value in rehabilitation

Appointments

FORGACS, PAUL, L R C P temp asst M O for Buckingham
PHILLIPS, T J M R C S temp asst ophthalmic surgeon to t Liverpool Eye, Ear and Throat Infirmary

The Chief Inspector of Factories has appointed the follow examining surgeons

ABBAT, P D M B Manc for Ludgershall, Wilts
HAWKE R F L M S S A for Crawley, Sussex
KNOWLES, R R, M B Lpool for Birkenhead, Cheshire
McDONALD, CARRICK, M B Glasg for Kilwinning Ayrshir
MAXWELL, E C W, B A Camb, M R C S for Robertsbr Sussex
WOOD, W C, M D Lond, F R.C S for Penshurst, Kent

Births, Marriages and Deaths

BIRTHS

ADLER —On Oct 14, at Epping, the wife of Captain Paul Ad R A M C —a son

BICKFORD —On Oct 17 at Bideford the wife of Flight Lieute B John Bickford F R C S, R A F V R —a daughter

MATHER —On Oct 15 at Wigan, the wife of Surgeon Lieute Northage de Ville Mather, of Todmorden—a son

MILLER —On Oct 5, in Capetown, the wife of Captain A Miller, R A M C —a daughter

MURPHY —On Oct 10 at Louth Lincolnshire, the wife of Li Colonel R Murphy, R A M C —a son

O'SHEA —On Oct 10, in Dublin, the wife of Major Patrick O R A M C —a daughter

WILSON —On Oct 12, at Ongar, Essex, the wife of Dr R Wilson, R A M C —a son

MARRIAGES

CELLARS—ROLLO —On Oct 18, at Cupar James Rintoul Cell M B, Squadron Leader, R A F, to Margaret Kilgour Rol

McENTEE—PRAG —On Oct 11 at Englefield Green, John Cha McEntee, M D, to Nora Ruth Walding Prag

PEARSON—SLATER —On Oct 16 at Buckingham, George B Pearson, L R C P E, to Mary Beatrice Slater

DEATHS

BOYLE —On Oct 15 Henry Edmund Gaskin Boyle, O B E F R C S D A, aged 66

COHEN —On Oct 16, at Edgware George Alexander Coh M B Edin, coroner for East Middlesex

DAVIDSON —On Oct 12 Hugh Allan Davidson, D S O Croi Guerre, M B Aberd, lieut colonel R A M C, of Dunnyd Mains Insch Aberdeenshire aged 66

GERVIS —On Oct 13 Henry Gervis, M B Camb, J P, late Brighton, aged 78

ORIGINAL ARTICLES

OME PROBLEMS OF WOUND INFECTION *

A A. MILES, M A CAMB , F R C P
ROFESSOR OF BACTERIOLOGY, UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

E H Kettle once deplored the dominance of the acteriologist in the study of infective inflammation—a ominance which he felt not only elbowed out the more rofitable study of the host's reaction but also obscured he problem with so many irrelevant facts about bacteria hat the wood could not be seen for the trees (Kettle 1927) This lecture is an attempt to show how much the " dominnt bacteriologist " has contributed to the study of wound nfection , his contribution is extensive and significant, out has been more successful in prophylaxis than in cure

EARLY AND LATE INFECTION COMPARED

The bacteriologist is, in the first place, faced with freshly inflicted wounds In them he finds bacteria apparently derived from skin, alimentary tract clothes and surrounding dirt The cultivation of swabs from very early wounds yields mainly indifferent cocci, both staphylococci and streptococci, diphtheroids, aerobic spore-bearers of the *Bacillus subtilis* type, and anaerobic spore-bearers Later swabs yield a greater variety · for example, 1–3 days after infliction, wounds contain *Streptococcus pyogenes* and *Staphylococcus aureus* in addition to the bacteria already mentioned The increase may in part be due to the growth of small initial doses of bacteria into recognisable prominence But figures for swabs taken 4–12 days, and 13–30 days after infliction show that while spore-bearers and indifferent cocci die out there is a still greater incidence of *Strep pyogenes*, *Staph aureus* and *Pseudomonas pyocyanea* The incidence of coliforms remain relatively high It is, in fact, the frankly pyogenic bacteria—streptococci, staphylococci and the coliforms—which appear in the later cultures (Miles et al 1940, Spooner 1941) These newly appearing bacteria may have been introduced at the time of wounding or added later If we assume that all the bacteria in a wound grow from small numbers introduced at the time of wounding, we shall have difficulty in explaining why *Staph aureus* and *Strep pyogenes* often appear for the first time as late as 3 weeks after wounding, for they are not given to lying dormant in the tissues It is easier to maintain that they are added after the infliction of the wound , and indeed, particularly in the case of the streptococci, we have strong circumstantial evidence in support of it The pyogenic streptococci can be subdivided by serological tests into a number of well-defined types In civilian life they reside in the upper respiratory tract of some 5–10% of the population, and if we were to select a few hundred people in a haphazard fashion, we should find that their throat streptococci belonged to a wide variety of types , no one type would predominate But when 50 of these wounded people are gathered from different places into one ward, not only may as many as 40% be infected with streptococci but the streptococcal types are not distributed in quite so haphazard a manner as we might expect had they been picked up from the environment at the time of wounding certain types predominate, which suggests an infection from a common source Moreover, a predominating type often turns up late in the history of wounds under treatment in a single ward, and by keeping a close watch on the noses, throats, wounds and cut fingers of patients, nurses and medical staff it is often possible to trace the apparent course of infection by one type of streptococcus from wound to wound, wound to throat, throat to nurse's cut finger, and cut finger to another wound

In certain Hertfordshire hospitals we seldom found *Strep pyogenes* in wounds sampled within a few hours of infliction , yet the incidence of streptococcal wound infection in the wards varied from 20 to 70% Colebrook and Francis (1941) estimate that 5% of their burns were initially infected with *Strep pyogenes*, and found 70% infected in hospital Besides streptococci, there are added infections by *Staph aureus*, coliforms, *Proteus vulgaris*, and occasionally the tetanus bacillus, Welch's bacillus and the diphtheria bacillus It is not uncommon to find added infections of all kinds in half the wounds of a ward Not all these infections are serious or give rise to clinical signs of infection but there is evidence that (apart from the quite large numbers of patients who are made seriously or even fatally ill by added infection) many milder added infections retard wound healing and certainly increase the risk of the cross-infection of clean wounds by constituting an open reservoir of potentially pathogenic bacteria

Added streptococci originate in the nose and throats of carriers It is the skin, and especially the skin recently infected with staphylococci, that is usually regarded as the source of *Staph aureus* But it is probably truer to regard the nose as its more constant origin *Staph. aureus* may infest the deeper crypts of the skin, but on the skin itself it is a superficial transient contamination It seems clear that the nose is the source of the skin staphylococcus, since both superficial and deep skin carriers are commonly nasal carriers In a few tests of such double carriers in which a precise serological typing was possible the staphylococci from the nose and skin proved to be of the same subtype The importance of the streptococcal carrier is fully appreciated , the potential dangers of the nasal carrier of *Staph aureus* are less obvious, but none the less important in combating hospital infection, for up to 90% of the wounds in a ward may be infected with it

A rough estimate of the extent of this nasal danger may be made by piecing together the scanty information about staphylococcus carrier-rates (Hallman 1937, McFarlan 1938, Gillespie et al 1939), and including some recent surveys that Dr A C Cunliffe and Dr A M Thomas have been making in Hertfordshire It appears that the staphylococcal carrier state in the nose, far from being the result of a temporary infection or contamination, may be the result of an early colonisation of the nose that gradually disappears with advancing age The nose of the newborn child is sterile, but at 2 weeks old 90% of the infants in hospital wards are infested with *Staph aureus* The incidence drops to 50–60% in young children and to 20–40% in young adults Of these carriers, at least half are profuse, and remain so for months on end The figures are appropriate to our inquiry, for they were obtained mainly from hospital patients, staff or medical students, and may be said to represent the staphylococcal environment of a wounded person in hospital We do not as yet know whether all strains of true *Staph aureus* are equally pathogenic The common infectors of the nose may be relatively innocuous, and wound infection may be due to more rarely occurring virulent types But until we know more about the properties of the staphylococcal subtypes it is reasonable to assume that the high incidence and relative permanence of *Staph aureus* nasal carriers in hospital personnel and patients, and the consequent high skin-carrier rate, is responsible for the predominance of *Staph aureus* in the infections of war wounds It is impossible to exclude all nasal carriers from participation in surgical work But the risk of infection from them is reduced to a minimum if all those engaged in surgical manipulation of wounds are compelled to wear impermeable masks in the wards as well as in the theatre

As a result of many bacteriological surveys of wounds, it may be said that the bacteria introduced into wounds by direct enemy action are much less disabling in the sum total of their after-effects than those introduced after infliction It is also true that a great deal of this added infection is preventable In peace-time the risk of hospital infection was small, though definite But the aseptic technique of peace has not stood the strain of a war in which at any moment a base hospital may be overwhelmed with the additional duties of a casualty clearing station The surgeons were the first to set their house in order over hospital infection, and in the process became part-founders of medical bacteriology But the initiative in the fight against hospital infection has lately passed to the fever hospital and to the obstetric and children's ward, and it is to the bacteriologists who worked in these places that we owe our present impetus in tackling war wound infection The surgeon already has the prophylactic techniques at his disposal, and a rearrangement of their emphasis and application should suffice to make the wards and theatres safe

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* Abridged from the Kettle memorial lecture delivered at the Welsh National School of Medicine in May 1941

Last year Dr Joyce Wright and I found the hospital-infection rate in a certain neurosurgical ward at times rose as high as 30% In four months, 15% of all wounds —air-raid or operation—were infected in hospital The figure was comparatively low, because a careful forceps-dressing technique was employed, but nevertheless *Strep pyogenes* was spreading from patient to patient During the air-raid lull of the new year the ward dressing technique was carefully revised Masking was rigidly insisted on during dressing, and a new routine instituted Since that time Dr Wright has maintained a detailed bacteriological watch on the whole unit The technique was maintained even when three separate convoys of air-raid casualties had filled the wards to their limit, and the result was excellent In spite of the presence of *Strep pyogenes* in chronic and newly admitted wounds in the throats of patients and staff (including an epidemic of a type 4 in the throats of 7 people), and in the air of the wards, the number of patients with added infections in a second 4-month period has been 4 Of these infections 3 were in trivial wounds of the arm and leg, which were dressed by the ordinary technique, they constitute an additional proof of the efficacy of the improved precautions, for the head wounds of the same patients were dressed by the improved technique and remained without added infection (McKissock et al 1941)

With the bacterium already established in the wound the issues are less definite Dominating the scene is the purulent wound infected with the pathogenic streptococci and staphylococci and those junior partners in the pyogenic axis—the various coliforms, *P vulgaris* and *Ps pyocyanea* It is worth noting that we have not yet exhausted the information we can get from the bacteria themselves in explaining the variations in severity of these pyogenic infections and the changes in bacterial flora that accompany healing or exacerbations of infection Next in numerical importance is the wound in which the initially infecting organisms, mostly saprophytes, die out in a few days and stimulate little, if any, tissue reaction Such wounds might be called contaminated rather than infected, and they solve their own problems by never proceeding to infection Finally, there is the wound in which essentially saprophytic bacilli find an opportunity to instigate a gas gangrene These bacilli, in the order of their frequency in wounds, are *Clostridium welchii*, *Cl sporogenes*, *Cl septicum*, occasionally *Cl œdematiens*, and a host of more or less well-defined species, all spore-bearing anaerobes I call them essentially saprophytic, for in most wounds they die out as rapidly as other contaminants like *B subtilis*, sarcinæ and micrococci In a minority of wounds they may multiply with other bacteria in a superficial necrotic layer of tissue, but it is only in a few wounds so infected that gas gangrene supervenes The opportunity for the offensive germination of the gas-gangrene bacilli is provided by areas of tissue, usually those denuded of oxygen, in which the reducing intensity, chemically speaking, is increased to a point that allows the growth of anaerobes, and this opportunity is largely removed by clearing from the wound foreign bodies, dead tissue, and anything likely to kill the remaining healthy tissue

So far there is little definite information on the importance of those differences we can detect in the strains of *Cl welchii* isolated from human flesh wounds Robertson and Keppie (1941) found that there is a tendency for *Cl welchii* strains from gas-gangrenous wounds to produce more powerful toxins than those from the merely contaminated wounds, and that the toxigenic powers of some of these gas-gangrene strains tend to be inhibited less by changes in the hydrogen-ion concentration of the media than those of the more saprophytic strains But powerfully toxigenic strains turn up in contaminated wounds, and fatal gas gangrene occurs with the feebly toxigenic strains We have found a similar lack of definite association between the capacity of toxin-free *Cl welchii* strains to resist the bactericidal power of human blood, and the capacity to produce gas gangrene Our most resistant strain came from a small granulating scalp wound that was healed in 10 days

METHODS OF TREATMENT

To combat these bacilli we have various antitoxins and a number of antibacterial chemotherapeutic agents, both natural and synthetic Of the natural antibacterial substances, elaborated by bacteria and fungi, few have received extensive therapeutic trial Gratia (1930) in Belgium and Dubos (1939) in America have both described such substances, the one from a fungus, the other from spore-bearing bacilli In this country we have Fleming's discovery of penicillin, which is powerfully antibacterial A full test of its value must await its production in large quantities It has no observable toxic effect on phagocytes in antibacterial concentrations, and its antibacterial effect is not inhibited in the presence of organic matter Its action, like that of the sulphonamides, is apparently bacteriostatic, an effect that permits the defences of the body to take adequate action against the invader (Fleming 1929, Abraham et al 1941) The synthetic antibacterial agents include the sulphonamides and the flavines The flavines are antiseptic rather than chemotherapeutic, though two, proflavine and 2 7 diamino-acridine, by reason of their low toxicity for tissues (Russell and Falconer 1941), approach chemotherapeutic rank At present we know little of their efficacy against the gas gangrene bacteria

The sulphonamides have been extensively tried in pyogenic wounds and there is little doubt of their prophylactic and therapeutic value They are inhibited to some extent by organic matter, particularly if the products of extensive tissue breakdown are present But even in the presence of pus their local application reduces the streptococci, staphylococci, coliforms and spore-bearing anaerobes in wounds There is every justification for their early employment in the treatment of such wounds, for even if they fail to destroy the bacteria they may prevent their multiplication, and thereby permit the delays in full surgical treatment that are sometimes inevitable in war In the treatment of gas gangrene there is no similar clear cut indication for the confident exhibition of these drugs The occasions for test in man have been few, and in animals the result of numerous attempts to treat experimental gas gangrene are conflicting Attempts vary in the animals used, the dose of bacteria, and the mode of applying the drug This variety is in a sense helpful, for the common features that can be abstracted from it tell us where the truth lies First, the susceptibility of the gas-gangrene bacilli in the test-tube is of a much lower order than that of the streptococci, and this low susceptibility is reflected in the animal, where the oral administration of the drugs is relatively ineffective Local therapy with the solid drug, in whose vicinity one can expect maximum concentrations, is much more effective In the second place, chemoprophylaxis, achieved by introducing the drug along with the infecting bacilli, is more successful than chemotherapy, which only prolonged the life of animals in a few cases, and in fewer cases saved it *Cl welchii* infections are most successfully treated, *Cl septique* less, and *Cl œdematiens* least With regard to the effect of the different sulphonamides, there is greatest disagreement over *Cl welchii*, in general, the best are sulphathiazole and sulphapyridine, with sulphanilamide a close second With *Cl septique* the order is sulphathiazole, sulphanilamide and sulphapyridine, with dissidents in favour of reversing the last two, and there is agreement that sulphathiazole is outstanding with *Cl œdematiens* Fleming (1941) has suggested that for historical reasons we tend to think of sulphanilamide as best for streptococci, sulphapyridine for pneumococci, and sulphathiazole for staphylococci, whereas in fact the last drug is active against all three cocci The same holds good for the gas-gangrene organisms, sulphathiazole is not merely the best drug for *Cl œdematiens*, it appears on balance to be the best drug for the whole gas-gangrene trio

Gordon and McLeod (1941) differ sharply from the prevailing trend of experiment with artificial *Cl welchii* and *Cl septique* infections They find no trace of curative action in sulphanilamide and sulphapyridine, and only a slight prophylactic action in sulphapyridine The reason for the difference does not lie in the dose of bacteria employed, which was 10 m l d, nor in the dose of drug administered It may lie in the mode of infection, for apparently the bacteria and the drugs were introduced into artificially damaged limbs, with a syringe, whereas most of the workers who report favourably on he sulphonamides infected their animals in open wounds nd applied the drug in the same spot. If this is the eason it indicates even more strongly the necessity for a maximum local concentration of the drugs, such as would follow the precise application of the powder to the open seat of infection.

Sulphathiazole appears to owe some of its local efficacy to its moderate solubility, which, lying midway between that of sulphanilamide and the more insoluble sulphapyridine, ensures that it goes into solution slowly but in sufficiently effective concentrations. All three drugs diffuse slowly through dead tissue, but as soon as they reach tissues with active circulation they are carried away by the blood-stream. This continuous drain on the central core of solid drug in the wound results in a steep fall in concentration as one passes from wounded healthy tissue. It would be reasonable, as Hawking (1941) suggests, to supplement local with oral administration of the drug and thus, by maintaining a given concentration in the general circulation, to reduce the speed of that drainage.

ANTITOXIN AND SULPHONAMIDE ACTION

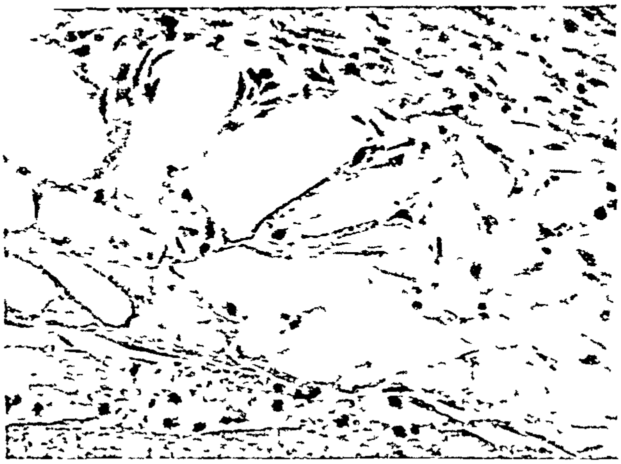
The use of antitoxin, either as an addition or an alternative to the sulphonamides, has the support of experimental work. Henderson and Gorer (1940) found antitoxin better than sulphanilamide or sulphapyridine; drug and antitoxin administered together were much more effective than either alone. Gordon and McLeod found it greatly superior to the sulphonamides as a prophylactic, and the small success they had in curing recently established infection was due entirely to antitoxin. They suggest that the antitoxin might profitably be applied locally in the treatment of gas gangrene. The analogy with local sulphonamides suggests that this would be highly effective, but we might explore the implications of this analogy before we accept it, particularly in view of the severe local reactions reported to have followed this kind of antitoxin therapy.

The effect of antitoxin and the sulphonamides on the bactericidal power of human blood for *Cl. welchii* gives some indication of their action in the body. In one experiment, for example, typical of many we have recently made an average of 1 bacillus survived from an inoculum of 4000 living bacilli in 100 c.mm. of blood. A comparatively large dose of *Cl. welchii* toxin (2 mouse m.l.d.), though it lysed the blood, depressed the bactericidal power only slightly; an average of 8 bacilli survived. But the addition of enough antitoxin to neutralise the toxin, far from restoring the bactericidal power, reduced it still more; 45 bacilli survived. *Cl. welchii* is killed in blood only in the presence both of living phagocytes and complement, and it can be shown that the combination of toxin and antitoxin, by fixing some of the complement, impairs the efficacy of the natural antibacterial mechanism. The blood-bacterium mixture is notoriously sensitive to antiseptics, yet the three sulphonamides, in a final concentration of 6.25 mg. %, depressed the bactericidal power only slightly and temporarily. After 2 hours, unheated blood kills better than sulphonamide blood. The effect is reversed in 24 hours; sulphonamides plus blood are more effective than blood alone. Leucocytes and complement contribute largely to this sulphonamide effect, for in heated blood the drugs are comparatively inactive. Penicillin in the same concentration is much more active than any of the sulphonamides, and at no time appears to affect the leucocytes. In applying these results with blood to therapy we must avoid what Kettle used to call the Bovril fallacy. The victim of this fallacy, regarding a tube of blood with the melancholy intentness of the bullock in the advertisement, and murmuring "Alas my poor brother," insists on regarding its identity with the whole body as complete. But the results do suggest that in the wound area, where the supply of blood and therefore of complement may be restricted, the local injection of strong antitoxin to settle the toxic issue might prejudice the issue between phagocytes and bacilli. Circulating antitoxin, on the other hand, which is accompanied wherever it goes by complement, is open to no such objection, and would certainly limit the specific intoxication to relatively anæmic tissues.

In this comparison of sulphonamides and antitoxin we must remember the size of their constituent molecules. The work of Menkin (1940) suggests that large molecules of foreign protein in the circulation would be selectively removed from the blood by early inflammatory tissue, and that they would be as definitely excluded from such tissue when the inflammation had proceeded to a later stage. The dye Trypan Blue behaves in the same way towards inflammatory tissue, and experiments with tissue inflamed by the *Cl. welchii* toxin show that early fixation and later rejection of the dye occur in the inflamed part. Circulating antitoxin is likely to be similarly affected; it remains to be seen whether this is in fact so, and whether the antitoxin "fixed" in the inflamed tissue is active against the toxin that produced the inflammation.

The change over from apparent avidity to inertness on the part of the local lesion may explain the enormous difference that has been observed between prophylactic and curative doses of antitoxin. In Gordon and McLeod's experiments the minimum curative dose of antitoxin a few hours after infection was 200–600 times the amount required for prophylaxis.

These considerations do not apply to the sulphonamides. A few experiments in rabbits with early and late toxin-induced inflammation show that there is no similar fixation or exclusion of circulating sulphanilamide. Presumably the molecule is small enough to be independent of these peculiar features of the inflammatory lesion; and it penetrates wherever it can diffuse, either from a deposit of solid drug, or from the circulation. Some experiments by Dr. L. E. Glynn (1941) illustrate the small deleterious effect of the solid drugs. He introduced clots of blood into pockets in the subcutaneous tissue of the rabbit and compared the organisation of the clot with and without powdered sulphonamides. Solid sulphanilamide disappeared in 24 hours. It could diffuse directly across the fascial sheath of the underlying muscle, for these were damaged to the depth of 4–5 muscle-fibres; this negligible layer of necrosis, 0.2 mm. in depth, was soon organised. Sulphapyridine produced occasional necrosis, sulphathiazole none. There were indications that sulphathiazole and sulphapyridine depressed the formation of fibroblasts to a slight extent, but the slightness is well illustrated in a section in which proliferating fibroblasts are seen actively invading the spaces immediately between the persistent crystals of sulphapyridine (see figure).


Rabbit fibroblasts growing between crystals of sulphapyridine, 7 days after introduction. (By permission of Dr. L. E. Glynn.)

It is not my primary intention to weigh the measures against infection in the balance, for there are many considerations upon which I have not touched. My survey of wound infection covers only a fraction of the ground, and much of what I have said I owe to the kindness of those who have allowed me to cite from unpublished work. Ogilvie has said that gas gangrene has its cause in a particular opportunity rather than a particular organism. If we have failed to define the opportunity we are in no position to be confident about the means of denying it to the saprophytic clostridia

2 Between 5 and 40 the survival rate is probably between 80% and 90% in the primary types, in the presence of any severe associated infection the fatality is high

3 The older age groups have a bad prognosis, there appears to be an equal chance of survival or death between 40 and 50, but after 50 survival is unlikely

4 The duration of symptoms probably has an appreciable effect on the outcome the sooner after the onset of symptoms that treatment is begun the better will be the prognosis

TREATMENT

Intensive chemotherapy should be instituted immediately on diagnosis The dosage should be adequate to provide the highest possible concentration of the drug in the cerebrospinal fluid (over 10 mg per 100 c cm of either sulphanilamide or sulphapyridine) in the shortest possible time To bring this about, the drug must be administered if necessary by all three routes by mouth, intramuscularly and intravenously (Hodes, Gimbel and Burnett 1939) It is noteworthy that, in the few series of cases reported, sulphanilamide has on the whole given better results than sulphapyridine (Schnitker 1940, Kolmer 1940) It is to be hoped that further observations will be forthcoming to explain or contradict this finding

In the age-group 5–40, except in those cases which have severe associated infections, sulphapyridine or sulphanilamide should be given in adequate dosage without specific antiserum With patients under 5 or over 40, however, it seems that specific antiserum ought always to be given Large doses should be given intravenously to combat the pneumococcal septicæmia, but there is not yet sufficient evidence to show whether it should be given intrathecally in addition Finland, Brown and Raugh suggest that it should, and the methods they advocate seem to be the most rational way of administering it They advise intrathecal injection of 5–10 c cm of the patient's own serum, withdrawn after the administration of the specific antiserum intravenously, for the provision of complement in the cerebrospinal fluid They claim that this method is least likely to give rise to undesirable reactions It is unfortunate that pneumococcal meningitis in these groups is so often fatal within seventy-two hours of its onset, making necessary the utmost speed in the institution of therapy Few institutions have the necessary antiserum on hand before twenty-four hours have elapsed, a delay which probably proves fatal to most cases

SUMMARY

In 14 cases of pneumococcal meningitis there was 1 recovery, 7 patients were over 50 and 2 under 2 years

The age-incidence of these cases and of 80 cases from the literature have been plotted to show fatalities and survivals Below the age of 1 year and above the age of 50 pneumococcal meningitis is almost invariably fatal The chief reason for the poor results in this series was probably the age of the patients

Intensive chemotherapy should be given in all cases, and specific antiserum, in addition, is probably essential for all cases under 5 and over 40

I wish to thank the honorary staff of the Birmingham United Hospital for permission to publish these cases and in particular Prof W H Wynn for his advice and criticism

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PNEUMOCOCCAL MENINGITIS
RECOVERY WITH SULPHATHIAZOLE

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A BOY, aged 1 year, was admitted to the Eastern Hospital on Feb 2, 1941, certified to be suffering from measles There was a history of bronchopneumonia at 6 months He had had a cough since Jan 24, a rash had appeared on Feb 1 and he had vomited on the day of admission On examination he had a slight cough, but apart from a temperature of 100 4° F no evidence of measles or other disease was found During the next three days he remained febrile and was drowsy and moderately ill Some injection of the ear drum appeared while the lungs remained clear On Feb 5 increasing irritability focused attention on the central nervous system, although no neck rigidity could be detected Lumbar puncture revealed a purulent fluid under increased pressure, containing 1775 white cells per c cm A gram positive diplococcus present in large numbers on direct examination proved on culture to be a pneumococcus type II Treatment with sulphathiazole (M & B 760) was instituted immediately after the lumbar puncture, in doses of 0 5 g by mouth every four hours, the dose was gradually reduced over the next six days, the total amount given being 9 25 g Improvement in the clinical picture could be seen within 24 hours and in 48 hours the child was sitting up feeding himself and the temperature was falling On the 8th the cerebrospinal fluid contained 570 cells per c cm and one pair only of cocci were seen, the culture being sterile On the 17th, by which time clinical recovery had long been complete, the fluid showed only a slight cellular reaction (30 cells per c cm) His further progress was uneventful

Grossman [1] recently described an attack of pneumococcal meningitis in a baby of 3 months which he treated successfully over a long period with enormous doses of sulphanilamide and sulphapyridine, together with antipneumococcal serum He was then able to find in the literature only three authentic recoveries from this disease in children under the age of 3 years The case here described belonged to this unfavourable age-group, yet ran a comparatively mild course. How much this can be attributed to treatment is difficult to say, but improvement coincided so sharply with the administration of sulphathiazole that it is probable that this drug did modify the course of the disease This is of some importance since treatment of pneumococcal meningitis with sulphapyridine has not been uniformly successful and it may well be that sulphathiazole is to be preferred Banks [2] has indicated that the latter drug has some advantages in the treatment of meningococcal meningitis

My thanks are due to Dr Norman Begg, medical superintendent of the Eastern Hospital, for advice and permission to publish the case

CORTICAL NECROSIS OF THE KIDNEYS
COMPLICATING PERFORATED GASTRIC ULCER

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Hertzog, in 1913, described a case of bilateral necrosis of the renal cortex in a girl of 10 years who was suffering from a purulent "cryptogenic" peritonitis Few clinical details were given At autopsy no cause for the peritonitis was found, and the kidneys presented appearances similar to cortical necrosis of pregnancy It appears to be the only case recorded of this renal condition complicating peritonitis The following case was recently seen by us

Man, aged 45, admitted to Smithdown Road Hospital on March 5, 1941, with signs of perforated peptic ulcer Had been in hospital 4 years previously with 'gastritis" Urine at that time normal, and chest showed nothing of note on X ray examination

Operation (Mr R J Crompton) performed under open ether at 1 A M on 6th—9 hours after onset of symptoms—and perforated chronic ulcer on anterior stomach wall sutured itoneal cavity full of fluid under considerable pressure l containing fibrin Abdomen was closed without drain- Urine examined before operation contained trace of umin, but was not examined microscopically For re- inder of this day urine was passed normally temperature e to 99 4° F On 9th drowsiness and oliguria were noted ine contained trace of albumin, moderate number of red ls and some granular casts Blood non-protein nitrogen) mg per 100 c cm Blood creatinine 3 1 mg per 100 c cm the 10th complete anuria and coma developed Twitching limbs with irregular conjugate movements of eyes On th patient died in coma Illness had been apyrexial, cept for rise in temperature on day of operation Blood- essure was not recorded, and no bacteriological examination peritoneal fluid was made

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[1] Grossman, A H *Arch Pediat* 1940, 57, 355
[2] Banks, H S *Lancet*, 1941, 1, 104

Autopsy (24 hours after death)—Only permission to amine the kidneys could be obtained, but the presence of a rino purulent peritoneal exudate was noted Both kidneys ere tense, slightly swollen, and presented similar appear- ices The subcapsular surface was pale and showed some techial hæmorrhages The cortex presented the opaque llowish-white appearance of coagulative necrosis A few gorged glomeruli could be seen as red specks The outline the necrotic zone had the usual serpiginous form, and tended centrally into the interpyramidal cortex The nction between normal and necrotic tissue was not notably peræmic The medulla, pelvis and larger branches of the nal vessels appeared healthy

Histology—Staining by hæmatoxylin and eosin, Weigert's rin stain and a modification of Mallory's aniline blue endrum and McFarlane 1940) The cortex showed almost nfluent coagulative necrosis involving both parenchymatous d interstitial elements There was, however, a continuous bcapsular band (0 25 mm wide) of normally staining tissue, id small, radially arranged islets of cortex were preserved, rticularly in the juxta pyramidal region Glomeruli in the ecrotic areas showed complete absence of nuclear staining, id engorged, widely dilated capillary loops Fibrin thrombi ere frequently present in glomerular capillaries Erythro- tes, with or without fibrin, were found in a number of the psular spaces Less severely affected glomeruli showed milar engorgement but with preservation of the nuclei hese glomeruli were not demonstrably larger than measured rmal controls (150μ) Slight proliferation of the tuft dothelium was occasionally seen in these surviving glom- uli In one or two the capsular epithelium was swollen id prominent, but was never more than one layer thick o hyaline fibrils were distinguishable in the tufts A few omeruli in the peripheral cortex showed slight thickening the capsular basement membrane, and one small cyst was en A number of glomerular afferent arterioles and intra- bular arteries contained fibrin thrombi In the latter the rombi were often mural in type, and fibrin infiltration was ident in the walls of one or two of these vessels The tertubular capillaries in the necrotic zone were packed ith polymorphs, a few of which had extravasated Very casional hyaline droplet degeneration, and numerous lbuminous casts, sometimes containing red-cells, were seen the medullary tubules

DISCUSSION

Mechanism of cortical necrosis—There is now fairly eneral agreement that the necrosis is ischæmic in origin ut opinion has differed as to the exact level in the renal asculature at which obstruction first occurs The iews held by different observers have been reviewed by unn and Montgomery (1941) From their own careful bservations they conclude that the primary lesion is an xtreme dilatation of the glomerular capillaries The onsequent loss of plasma leads to inspissation of the lood, stasis and finally to complete arrest of the lomerular circulation As a result thrombosis may ccur in the glomeruli, afferent arterioles and intralobular rteries, in that order In this way varying degrees of farction are produced In the early stages the pressure the arterioles and arteries is increased owing to the istal obstruction and fibrin is forced into the vessel alls, producing the fibrinoid necrosis which is often een In those cases which are associated with preg- ancy it seems likely that vaso-spasm precedes, and pro- ably determines, capillary paralysis and dilatation

Non-pregnancy cases—Dunn and Montgomery des- ribed 8 cases of renal cortical necrosis, none of which as associated with pregnancy, and found a further 18 in the literature It has been shown experimentally that *Staphylococcus aureus* toxin can produce cortical necrosis of the kidney (Von Glahn and Weld 1935, de Navasquez 1938), and in a number of non-pregnancy cases a bacterial toxin seems to have been responsible. Thus Hertzog's case followed a purulent peritonitis In our case the peritoneal fluid was not examined, but peritonitis was present In the cases reviewed by Dunn and Montgomery, scarlatina, sore throat, postoperative streptococcal infection, pneumonia, diphtheria, "grippe" and possibly dysentery were encountered as antecedent infections One of Dunn's own cases occurred during convalescence from appendicectomy, but the appendix was not acutely inflamed and there was no peritonitis. More recently McFarlane (1941) has described a case in which necrosis of the renal cortex followed multiple fractures and internal hæmorrhage, and in which a bacterial origin could be excluded

Relation to acute nephritis—Many of the infective conditions which have been associated with cortical necrosis are recognised causes of acute glomerulo-nephritis, and some of Dunn's cases appeared to be exceptionally severe manifestations of "war nephritis" As a result of his observations on the early glomerular lesions in acute nephritis (Dunn 1940) he and Montgomery suggest that the essential primary lesion, both in cortical necrosis and in acute nephritis, is a sudden dilatation of the glomerular capillaries, and that these cases of cortical necrosis should be regarded as examples of acute necrotising glomerulonephritis, the occurrence of ischæmic necrosis being determined by the severity of the lesion The finding of proliferative glomerulitis and epithelial crescent formation in some cases of cortical necrosis forms a link between this condition and glomerulonephritis Scriver and Oertal (1930) depicted crescent formation in one of their pregnancy cases, and Dunn found glomerulitis in a number of his non-pregnancy cases de Navasquez (1935) on the other hand, found no proliferative changes in his pregnancy cases, but described crescent formation in cortical necrosis produced by staphylococcal toxin The appearances described in the surviving tufts in our case might be regarded as evidence of slight proliferative glomerulitis

Role of shock and hæmorrhage—It has often been remarked that a retroplacental hæmorrhage precedes cortical necrosis of the kidney and it has been suggested that the sudden fall in blood-pressure is a factor contributing to renal ischæmia It is a question of interest whether shock, resulting from the perforation, operated in this way in our case Capillary stasis and hæmoconcentration, both features of shock, would contribute to arrest of the glomerular circulation The interval between the perforation and the first observation of renal symptoms might be regarded as evidence against this suggestion McFarlane's case already quoted, appears to be the only one in which shock and hæmorrhage alone have resulted in necrosis of the renal cortex

SUMMARY

In a man of 45 bilateral necrosis of the renal cortex followed perforation of a gastric ulcer

Recent observations suggest that glomerular capillary dilatation, leading to glomerular stasis, is the primary lesion in cortical necrosis Such dilatation may result from the action of bacterial toxins, and is regarded by some as the lesion common both to cortical necrosis and acute glomerulonephritis In pregnancy cases vasospasm probably precedes and determines capillary paralysis

In the case described bacterial toxins were probably responsible, but shock, with its resulting capillary stasis and hæmoconcentration, may have been a contributary cause

Prof J Shaw Dunn generously supplied us with material from one of his cases for purposes of comparison Our thanks are also due to Dr J P Steel, medical superintendent of Smithdown Road Hospital, for permission to publish this case, and to Mr R J Crompton, resident surgical officer at the hospital, for the use of his operation notes

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BACTERIOLOGICAL AIR ANALYSIS BY THE CLOUD-CHAMBER METHOD

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THE method to be described was developed in an attempt to evolve a means of bacteriological air sampling whereby the organisms would be isolated in a fluid rather than on a solid medium, as is the case with exposed plates and the air centrifuge [1] A preliminary report was made in April, 1941, to the epidemiological subcommittee of the Shelter Hygiene Committee of the Ministry of Health Further work had to be postponed, but the results obtained are published in the hope that others may follow up what appears to be a promising line of investigation

THE METHOD

The essential features are first, the trapping of suspended particles by drawing the air sample through a water-vapour mist, and second, the condensation of water on any particles left in suspension by cooling the saturated air The second principle is derived from that of the Wilson cloud chamber, in which the path of electrons may be observed by depositing on them water droplets condensed from a saturated atmosphere by a reduction in pressure

The air for analysis is drawn through a mist obtained by directing into a humidifying chamber a fine jet of steam, rapidly cooled by expansion to below 50° C In preliminary experiments the air was drawn through a large media funnel inverted over the spout of a bronchitis kettle which served as the source of water vapour Subsequently the funnel was replaced by a bulb shaped Pyrex glass flask of 5 litres capacity, air and mist being admitted through an opening 2 in in diameter in the bottom The lip of this opening was turned up into the flask about ½ in thus forming a channel in which the condensate forming on the inner wall of the chamber might collect A smaller opening resulted in too high a temperature being produced by the vapour in the flask The bronchitis kettle was later replaced by a flask of boiling water, part of the steam from which is directed through the opening into the humidifying chamber by a glass nozzle with an orifice 1 mm in diameter The steam passing through the nozzle is controlled by a screw clip on the rubber tube connecting it with the boiler In order to protect bacteria from direct contact with hot steam the nozzle should be screened by a conical shield of some poorly conducting material such as Cellophane In the experiments to be described this was not done The amount of steam passing through the nozzle must be controlled so that during air sampling the humidifying chamber is kept filled with a mist at a temperature not greater than 50° C without any excess vapour drifting back through the entry orifice

The upper part of the chamber tapers to an outlet ½ in in diameter through which the mixture of air and mist is withdrawn and passed through a condenser system the extent of which depends on the rate of air sampling In our experiments, two 10 in double surface condensers of the Liebig type connected in series were sufficient when air was sampled at the rate of 1/10 c ft per min The effect of setting the outlet to the chamber at the apex of a cone is to produce stream lining and even mixing of the air and water vapour as they are withdrawn

The outlet from the condenser system is connected with a suction pump through a flow meter of the manometer type and a cotton wool plug filter, which was introduced in order to test the degree of sterility achieved in the treatment of the air sample Where low rates of air flow are used the suction pump might be replaced by an aspirator bottle containing a known volume of water by whose displacement air can be drawn through the humidifying chamber and condenser system

RESULTS

The result of a single experiment is set out in the table A number of additional experiments were carried out along the same lines and with similar results

Ten c cm of an 18 hour broth culture of a readily identifiable serological type of salivary streptococci was sprayed into the upper air of a small room, 10 ft long, 5 ft wide and 10 ft high An ordinary De Vilbis throat spray was used, the atomisation produced being very coarse so that most of culture fell immediately to the ground, on which it duced a visible wet film A quarter of an hour ela between the end of spraying and the beginning of air sampling during this period the apparatus was assembled on a bench the room The humidifying chamber was then filled w mist and air drawn through at the rate of 1/10 c ft per m At the end of each of three 15 min periods air sampling w discontinued, the steam cut off, the condensate which h collected in the humidifying chamber flushed out with small quantity of sterile water and the cotton wool fi replaced by a fresh one These operations necessitated interval of 10 min between each 15 min period of air sampl Blood agar plates 4½ in in diameter were exposed for 15 m periods at the level of, and 12 in from, the entry to t humidifying chamber A fresh plate was exposed at t beginning of each period of air sampling At the end of t experiment the condensers and their connecting tubes we flushed out with sterile water and from each filter the cott wool plug was removed, teased out in 15 c cm of sterile br and then taken into separate flasks of glucose broth Th together with blood agar pour plates incorporating kno fractions of the chamber and condenser washings and the ent filter plug washings were incubated at 37° C for 48 hours

It will be seen from the table that there was a rap fall in the number of colonies on the successive plate exposed to the air of the room during the experiment This clearly shows the selectivity of the exposed plate in demonstrating large, rapidly falling, infected particle in the atmosphere At the end of an hour from the time of spraying, the blood-agar plate showed no strepto coccal colonies after 15 min exposure, whereas the cloud chamber still demonstrated a fairly high degree of atmospheric pollution

COMPARISON BETWEEN DEGREE OF AIR INFECTION DEMON STRATED BY THE CLOUD CHAMBER AND EXPOSED PLATE METHODS IN AN ARTIFICIALLY INFECTED ATMOSPHERE

1½ c ft of air sampled between	No of strep colonies from cloud-chamber washings	Cotton wool filter cultures *after passage* of air from cloud chamber (pour plates and glucose broth)	No of strep colonies on exposed plate
3 and 3 15 P.M	3000	Sterile	++
3 25 and 3 40 P M	450	,,	110
3 50 and 4 5 P M	150	,,	0

++ Too many colonies to count accurately (approx 2500)

Air spraying was begun at 2 40 P M and completed 2 45 P M

Air sampling was begun at 3 P M

The washings from the first and second condensers yielded 50 and 30 streptococcal colonies, respectively In addi to streptococci a few colonies of staphylococci and *Bacil subtilis* grew in each of the pour plates, except those made fr the filter plug washings which were sterile

DISCUSSION

Steaming is commonly employed for removing bacter and dust from the air inside hoods under which manipul tions requiring a high degree of sterility are sometim performed At one time this method of air sterilisatio was used in operating-theatres, but it has now b largely discontinued owing to the excessive humidit produced It has been observed that bacterial poll tion of the outside atmosphere is specially large at th level of the lower cloud limits (Flemming [2]), this ma part be due to the removal of bacteria from rising a currents by cloud formation

As a means of quantitative bacteriological air analy the method described here has certain limitations, b they do not seem insurmountable In our experimen only low rates of air sampling were used, and a dir relationship seems to exist between the necessar condenser space and the rate of air flow over it Furth the apparatus used in these experiments, althoug simple, is not easily transportable and does not len itself readily to use under crowded or difficult fiel conditions Time and facilities were not available for devising a more portable form of apparatus The id chamber has certain advantages over the other hods in common use Its efficiency in removing ptococci from the air appears to be high, judged by sterility of treated air as demonstrated by cotton-ol filters Theoretically, the efficiency does not depend olly on particle size, and it should be possible by this thod to isolate virus particles from the air Finally, organisms are recovered in a fluid medium , suitable ations can be put up for colony counts in selective dia as indicated by the probable degree of atmospheric lution and the particular organisms under investigation

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[1] Wells, W F *Amer J publ Hlth*, 1933, 23, 58

[2] Flemming, J. *Z Hyg* 1908, 58, 345

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GAS-GANGRENE OF THE EYE

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Gas-gangrene panophthalmitis is not common, ough cases have been reported by Chaillous (1904, 05), Darier (1905, 1906), Benedittı (1907), Schumaker 908), Oreste (1910), James (1910a and b) Lutz (1910) eath (1929), Ridley (1929) Hamilton (1930) Berry 932) and Walker (1934, 1938) There seems to be published record of any cases during the 1914–18 ar but details of one have been received in a personal mmunication from M H Whiting Consideration of e published reports and the following 12 cases which ve been treated during the past eleven years at the oyal London Ophthalmic Hospital enables the main atures of the infection to be described

TWELVE CASES

The patients were all male, ten being aged between 23 id 56, one aged 11 and one 64 All had received a erforating wound of the globe, and in seven of them is was associated with an intraocular foreign body other patients it was the result of injuries from such ticles as pieces of stick a stevedore's hook and the ner tube of a motor tyre In no case had the perfora-on been received more than 24 hours previously nophthalmitis was already present in six patients hen they were first seen, and the remainder developed e same condition within 24 hours of admission Severe in in the eye was a well-marked feature with brawny elling of the lids as in orbital cellulitis In two of the es bubbles of gas were seen in the anterior chamber eneral manifestations were slight, though some cases, here there was delay in removal of the eye, showed gns of toxæmia without much rise of temperature

The intraocular foreign body was removed from the ven patients where one was present, and in one recent jury a prolapse of the iris and ciliary body was abscised id a conjunctival flap stitched over the wound These easures had no effect on the progress of the condition, id removal of the infected eye was performed in every se, in eleven by evisceration and in one by enucleation en of the men were given anti-gas-gangrene serum ecovery was rapid and uneventful in all, the socket aling without complication, and where signs of xæmia were present these rapidly disappeared after e eye was removed *Clostridium welchii* was isolated om all the eyes, and, in addition, *Staphylococcus albus* om two of them The latter organism may be regarded contamination from the conjunctival sac

ÆTIOLOGY AND PATHOLOGY

A perforating wound of the globe, penetrating the treous, is the route of infection in all cases, and in any an intraocular foreign body is present No other naerobic organism has been found, but *Staph albus* was entified in two of my patients, and streptococci have peared in some reported cases The infecting organ-m has been thought to be present on the object causing e injury, but the variety of these and in some cases the parent lack of contamination with soil, manure or her recognised sources of *Cl welchii* suggests that the ganism may sometimes be present in the conjunctival c Benedittı (1907) has described a case of gas-ngrene panophthalmitis where *Cl welchii* had previously been isolated from a mucocele of the lacrimal sac, while Fava (quoted by Oreste 1910) has described the occurrence of the same organism on the lashes Males are affected almost exclusively, because of the greater likelihood of their receiving perforating wounds of the globe in their work In this series ten of the twelve patients fell within the usual age-limits of occupational diseases There is no evidence to show that hæmorrhage fatigue or a lowered general state of health bear any relation to the occurrence of the infection, nor does age seem to have any effect on incidence except by determining occupation

The enucleated eyes show the changes usually found in panophthalmitis The margins of the wound, anterior chamber, iris and ciliary body are densely infiltrated with polymorphonuclear leucocytes The lens is similarly affected when its capsule has been injured Many leucocytes are present in the vitreous and there is œdema, leucocytic infiltration, and destruction of the retina *Cl welchii* is present in the vitreous and inner layers of the retina and Chaillous (1905) has emphasised that they avoid the zone close to the choroid, which may be expected to have a relatively high oxygen content

CLINICAL MANIFESTATIONS AND TREATMENT

Acute panophthalmitis developing within 24 hours of a perforating injury of the globe and associated with severe pain is the characteristic clinical finding General collapse and pallor may follow if treatment is delayed A brown discharge from the wound may appear occasionally containing small bubbles of gas In the early stages an intraocular foreign body may be seen in the vitreous with a bubble of gas attached, and later gas appears in the anterior chamber

Evisceration of the globe without opening the subconjunctival tissues is the treatment of choice, but enucleation has been performed with equal success Anti-gas-gangrene serum has been given, but patients have recovered equally well when this has not been available Recovery has been rapid and uneventful in all cases, and of those described here all left hospital within two weeks of the removal of the globe In no reported case of gas-gangrene infection of the eye has the patient died from this cause There is no record of the effect of the sulphonamides in this condition

The course of gas-gangrene infection of the eye thus differs materially from that in other parts of the body ; this may be traced to anatomical peculiarities The factors which predispose to infection by gas-gangrene organisms are

1 Inadequate drainage of deep wounds
2 Presence of soluble calcium
3 Presence of foreign bodies, devitalised tissue and blood-clot
4 Impairment of circulation, as by tight bandaging
5 Involvement of muscle in the wounds

A perforating wound of the globe has no adequate drainage in many cases, and the vitreous, which is an inert substance without blood-vessels, contains soluble calcium For these reasons the globe is a potential site of gas-gangrene infection Elsewhere in the body the infection spreads in the tissue planes between muscle-fibres , lymphatic spread is slight, and invasion of the blood-stream is a late occurrence No muscle tissue connects the interior of the globe with another part of the body, and it has no true lymphatics The infection tends to remain localised until its severity becomes obvious, and eradication of this local infection prevents further spread

SUMMARY

Twelve cases of gas-gangrene panophthalmitis following a perforating wound of the globe are described Evisceration was performed in each case and recovery was rapid

The panophthalmitis develops within 24 hours of the injury and is accompanied by severe pain but little general disturbance

No deaths have been reported from this condition

I should like to thank the members of the surgical staff of the Royal London Ophthalmic Hospital for permission to publish these cases, and Dr S H Browning who carried out the bacteriological investigations

References at foot of next page

FORTY CASES TREATED AT THE ALLENDALE CURATIVE WORKSHOP

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REHABILITATION needs serious attention at present An account of the first year of work at the Allendale Curative Workshop, opened at Clifton, Bristol, in 1939, is therefore of interest

The premises consisted of a former hotel with large ground-floor rooms and nearly an acre of garden Work had to be experimental, and each patient was made a special study Among the personnel was Miss Mary Macdonald, member of the Association of Occupational Therapists and head of the Dorset House School of Occupational Therapy She had then lately returned from a tour of orthopædic hospital occupational therapy departments in America having been given a research grant for this purpose by the Pilgrim Trust Dr Eugen Weissenberg, formerly in charge of the physiotherapy department at the university clinic, Vienna, joined us as a student Miss K Barber, another member of the A O T , and now in charge of occupational therapy at a Naval hospital, was also with us, and we had an enthusiastic teacher in Mr R C Cole, who was an excellent joiner Students of the Dorset House school engaged in their clinical practice with patients

Weaving and light crafts were carried on in a room which measured about 19 ft by 17 ft and allowed space for 10 patients Slightly heavier work, such as block printing and basket-making, was undertaken in a room (20 ft by 15 ft) which provided space for 9 patients More strenuous work, such as joinery and metal work, was carried on in a long room (42 ft by 15 ft) where benches, a lathe, and bicycle and treadle saws were provided , some embossing presses which had been given to us were also in this room The old dining-room (30 ft by 20 ft) was provided with a billiard table, and the conservatory gave room for darts

The first 40 cases show what useful work can be accomplished They came chiefly from fracture clinics at the hospitals, and were chosen by their surgeons because of some complication calling for special attention—joints fixed by adhesions, or bad habits of posture No patient was taken without prescription and full instructions from his doctor , in the case of patients from the fracture clinic, the occupational therapist in charge attended regularly at the clinic when the orthopædic surgeon was re-examining the patient, and heard his fresh instructions A report from the hospital almoner was also received on each case sent up Treatment was given in the mornings only, but the whole day should be occupied if possible before the patient is discharged back to work

CASE-HISTORIES

CASE 1 —A woman of 23 with arthrodesis of tuberculous hip After operation she had developed a functional disease of the knee joint She was lacking in self confidence and was too conscious of her disability Her inability to sit at an ordinary table seemed the chief cause of her unhappiness and also her inability to return to her work as a shorthand-typist She was taught to weave on a small loom with hand controls in order to interest her in the subject without referring to her leg She was then promoted to a foot power loom in which the warp was raised or lowered by flexing the knee joint While using the hand loom she had become so keen on the texture and pattern of the material she was weaving that was glad to perform the necessary movements, and was able to realise that her knee was quite capable of being to a more æsthetic posture Her gait improved at the time She asked to stay on for a few weeks to finish the leng material she was weaving and then returned to her office

CASE 2 —A man of 53, suffering from the after effec acute infective polyneuritis He had been completely p lysed for several months but had recovered sufficientl walk, and by several trick movements he could feed hi Treatment began with weaving a rug on a frame threaded w a warp of string The patient's deltoid and extensor mu were weak and could not bear the weight of his arms so th arms and hands were slung in canvas loops from brack extended from the top of the frame He had a spasm contraction of the shoulder muscles which relaxed when th arms were suspended Improvement became evident in t first few days, since the patient enjoyed the work The n stage was to support the wrists only on an adjustable s placed across the frame, again leaving the fingers fre weave and to push the threads into place, thus getting a extension of the fingers and wrists As the muscles imp in tone and strength, new crafts were prescribed, such knotting dog leads, stool seating and woodwork The d board for a few minutes each day helped in the cure

CASE 3 —A man, aged 61, who had had a compound fract of the radius from a conveyor belt accident His should had been strained, and he had arthritis of shoulder, elbow an wrist with much residual disability of shoulder, arm and for arm Mental depression was pronounced Treatment wa first given in the form of easy weaving on small hand loom at this time the therapist was making friends with the patient and gaining his confidence Later he made a warp on the "mill," encouraged by the knowledge that the warp wa needed for another patient's work An occupation had t be chosen that could be carried out at a level which gave eas abduction of the upper arm to begin with , this was increase gradually by raising the height of the mill without the patien noticing that he was doing more As soon as he realise that his angle of abduction had increased his confidence wa aroused and he then willingly cooperated in carrying o the changes in his work that increased the effort needed H recovery was completed by getting him to sand paper a paint screens raised to a level above his shoulder and to d holes in a solitaire board, which exercised flexion and ext sion of wrist Finally he did weaving on a large foot lo which enabled him to get larger movements , easy supinat was achieved by throwing and catching the shuttle

CASE 4 —A left handed man with compound fractur left proximal phalanx of ring finger and simple fractur little finger Even passive extension of these fingers w impossible Treatment was by joinery, which was his hobb first he did planing with fingers extended as far as possibl the plane, and then sawing and generalised movement, w various tools, to ensure complete movement and supple The patient was entirely cooperative and the fingers beca almost normal

DISCUSSION

These cases bring out the importance of the muscu spasm which often develops before treatment is beg Without occupational therapy this is difficult to ov come because the patient has allowed the wrong pos to become a habit Occupational therapy replace the patient's mind the image of a limb that he can use by one of a piece of work which that limb is acco plishing Much depends on the atmosphere into wh the new patient is introduced Allendale was essenti a happy place where people felt they would get w Each patient was welcomed and made to feel that h difficulties and disabilities were understood His pr tive impulses to investigate new surroundings, to s what he could perform, and to join in the activities of group, all had to be stimulated , and when the appropri emotion had been aroused the impulse was directed once into an activity that helped his recovery His f and suspicion had to be circumvented It usually t a few days to start a patient off well , many grasped t idea of what was intended in the first few minutes a became real enthusiasts in helping newcomers, but oth needed much care to begin with , but once they realis that a change had begun in the injured limb, th cooperation could be relied upon Special appara designed by Dr Weissenberg, was available to mea

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angle of movement, and the patient could thus see a an actual graph what improvement he had made ;xperience has taught the following rules

The craft chosen must provide the exact muscle move-it needed at each stage It must be changed as the ent changes

The occupational therapist must superintend the move its continually, she must, therefore, have a complete nmg in anatomy and physiology, such as is required for ssage.

The patient's mind must be concentrated on the accom-hment of the work on which he is engaged Therefore it st be something that he enjoys doing and knows to be ful

The degree of strenuousness must be carefully regulated mature use of heavy tools can only do harm, and to itinue light work too long may produce a dilettante habit, l delay a man's return to his own work The equipment ist, therefore, include apparatus for heavy sawing and mmering Work should be increased until the patient is ing a full day's activity, which can include digging in the rden and pre-vocational work Games are a valuable junct A patient who thought he could not play billiards s seen to be acting as marker to the players, he walked ind and lifted his arm to mark, unconsciously exceeding at he believed to be his capacity -

Fear of infringing the rules of insurance companies d to be overcome Some patients thought that eatment might be counted as "work" and that it ould reduce their compensation, this doubt was best moved by the surgeon in charge of the case Only e man expressed fear of his trade union objecting, and ked "what the pay would be" for his work

The cost is important Only one of the first 40 cases as paid for by an insurance company Nearly all were ompensation cases and the money was just enough for e man to live on, most could not even afford their res to the curative workshop A small part of the cost as been covered by the Dorset House School of Occu-ational Therapy It is hoped that in time insurance ompanies will realise that occupational therapy lessens nd shortens disability and therefore reduces cost surance companies in America pay for such treatment nd even run their own rehabilitation centres for the jured workpeople whom they are compensating, ecause they know it pays them to do so Insurance ompanies in England already pay for medical treatment, ursing and massage, and might well make wise expendi-ure on this great aid to recovery

We have had to depend entirely on voluntary attend-nce, and it is difficult to ensure that the patient can be onvinced in the first or second visit that it is worth hile to persevere with treatment, perhaps at some onsiderable expense of energy and of money for fares hose who are intelligent enough to grasp at once the rinciple involved become enthusiastic quickly and help ewcomers to settle in But while numbers are small iose nearing recovery are few, and those who have covered have gone Definite instructions from the isurance companies paying compensation would help, this stage, to ensure regular attendance and conse-uent success

The injuries and disabilities treated included frac-ures of humerus, radius and ulna, wrist, metacarpals ialanges, scaphoid, os calcis and cervical spine, thritis, arthrodesis and ankylosis of joints associated ith such fractures, dislocation of the elbow, valgus formity of the feet, chronic strains, pareses of usculospinal, median, ulnar and circumflex nerves, rebral palsy, laceration of muscles and severed ndons after repair, limitation of movement after teomyelitis of the carpus, tuberculous osteitis of p and spine, acute infective polyneuritis, post-icephalitis, and traumatic neurosis Results are mmarised in the following table

At the beginning of the war arrangements were made r the workshop to undertake treatment under the M S, but enemy action having made it inadvisable r patients to remain in Bristol the workshop was trans-rred elsewhere Bristol patients are treated at Win-rd Hospital under Miss G E Barnes and Mr R C le in the wards and in a special occupational therapy it The Dorset House School of Occupational Therapy has now been transferred to Barnsley Hall Emergency Hospital, Bromsgrove, where it is fortunate in being under the direction of Dr Andrew Shepherd, the medical superintendent, who has paid special attention to occupational therapy in his hospital for many years Active rehabilitation work is again in progress there, and with the backing of the Ministry of Health will be on a much larger scale than was possible at Allendale

LENGTH OF TREATMENT AND ITS RESULTS IN 40 PATIENTS (32 MEN, 8 WOMEN) OF VARIOUS AGES

Age (years)	Cases	No of treatments	Cases	Length of treatment (months)	Cases
10–19	2	Less than 5	6 } 13	1	9
20–29	5	5–9	7 }	2	15
30–39	4	10–19	9	3	4
40–49	5	20–29	6	4	4
50–59	10	30–39	5	5	1
60–69	8	40–49	3	6	
70–79	1	50–59	4	7	2
Not given	5			8	1
				9	1
				Attended only once	3

Cured or much improved	25 cases
Slightly improved	7 ,,
Not improved	5 ,,
Only attended once	3 ,,
Total	40

SUMMARY

A report is given on the first 40 cases treated at the Allendale Curative Workshop, attached to the Dorset House School of Occupational Therapy, Clifton, Bristol; 4 cases are described fully

The cost of rehabilitating patients by occupational therapy might well be borne by insurance companies, as it is in America, this would allow of extension of this valuable form of treatment

I wish to thank Dr E Weissenberg and Miss E M Macdonald for their help in preparing this report, and to Dr H H Carleton, Mr K H Pridie, and Mr A L Eyre-Brook for allowing me to report on their cases

LOCATION OF FOREIGN BODIES BY A RADIO-FREQUENCY PROBE

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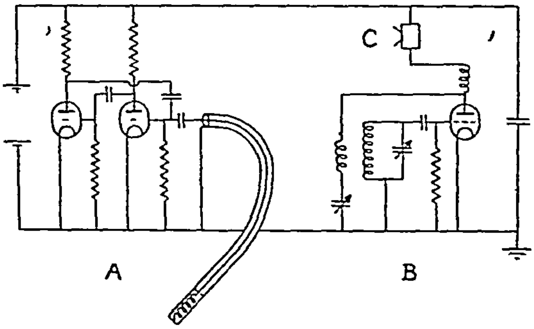
IN THE LANCET of May 31, 1941 (p 699), mention was made of an instrument, described in a broadcast from Germany, for locating metallic particles embedded in the body The device, which is intended to take the place of X rays in the operating-theatre, does not appear to have been used to any appreciable extent in this country



An experimental set has been assembled at this hospital The high-frequency oscillator (A in the diagram), working on a frequency of the order of 10^6 or 10^7 cycles per second, has the whole of its tuning inductance in the form of a search coil which can be moved about near the patient, and the second oscillator (B), working on a slightly different frequency, acts as a detector, and produces in the loudspeaker or telephone (C) a beat note equal to the difference between the two frequencies When the search coil comes near a piece of metal its inductance falls slightly, and the resulting frequency change is at once noticed in the note from the apparatus

The possible choice of radio-frequency is very wide the highest values give the greatest sensitivity to metallic bodies, but their practicability is limited by the stability of the apparatus and by the increasing effect of dielectric materials in the vicinity of the search coil relative to the effect of the metal itself A frequency of about 3×10^6 was found to be about the optimum Using this frequency, the apparatus will indicate the presence of a sixpenny piece at a distance of half an inch, and particles down to the size of a small pin closer to the search coil Larger bodies may be detected at slightly greater distances It does not seem possible to extend the effective range of an instrument working on this principle much beyond these values

The instrument is likely to be of value, in conjunction with X-ray examinations, for indicating the approximate position of metallic substances, in particular for assisting the surgeon while operating It cannot, it seems, be regarded as comparable in value with X-ray methods, by which the number and size of the particles are shown as well as their precise positions within the tissues

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PULMONARY TUBERCULOSIS IN THE SERVICES

SURVEY OF 100 CASES

JOHN ASPIN, M B CAMB
RANDAL STALKER, M B EDIN
LATELY ASSISTANT MEDICAL OFFICERS AT A SANATORIUM

A SURVEY has been made of 100 soldiers and airmen suspected of having pulmonary tuberculosis who were sent directly to one sanatorium from military hospitals and sick posts The cases were admitted without selection in the order of application for beds Usually they came three or four weeks after the diagnosis had been made There were all types of soldiers, in all stages of the disease Some seemed comparatively healthy, some were evidently moribund We believe that this series of 100 consecutive admissions between June and December, 1940, is likely to be representative of the incidence of pulmonary tuberculosis in the Army and R A F at that time

Eight men were finally regarded as non-tuberculous, and were diagnosed as follows

Chronic bronchitis	2
Postpneumonic effusion	1
Postpneumonic fibrosis	1
Pleurisy (no tuberculous basis found)	1
Lung abscess	1
Effort syndrome	1
Congenital cystic disease of lung	1

The case of congenital cystic disease had received sanatorium treatment for tuberculosis at the age of seven After four weeks' military service (he had been a chef in civil life) he broke down with malaise, pleurisy and heavy staining Lipiodol bronchography performed at the sanatorium by Dr J W Seymour revealed that he was a typical case of generalised congenital cystic disease of the lung

RECRUITMENT OF KNOWN CASES

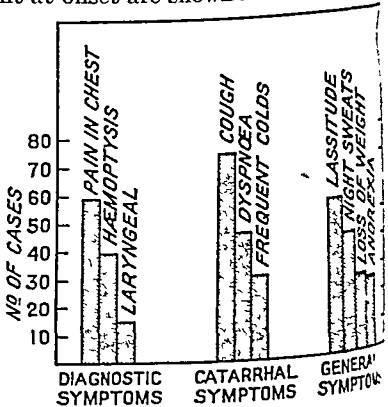
The series, which contains a proportion of men who enlisted before the Public Health (Tuberculosis) Regulations, 1940, came into force, includes 10 previously notified cases of tuberculosis, 6 of whom had been in sanatoria There were 4 men considered to have active pulmonary lesions at enlistment, one of these, who had previously refused institutional treatment, was invalided after his tuberculosis officer had communicated with the military authorities An arrested case whose history has been published (Aspin 1940) had been discharged from the Army in February, 1940, after a breakdown Before June in the same year not only had he contrived to re-enlist in another regiment but he had broken down and had been invalided for a second time At the time of enlistment 3 other men had quiescent pulmonary lesions, while 2 who were previously non-pulmonary cases broke down in the Service with pulmonary lesions

Most of these men had concealed some essential of their history when they came before medical bo and one or two had deliberately made false statemen Although one man admitted that he had joined up t get a "soft job," and revealed a previous history of san torium treatment when he found himself on the parad ground, the others gave us the impression that they f they were helping their country when they enl Under the Public Health (Tuberculosis) Regulation 1940, the medical boards who examine recruits are n made acquainted, as far as possible, with the previ history of examinees whose names are on the tuberculo registers In addition, the Ministry of Labour now a every examinee before a medical board to sign a decla tion that he has not at any time suffered from tuber losis In this way the future recruitment of know cases of tuberculosis should largely be avoided T need for such measures is shown in a series published Kersley (1941) who, in the first 100 men that he examin and boarded out of the Army, found clear evidence t 18 had been in sanatoria and that 15 more had b suffering from the disease before enlistment

MODE OF ONSET

In about two-thirds of our cases the onset was gradu Several symptoms had usually appeared before t soldier reported sick In the remainder the onset w more abrupt and indeed often dramatic, 9 men reported sick after a considerable hæmoptysis, which in 6 had happened while on duty One man was digging in a deep trench when suddenly he developed a spontaneous pneumothorax There were 18 cases of pleurisy with effusion in which sudden severe pain was the presenting symptom Of these men, 10 were well and gave no symptoms or signs of chest trouble until the day the pain began In these 10 cases fluid was demonstrated 4–25 days after the onset of the pain

Examination of the symptoms present when the men reported sick showed that there were only 20 cases in which there had not been pain in the chest, hæmopty or staining, 59 men said they had pain in the ches 39 had coughed up blood or blood-stained sputum, T reported both pain in the chest and hæmoptysis Th symptoms present at onset are shown in the figure



Frequency of initial symptoms

In 7 cases the diagnosis was made while they were under investigation in hospital for apparently unconnected conditions—hernia, error of refraction, gastritis, mastoid infection, wounds, dysentery and acute encephalomyelitis, 2 men complaining primarily of hoarseness were diagnosed as tuberculous by ear, nose and throat specialists to whom they w referred

A history of considerable distress during phy training was given by 24 men, of these, 14 had to harder physical work since joining up Of the 76 m who felt no undue distress during physical training had to do harder physical work While the dis was more advanced in cases showing distress dur physical training, previous occupation seemed influence the degree of dyspnœa experienced It evident that a labourer would not complain of breath lessness after exertion that might be troublesome to sedentary worker

NATURE OF LESIONS AND STAGE OF DISEASE

Obviously abnormal physical signs in the chest w present in 48 cases and clubbing of the finger-nails in

In 46 men the lesions were unilateral, while 53 show bilateral disease Cavitation was present in 40 c ding 14 in which one lung was only involved e were 18 cases with pleural effusion, in 11 of which rlying shadowing was visible, 1 of the simple ions was regarded as non-tuberculous Definite ; of fibrosis, as shown by displacement of the heart achea, or thickening of interlobar septa, were found ie radiograms of 14 cases, while 20 more showed less ous evidence of contracting lesions In 13 cases e was definite calcification, and in 8 of these the ified areas were well outside the hilar regions

Vhen the original diagnosis had been confirmed, 92 s remained These were arranged according to the sification of the Ministry of Health into class TB us (sputum negative or absent), class TB plus itum positive) groups I, II and III (early, moderate advanced cases) The proportions were found to TB minus 35 9%, TB plus group I, 11 9%, up II, 41 3%, and group III, 10 9% To compare se figures with those from an area with a highly de- oped tuberculosis scheme, the numbers of new patients h pulmonary disease applying for treatment during 6, 1937 and 1938 were obtained from Dr G Lissant x, central tuberculosis officer for Lancashire The nen, who were actually on the register at the time enlistment, were removed from the series of Service ses, and the 83 remaining new cases compared with new cases applying for treatment under the Lanca- re scheme

BLE I—STAGE OF DISEASE IN SERVICE CASES AND IN NEW CASES APPLYING FOR TREATMENT IN LANCASHIRE

Stage	No of cases		Percentage	
	Lancashire	Service	Lancashire	Service
minus	1209	33	35 5	39 8
plus group I	271	8	8	9 6
group II	1473	33	43 3	39 8
group III	451	9	13 2	10 8
Totals	3404	83	100	100

These two sets of figures show considerable similarity casual inspection might suggest that the Service cases ere slightly less advanced, but in such a small series e differences might easily be expected as a sampling ror It is concluded that in these soldiers and airmen pul- onary tuberculosis was diagnosed while the disease was more advanced than it would have been in new cases plying for treatment under the Lancashire scheme

PAST HISTORY AND DURATION OF SERVICE

Kayne (1940), in a survey of 134 cases, found that the ain criteria adopted by medical boards in selecting ses for special examination were statements of berculosis in the family, "pleurisy" in the past, or lmission to a sanatorium or attendance at a tuberculosis inic in childhood or adolescence Since in his series he und only 2 men with active tuberculosis and 1 with cently active tuberculosis, Kayne concluded that stories of tuberculosis in family and pleurisy in the st as given by the recruit cannot be relied on to detect ore than a small fraction of recruits with either active healed pulmonary lesions

In the present series 18 out of 92 cases of tuberculosis ive a history of a parent, brother or sister either being eated for pulmonary tuberculosis or dying with the sease, 5 of these cases and 10 others gave a history of emoptysis or pain in the chest with pyrexia before listment These figures suggest that in Kayne's ries the lack of positive findings may have been due to reliable statements and the concealment of relevant cts by the recruits themselves This unreliability has en confirmed in our series by the enlistment of known ses of tuberculosis Others who wished to be dis- arged from the Army because they had been worried out their health freely confessed that they had made false atements, or had withheld essential information, when ey were examined by the medical recruitment board

Three-quarters of these men were conscripts whose ilitary service amounted to less than a year Indivi- al service, however, varied over a wide range A M S had been 24 years with the colours An "AC2" d 5 days' service to his credit While 4 old regulars could muster 64 years' service among them, 12 others could not together make up six months' service (table II)

TABLE II—DURATION OF SERVICE

—	Less than 1 month	1–3 months	3–6 months	6–12 months	1–2 years	More than 2 years
No of cases	16	18	19	23	14	10

DISCUSSION

Tuberculosis among men who served in the last war gave rise to serious problems even in the postwar years, and pensions for tuberculosis accepted by the state as "directly attributable to, or seriously aggravated by" military service continued to be given for many years after the war was over Mitchell and Smith (1931a) state that 65,370 such pensions were awarded up to March, 1929, representing 7 6% of the total pensioned disabilities up to that time Positive sputum was then the chief criterion for the diagnosis of pulmonary tuberculosis (Joint Tuberculosis Council Report 1939) Although the wastage in man-power from tuberculosis during the last war was negligible (Mitchell and Smith 1931b), many men suffering from pulmonary tuberculosis were returned to duty, with a consequent risk of infecting their comrades. Thus, from 1916 onwards 21% of the cases arising in the British Army were returned to duty (Mitchell and Smith 1931c)

The problems presented in this war by tuberculosis arising in the armed forces seem likely to be less acute The death-rate from pulmonary tuberculosis has fallen steadily, and is now less than half what it was in 1918 Enlistment of known cases of tuberculosis, so common in the early stages of the last war, will be largely prevented by the new regulations The risk of contact infection is further diminished because men diagnosed as tuberculous are now returned to duty only in exceptional circumstances All examinees before medical boards suspected of being tuberculous are at once referred to the tuberculosis officers for special examination Our figures show that in one small series at least tuberculosis arising in soldiers and airmen was diagnosed as soon as it would have been among civilians and that more than a third of these men were negative cases Cases discovered in the Services are sent to special hospitals where full treatment is started at once, and when they are discharged from the Services, this treatment is continued by their local authority At least one tuberculosis colony, the Papworth Village Settlement, is already offering the benefits of colonisation to suitable cases invalided from the Services

These real advances are not enough to prevent the recruitment of men likely to break down with active pulmonary tuberculosis within a few months of joining the Services In our series, out of 92 men, active lesions had been found within three months of enlistment in 29 cases (31 5%) and within six months in 48 cases (52%) These figures are less disturbing if it is remembered that mass radiography, whenever it has been performed on symptom-free people, has revealed active tuberculous lesions in 0 5–5% of them Heaf (1940) has discussed the value of mass radiography in peace-time in combating the spread of infection by revealing the hidden active cases among the apparently healthy population Even when men have previously been examined clinically, mass radiography has demonstrated some, though fewer, unsuspected active lesions Berner (1939) in 10,852 picked storm-troopers who had been screened found 0 8% of such cases Among 9000 recruits from the Australian Imperial Forces, Cooper (1939) discovered 0 55% of active cases, and Galbraith (1941), in a later report, states that out of more than 100,000 such recruits 0 56% showed radiological evidence of active pulmonary tuberculosis Sheldon Dudley (1941), reporting the results of mass radiography in the Royal Navy, where screen-photography is now performed as a routine, found an incidence of 0 32% active cases of pulmonary tuberculosis in 11,000 new entrants

Kayne (1940) holds that without routine radiological examination the detection of unsuspected pulmonary tuberculosis in recruits is impossible If the administrative and technical problems be overcome, there seems to be a strong case for the extension to the Army and

R A F of mass radiography by screen-photography using 35 mm cinema film The position has been ably summarised by Bentley and Leitner (1940) —

> "It is not suggested that screen photography will abolish tuberculosis from the Services, but it would eliminate a sensible proportion of tuberculous subjects who should not be allowed to serve It is thought the saving in pensions alone would more than outweigh the cost of the investigation "

Probably many men in our series were unsuspected cases of tuberculosis when they joined up, and we have tried to find out how many would have shown radiological lesions visible by miniature radiography at the time of enlistment

No-one would deny the difficulty, and some would question the possibility, of estimating the radiological appearances some time before a radiogram was taken We were guided by duration of service, extent and density of the lesions, presence of cavitation, and clinical course of the disease When a man had served for longer than six months, especial attention was given to definite signs of a contracting lesion, presence of hard shadowing or calcification in the lung fields, and previous history suggestive of tuberculosis The cases have accordingly been divided into two groups—those in which miniature radiography at enlistment would, in our opinion, have revealed lesions suggestive of pulmonary tuberculosis, and others in which miniature radiography would have given no help (table III)

TABLE III—SERVICE CASES IN WHICH MINIATURE RADIOGRAPHY AT ENLISTMENT WOULD PROBABLY HAVE REVEALED LESIONS SUGGESTIVE OF TUBERCULOSIS

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		No help	Suggestive lesions
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1– 3	18	5	13
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6–12	23	15	8
12–15	11	9	2
More than 15	13	13	0
Total	100	54	46

We estimated that in 46 cases abnormal shadowing or displacement of the mediastinum would have been clear enough at enlistment to have been detected by miniature radiography, though careful physical examination and history-taking had revealed no evidence of tuberculosis

SUMMARY

A survey has been made of 100 Service men suspected of having pulmonary tuberculosis The stage at which the disease was diagnosed in these men did not differ materially from the stage at which cases are diagnosed in civil life

Reasons are given for the belief that in this war spread of disease by infection in the Services is likely to lead to fewer cases of pulmonary tuberculosis than in 1914–18

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Miniature radiography at enlistment would probably have revealed definite lesions in 46 of our cases

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ANTERIOR DISLOCATION OF RADIAL WITH FRACTURE OF SHAFT OF ULNA

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ASSISTANT ORTHOPÆDIC SURGEON TO THE ROYAL SOUTHERN HOSPITAL, LIVERPOOL, ORTHOPÆDIC SURGEON TO THE BIRKENHEAD GENERAL HOSPITAL

IT cannot be said that anterior dislocation of the h of the radius with fracture of the shaft of the ulna suffered in the past from lack of attention or inve tion The lesion is relatively rare, but recorded c show that it has attracted notice since the beginning the last century, when it was first described by Monte who recognised it without the aid of X rays I reco here 4 new cases illustrating the successive poin emphasised by various authors during the last ten ye

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Several writers have paid great attention to the exact mechanism causing the injury, but it seems to me more important to recognise that this dislocation of the radial head can only take place as a result of disruption of the orbicular ligament Hunt (1939) and Campbell (1929) both describe this ligamentous tear, as do several later observers, but the standard textbooks of fracture (e g Scudder 1926, Sinclair 1931) made no mention of it until it was referred to by Kellogg Speed (1935) and Bohler (1935) Wilson (1938) gave a complete descrip tion of the pathology My own observations have con firmed the ligamentous tearing in each case, and I hav particularly noted that the torn ends were alw retracted deep to the radial head and that, at the ulna attachment, the ligamentous strands were so short torn as to be useless for reconstruction

CASE-HISTORIES

CASE 1 —Age 13 Fell on the right elbow in Novem 1938 X ray report of forward and outward dislocati the head of the radius and fracture of the ulna The c location was replaced manually, but the reduction was stable At open operation on Dec 6 the ordinary exte lateral approach to the head of the radius was used, but it w difficult to reach the front and inner side of the head The torn edges of the orbicular ligament were demonstrated and an attempt made to suture them The radial head dislocated for the second time a few weeks later, but despite the deformity the functional result was good and by April, 1939, there was full range of elbow movement and the

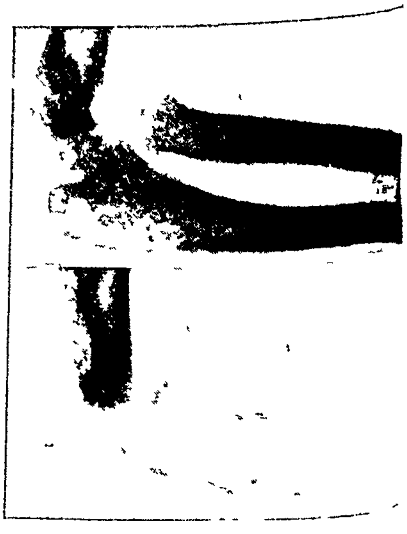

FIG 3—Case 4 (*a*) Lateral view of elbow sho dislocation of head of radius (*b*) Lateral of elbow showing stable reduction of disl radial head after reconstruction of orbi ligament

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ASE 2 —Age Accident on g 8, 1939 diography revealed an anterior location of the ad of the radius companied by incomplete acture of the na without any splacement gain the head of e radius was sily replaced manual reaction under aæsthesia, but in case 1 the islocation curred readily t operation on ug 16 an anterior incision at e outer side of e antecubital ssa was used, was particularly noted that ccess to the ead and neck of e radius was uch easier and as obtained by etracting supinator longus outwards and brachialis anticus wards In this case also the torn ends of the orbicular gament were found curled up deep to the radial head, but even ith the better approach attempts at suturing the ligamentous emains were unsuccessful X rays showed that the islocation recurred

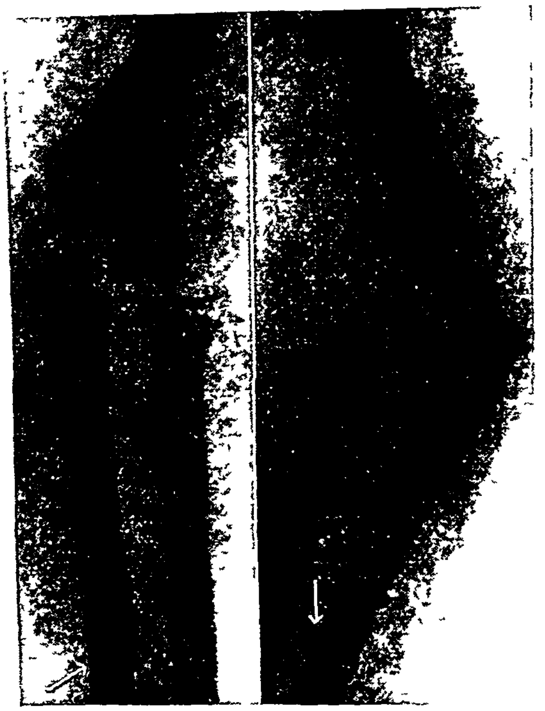


FIG 1—Case 3 Anterior and lateral views of elbow showing dislocation of head of radius and fracture of shaft of ulna Arrows in figs 1, 2, 3 indicate site of fracture of ulna

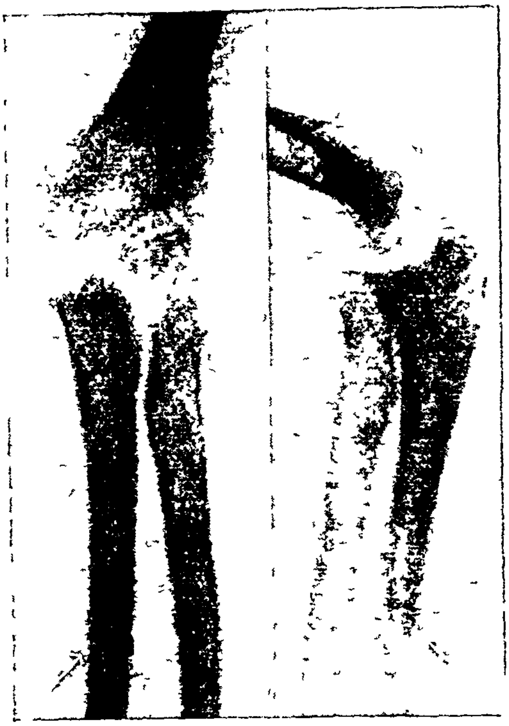
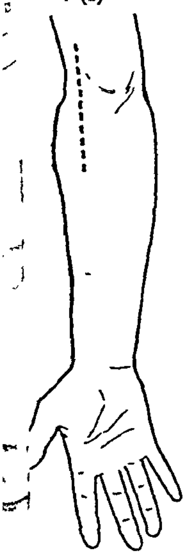


FIG 2—Case 3 Anterior and lateral views of elbow after reconstruction of orbicular ligament

CASE 3 —Age 7 Fell on the right arm in June, 1940, and stained a fracture of the middle of the shaft of the ulna, ith anterior dislocation of the head of the radius (fig 1) t operation on June 18 the anterior approach was used and e torn orbicular ligament was easily demonstrated The peration described below was carried out The elbow was imobilised for 4 weeks and then active movement was allowed fter 4 months the patient had a full range of movement, and X rays showed that reduction of the dislocation was stable (fig 2)

4 (a)



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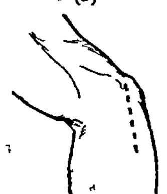

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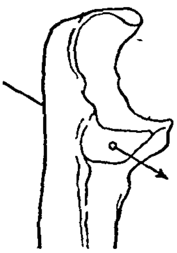

g 4—Right arm (a) Anterior cubital incision (b) Incision on inner side of elbow parallel to posterior border of ulna

G 6—Head of ulna showing bore hole

CASE 4 —Age 14 Accident on July 31, 1940 Dislocation of the head of the radius Manual reduction was easy but dislocation of the radial head recurred in plaster (fig 3a) Operation as in case 3 was carried out After 3 weeks' immobilisation the plaster was discarded and a month after that the child had a full range in the elbow and the joint has remained normal since Fig 3b illustrates the stability of the reconstructed orbicular ligament

OPERATION

The anterior incision (fig 4a), used in the cases I have described here, was made to the outer side of the antecubital fossa, according to the directions given by Campbell, Corbett and Wilson In the upper part of the incision the gap between supinator longus on the outer side and brachialis anticus and biceps on the inner side was defined, and these muscles were retracted, the posterior interosseus nerve going with supinator longus This line of cleavage was carried downwards so that the head of the radius and the inner and upper border of supinator brevis came into view Small deep retractors were then inserted and the head and neck of the radius, with the torn ends of the orbicular ligament, were defined (fig 5) A second incision was then made at the inner side of the elbow parallel with the posterior border of the ulna (fig 4b) The ulnar nerve was defined as it comes out of the postcondylar groove and retracted posteriorly, so that the inner surface of the olecranon was available At the level of the superior radio-ulnar joint a drill hole was then made through the base of the olecranon process, emerging at the lesser sigmoid cavity of the ulna (fig 6) A loop of kangaroo tendon was then passed around the neck of the radius and both ends threaded through the eye of an aneurysm needle which was passed along the drill channel in the ulna to emerge in the superior radio-ulnar joint The two ends of kangaroo tendon were then brought out at the inner surface of the ulna and knotted in

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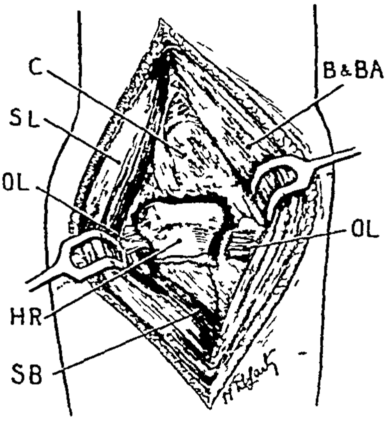

FIG 5—Operation C = capitellum covered by capsular ligament, SL = supinator longus, SB = supinator brevis, B and BA = biceps and brachialis anticus OL = torn ends of orbicular ligament, HR = head of radius

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WITH FRACTURE OF SHAFT OF ULNA

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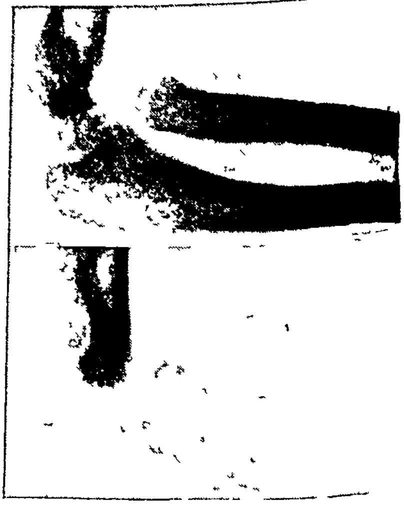

FIG 3—Case 4 (*a*) Lateral view of elbow sho dislocation of head of radius (*b*) Lateral of elbow showing stable reduction of disl radial head after reconstruction of orb ligament

onchogenic origin, who were treated with sulphathiazole

CASE-REPORTS

CASE 1 —Man of 59 Pneumonia complicated by lung bscesses and empyema Admitted Feb 2, 1941, on 4th ay of disease, very ill with high fever, dyspnœa and cyanosis onsolidation in upper- and mid zones left lung From 4th o 14th day sulphapyridine, 55 g , given by mouth Pyrexia ess for 2 days only Consolidation developed in right midone Between 14th and 17th day pyrexia continued and adiography revealed cavity in left mid zone Sputum 8–12 oz daily) showed predominating growth of *Staph ureus* as well as some *Streptococcus hæmolyticus* From 17th o 23rd day sulphathiazole, 36 g , given by mouth , apyrexial after 48 hours and showing much clinical improvement Right lung cleared satisfactorily, but abscess persisted in eft lung From 28th to 30th day there was further pyrexia educed by sulphathiazole Aspiration of sterile, turbid, erous effusion from left pleural cavity carried out on 43rd nd 49th days On 61st day recurrence of pyrexia with acute nephritis Left pleural effusion now found to give good rowth of *Staph aureus* and moderate growth of *Strep hæmolyticus* Blood urea, 47 mg per 100 c cm After another course of sulphathiazole, patient became apyrexial after 3 days and nephritis cleared up after 5 days Empyema persisted and intercostal drainage instituted on 66th day Sulphathiazole concentration in pleural fluid was 8 6 mg per 100 c cm and in blood 15 5 mg per 100 c cm Although dyspnœa and tachycardia improved considerably, empyema cavity remained large and on 94th day rib resection was done under local anæsthesia and drainage begun Patient then made a good recovery, empyema cavity closing in and lung abscess no longer being visible radiologically

CASE 2 —Woman of 62 Staphylococcal pneumonia Admitted Jan 31, 1941, on 7th day of illness Toxic, with consolidation of left lower lobe From 7th to 15th day sulphapyridine, 48 g , given by mouth Temperature fell slightly at first but soon rose to higher than before and lung signs persisted Copious purulent sputum gave good growth of *Staph aureus* From 15th to 22nd day sulphathiazole, 80 g , given by mouth Apyrexial after 4 days , fever recurred on 21st day and 2 oz of sterile turbid fluid aspirated from left pleural cavity Permanently apyrexial after 23rd day and lung condition cleared satisfactorily Radiogram of chest showed no lung abscess

CASE 3 —Girl of 16 Staphylococcal empyema probably complicating influenzal pneumonia Admitted Jan 28, 1941, on 6th day of illness, very ill, pale and toxic with palpable spleen Signs of right basal pneumonia with pleural effusion From 6th to 12th day sulphapyridine, 36 g , given by mouth Further rise in temperature On 8th day aspiration of sterile serous effusion from right pleural cavity No tubercle bacilli in sputum X rays showed opacity right base with doubtful evidence of lung abscess and loculated pleural fluid On 13th day more turbid fluid aspirated , this grew *Staph aureus* From 16th to 20th day sulphathiazole, 36 g , given by mouth , no improvement Pyrexia continued and was unaffected by further aspirations of the empyema, in which *Staph aureus* persisted Sputum showed no staphylococci, but was not examined for these organisms until 18th day On 21st day rib resection was done and drainage instituted Biopsy of pleura showed no evidence of tuberculosis Gradual improvement followed, patient becoming apyrexial and sinus healing

CASE 4 —Man of 18 Boil on chin with sterile empyema Admitted Feb 7, 1941 Boil for 6 days and left pleuritic pain for 3 days On admission febrile and toxic Large furuncle on chin and left pleural effusion, which on aspiration was found to be purulent but sterile on culture Blood-culture sterile X rays showed opacity at base of left lung From 6th to 12th day sulphathiazole, 40 g , given intravenously plus 48 g by mouth Further aspirations of pleural fluid on 7th and 8th days showed effusion to be less purulent and still sterile Sulphathiazole content of pleural fluid 8 9 mg per 100 c cm Drug rash appeared on 12th day Patient became permanently apyrexial on 13th day, by which time furuncle and lung condition had almost cleared up *Staph aureus* cultured from furuncle

SUMMARY

A group of 4 patients (2 male and 2 female) with staphylococcal pulmonary infections were treated with sulphathiazole , 3 of them had failed to respond to sulphapyridine

All recovered, though 2 required drainage of empyemas

I wish to thank Dr W Allen Daley, medical officer of health to the London County Council, for permission to treat these cases The sulphathiazole used in the clinical trials was supplied by Messrs May and Baker Ltd

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ACUTE LARYNGITIS COMPLICATED BY RECURRENS PARALYSIS

A J MOFFETT, M B BIRM , F R C S
MAJOR, R A M C , ASSISTANT SURGEON TO THE EAR AND THROAT HOSPITAL, BIRMINGHAM

THE two cases here recorded, both in soldiers were seen within a few days of each other during a period when acute upper respiratory infections were fairly common

CASE 1 —Age 19 Ten weeks before examination had a severe sore throat, followed in a few days by gradual loss of voice When seen could speak only in a whisper but could make a loud harsh noise when coughing Throat, nose and pharynx mildly congested Both antra dim on transillumination, but right antrum washout showed no macroscopic pus Subacute inflammation of larynx with little muco pus on right vocal cord Trachea shared in general inflammation Right vocal cord showed complete recurrent paralysis, cord being in cadaveric position Right arytenoid could be moved with a probe

X ray appearances of chest normal No glands palpable in neck Postnasal swab gave Freidlander's bacillus and pneumococcus on culture , no diphtheria bacilli

Three days later voice returned gradually, but it had peculiar cracked sound which patient stated was not there prior to illness Two weeks later voice and appearance of vocal cords, except for gradual subsidence of inflammation, were unchanged

CASE 2 —Age 38 Twelve days before examination was walking to duty on a bright but cold frosty morning Had gone only short distance when became aware of slight tickling in throat This got steadily worse from day to day, until two nights before examination was awakened from sleep by violent fit of coughing Had several severe paroxysms ending in alarming inspiratory stridor which made him hold on to the bed to get his breath Paroxysms recurred nightly, most severe being on night before examination No loss of voice Looked ill T 99° F , P 100 per min Nose and pharynx acutely inflamed , pharynx studded with œdematous lymphoid follicles and very sensitive Small tender gland on left side of neck at level of hyoid bone Larynx acutely inflamed , vocal cords and mucous membrane bright red Trachea also inflamed Left vocal cord showed paralysis in which some adductor movement was still present Arytenoid mobile That night had another slight paroxysm of coughing, but improved rapidly with expectorants, inhalations and rest in bed X-ray appearances of chest normal Postnasal swab gave few *Staphylococcus aureus*

Ten days later condition had improved considerably Paralysis of left cord now complete but laryngitis less inflamed Voice tired easily and had not improved after a further ten days sick leave Ten weeks after onset laryngitis had disappeared and paralysed cord had regained considerable range of movement

The distressing inspiratory stridor experienced was probably due to an abductor paralysis in the early stages

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IN " The Battle of Britain " (Puffin Picture Book 6d) David Garnett has retold the story of August–October 1940 and James Gardner has illustrated it in colour The Air Ministry account, on which this is based, must have thrilled every grown person in the country , this will bring in the under-sixteens such a way as to prevent any sliding back As this manœuvre was carried out the head of the radius could be seen to reduce into both elbow and superior radio-ulnar joints and the stability of the reduction could be demonstrated before the wound was closed Both incisions were closed and the arm fixed in plaster

If the importance of the torn orbicular ligament is admitted, rational treatment will obviously aim at its reconstruction It is remarkable that although Campbell (1929) advised and carried out the procedure here described, books on fractures show a division of opinion about what should be done Bohler (1935) says that the dislocation is reduced by traction on the forearm with pressure on the head of the radius, and that if this is done early the orbicular ligament will heal and perfect function be restored Kellogg Speed (1935) notes that reduction is difficult and mentions restoration of the orbicular ligament by a fascial graft passed through a hole drilled in the ulna Watson-Jones (1940) recommends reduction as described in Bohler's textbook but advises reconstruction of the orbicular ligament in late cases where the fracture of the ulna is malunited or non-united Wilson (1938) emphasises that in all cases there is a rupture of the orbicular ligament and states that while dislocation is easily reduced by closed manipulation it is impossible to retain the position He recommends reconstruction of the orbicular ligament by a fascial sling passed through the ulna

In my experience, though it is easy to replace the radial head by closed manipulation, the displacement always recurs The reason seems to be the curling up of the ligamentous ends beneath the radial head , in addition the orbicular ligament is usually so much damaged as to make primary repair impossible It is also evident that the degree of pressure which has necessarily to be kept on the head of the radius while the elbow is fixed in plaster is not safe Even those surgeons who agree that reconstruction of the orbicular ligament is the only sound method of obtaining success in these cases, differ considerably about the way to achieve it Hunt's suggestion (1939) of simple suture of the torn ends seems to be a counsel of perfection rarely possible to follow The same objection holds for Corbett's method of plastic repair with a strip of bicipital fascia , there is not enough of the torn orbicular ligament left, particularly in a small child, for adequate fixation of the repairing strip Campbell, Wilson and Kellogg Speed all carry out their reconstruction by drilling a hole through the upper end of the ulna The results in my cases 3 and 4 illustrate the success of this method, and it is probably of little importance what material is used for constructing the new orbicular ligament

SUMMARY

Four cases of anterior dislocation of the head of the radius, associated with fracture of the shaft of the ulna, are reported

The best method of treatment seems to be open reduction of the dislocated radial head through an anterior incision, with reconstruction of the orbicular ligament by means of a loop passing round the neck of the radius and secured through a hole drilled in the upper end of the ulna

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SOCIALIST MEDICAL ASSOCIATION—A conference on the historical aspects of the medical services will be held at 12, Great Newport Street, London, W C 2, on Sunday, Nov 2, at 11 A M Mr H L Beales will speak on the social background of the development of the voluntary hospitals in the 18th century, and Dr T O Garland on health problems of the early days of industrialisation In the afternoon Mr Arnold Sorsby will open a discussion on the development of organised medicine Further information may be had from the secretary of the association, 33, Murray Road, Northwood, Middlesex

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SULPHATHIAZOLE IN STAPHYLOCO LUNG INFECTIONS

GEORGE MELTON, M D LOND , M R C P
SENIOR RESIDENT PHYSICIAN AT LEWISHAM HOSPITAL, L C C

STAPHYLOCOCCAL infection of the lungs is well rec nised as a complication of staphylococcal septicæmia a pyæmia Staphylococcal pneumonia may however ha a bronchogenic origin and such cases have particular been observed during influenzal epidemics (Chicker and Park 1919) In influenzal patients the staphy coccus plays the part of a secondary invader, either al or in combination with other organisms Apart fr these epidemics, staphylococcal pneumonia does n appear to be common, though occasional reports of t occurrence, particularly in children but also in adu have been published (Reimann 1933, Macgregor, 19 Everley Jones 1938, Kanof et al 1939) It is p ticularly liable to arise in patients whose resistance h been lowered by debilitating conditions

The pathological features of staphylococcal pneumon are the development in one or both lungs of one or mor areas of massive consolidation showing hæmorrhage and early abscess formation These abscesses are often multiple *Staphylococcus pyogenes* can be cultured as the predominant organism from the lungs Clinically the disease is often characterised by an insidious onset, but it may begin suddenly with chills and rigors Associated upper respiratory infections are common Pleuritic pain sometimes occurs Fever is often high and remittent, with tachycardia, dyspnœa and cyanosis There is often severe prostration, particularly in children and in influenzal patients Diarrhœa appears commonly in infants At first the physical signs are those of bronchopneumonia Evidence of consolidation may soon develop over one or more lobes Later the clinical features of lung abscess may manifest themselves Th sputum is purulent and may be bloodstained or ru and in influenzal cases is sometimes salmon pink I contains staphylococci, either alone or as the pr dominant organisms, and is often copious when absce have developed If the patient does not die in the fi few days of his illness an empyema commonly develo Staphylococcal pericarditis and acute nephritis a occasional complications The disease often last long as a month in cases which recover The fatality high, particularly in influenzal and debilitated cases a in children Thus it was noted by Chickering in t 1918 epidemic that though the staphylococcal ca constituted only about 10% of the total pneumon they were responsible for approximately half the dea Kanof and his colleagues noted a fatality of 73% in h series Macgregor reported 10 successive cases in childr with no recoveries Reimann, on the other hand reported 6 patients with only 2 deaths Leucopenia and high, sustained fever are ill omens in prognosis

There have been few reports of the results of su phonamide therapy in staphylococcal pneumon Blake and Haviland (1939) treated 6 cases (3 with positive blood-cultures) with sulphapyridine Only patient recovered and this case had a negative bloo culture Maxwell (1938) reported a cure with sulph pyridine in a case of staphylococcal septicæmia wi pneumonia The sputum of this patient, howev contained pneumococci Weisman and Russell (19 described 5 cases of staphylococcal laryngotrache bronchitis in infants treated successfully with sulph methylthiazole , 3 required tracheotomy, but desp this measure their condition continued to deterior until they were given the drug Kammerer (1941) mentions a case of staphylococcal postoperative aspi tion pneumonia with multiple lung abscesses which wa cured after sulphamethylthiazole therapy In a ser of 50 cases of staphylococcal infection treated wit sulphathiazole which I reported recently (Melton 1941) I observed that in patients suffering from multi pyæmic lung abscesses the drug seemed to have little effect, but 4 patients with staphylococcal septicæmia developed pulmonary complications which cleared up satisfactorily The present report concerns 4 othe patients with staphylococcal pulmonary infections, 3 of imated from an equation in which the total " thera- tic units " multiplied by 100 are divided by the mber of weeks of treatment the answer being the so- led " efficiency index." Given that treatment is ministered for the number of weeks recommended for e stage of the disease, and an efficiency index of 60 or ore, the patient is regarded as having had sufficient atment The average clinician may feel rather eptical of this attempt to estimate the patient's action to treatment in terms of a mathematical rmula, but the procedure has stood the test of Colonel urke's experience and so commands respect It may questioned whether his classification of the stages of philis has much advantage over the Ricordian classifi- tion on which fundamentally it is based Despite ese criticisms the book is able and stimulating It is be hoped that it will not be allowed to pass into livion as a result of the author's untimely death

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Medical Societies

NUTRITION SOCIETY

THE first scientific meeting of the society was held in e Physiological Laboratory Cambridge, on Oct 18 r CHARLES MARTIN F R S , took the chair at the orning session and Sir JOSEPH BARCROFT, F R S at e afternoon session In an introductory address Sir OWLAND HOPKINS, F R S , pointed out that the need r a nutrition society had long been felt The subject as becoming so large and its implication so wide at it was no longer practicable to consider it as a bsidiary branch of biochemistry or physiology More portant perhaps was the need for closer collaboration tween the laboratory worker and the clinician between e public-health worker and the dietitian between ose concerned with human nutrition and those con- rned with animal nutrition Such coöperation was ssible and a society such as this could bring it about he secretary, Mr Leslie J Harris D Sc read messages goodwill from American nutritional workers and many nglish societies The meeting took the form of a mposium on the evaluation of nutritional status his was discussed under three heads · the assessment the level of nutrition in man; the clinical signs of etary deficiency , and the nutrition of farm animals

ASSESSMENT OF LEVEL OF NUTRITION IN MAN

Dr HARRIS reviewed the laboratory methods which ive recently been evolved for the study of nutritional atus in man There were many reasons he said why ch tests were of use—they could detect signs of ficiency earlier than was possible by clinical examina- on , even if no deficiency existed it was often useful determine whether the reserves of a nutritional factor ere high or low , the final symptoms of deficiency (for ample, avitaminoses C or K) often occurred so sud- nly that it was of considerable advantage to detect e possibility of their approach ; lastly, the existence of rtial deficiency in itself, while not necessarily causing vious signs or symptoms must result in some degree of health Dr Harris brought forward evidence for the ality of " partial deficiencies " The fact that frank riberi or scurvy were rare in this country or even that rsory examination revealed no sign of malnutrition, is not sufficient to prove that partial deficiency did not ist The standards used in assessing malnutrition re often either inadequate and variable—such as the ethod of classification of nutritional status in school- ildren—or were too low, as for example were the past ight and height averages for children The adminis- ation of iron to " normal " babies or of extra milk to normal " school-children has resulted in considerable provement in health and physique He then des- bed the methods which were available for the detection partial deficiencies of different dietary essentials and ve examples of their use By the urinary excretion thod (the so-called " saturation " test) of measuring amin-C reserves it was shown that school-children in a or district in Cambridge were lower in respect of vita- n-C nutrition than those from a well-run home for aifs and strays where the diet was adequate The serves of the vitamin were also found to be higher at e end of the summer than in the early spring. Large groups of children given various graded supplements of vitamin-C showed corresponding graded levels in their " reserves " as measured by this method. Low levels of vitamin C were found in patients with acute infectious diseases, in those on " gastric diets " and in lower economic classes Tests such as these were being developed also for vitamin B_1 and nicotinic acid and they offered a reliable method of obtaining exact information about the level of nutrition of individuals or groups of individuals in the community in respect of specific nutrients

Dr H M SINCLAIR spoke of the necessity for caution in interpreting the results of saturation tests Alterations in renal threshold rate of storage or rate of metabolism might conceivably affect the quantity of vitamin excreted in the urine, apart from the degree of saturation of the tissues The postabsorptive level of a given vitamin in the blood was probably of greatest physiological significance since this determined the amount available to the cell In attempting to assess accurately the nutritional status of individuals or groups an exhaustive investigation was essential—clinical, clinico-laboratory and special tests in blood and urine He gave examples of the methods by which nutrition surveys of this sort were being conducted in America

Dr JOHN YUDKIN gave an account of some recent surveys of the incidence of dark adaptation which he had been carrying out in collaboration with Mr G W ROBERTSON, B Sc. Poor dark adaptation in single individuals may be proved to be due to deficiency in vitamin A by the improvement which occurs when the vitamin is given In comparing large groups of people, however a comparison of the proportion in each group whose dark adaptation is good, bad or indifferent is sufficient to show the relative status of these groups as regards vitamin-A intake Thus, in a study carried out in children from three Cambridgeshire schools, 60% of the children from two of the schools, and only 35% from the third school were classed as having good dark adaptation In adults, it is necessary to compare groups of similar age since there is a deterioration of dark adaptation with age In three groups of young people below the age of 22, two of them—nurses and medical students—showed 80–90% who had good dark adaptation, while the third—workers in a Midland factory—contained only 55% in this grade The factory workers were also examined as to their hæmoglobin levels Nearly 800 subjects were investigated more than 30% of the women and some 6% of the men had definite nutritional anæmia

CLINICAL SIGNS OF DIETARY DEFICIENCY

Dr. B S PLATT stressed the point that the nutritional level at which clinical symptoms appeared was definitely lower than that at which optimal health is maintained The detection of deficiency diseases rested not only on accurate examination but also on the response to specific therapy or on the improvement following a generally increased standard of nutrition Illustrating his remarks with photographs, Dr Platt pointed out some of the features of deficiency diseases as seen by him in China and Africa In some instances the introduction of some simple dietary measure produced impressive results The change, for example, to unwashed from washed rice in certain factories in Shanghai led to a considerable fall in the number of employees who had to give up their work. Dr Platt emphasised the association between deficiency and infection He referred also to the high incidence of infestation with the bed-bug found in people suffering from cheilosis Finally, a great deal might be learned from the study of the general behaviour of subjects the apathy and listlessness found in malnourished children contrasted greatly with the exuberance and high spirits of their better nourished neighbours

Dr R H DOBBS dealt with the assessment of the nutritional status of children Adequate assessment must be made on the basis of physical examination general behaviour (particularly as described by the mother and teacher) and the existence of special evidence of malnutrition Of particular value in the physical examination was the condition of the skin, the musculature (including stance and posture) and the teeth. Apathetic behaviour poor appetite and undue fatigu-

Reviews of Books

Diseases of the Heart

Diagnosis and Treatment HENRY A CHRISTIAN, M D, F A C P, Emeritus Hersey professor of the theory and practice of physic, Harvard University London Humphrey Milford, Oxford University Press Pp 599 35*s*

THE name of H A Christian on the title-page of a medical book is sufficient guarantee of its clinical soundness, and this reprint from the " Oxford Monographs on Diagnosis and Treatment " is no exception Based largely on Dr Christian's personal experience at the Peter Bent Brigham Hospital and in consulting practice, it presents an able and coherent picture of clinical cardiology True to his title, he emphasises diagnosis and treatment rather than ætiology, but enough is said to ensure that the reader has some idea of current views on causation The common conditions met with in practice receive most attention, but rarer conditions are not overlooked and there is a succinct chapter on glycogen disease, amyloidosis of the heart, and other such unusual findings The references are confined to American literature, and it is good to know that despite the international situation we are still able to receive exports such as this from our American colleagues

Diabetic Manual

(7th ed) ELLIOTT P JOSLIN, M D London Henry Kimpton Pp 229 10*s* 6*d*

THE appearance of the seventh edition of this book is a good indication of its popularity on both sides of the Atlantic In the simplest of language a remarkably complete picture of diabetes mellitus is given to the reader , by the use of homely examples the details of treatment are made clear and the possibilities of misunderstanding are reduced by a series of questions and answers which show real comprehension of the patient's difficulties But perhaps the greatest virtue of the book lies not in the competence which it displays in setting forth technical knowledge but in its attitude to diabetes as a personal problem Its whole tone is one of hope , and it would appear impossible for a patient to study this manual without realising that, far from being at the mercy of a mysterious illness, he is in fact master of his own fate

War-time Health and Democracy

HUGH CLEGG, M B Camb , M R C P London J M Dent and Sons Pp 64 1*s*

A CHANGE has taken place in the professional attitude to subjects which a few years ago were dismissed almost without discussion Proposals for state and socialised medicine are receiving a more sympathetic hearing The war is naturally the precipitating factor in this changed attitude, but wider economic forces have created the possibility of change That the situation does not affect only a minority is shown by the B M A Planning Commission, which by its very existence has put it on record that somebody should do something Dr Clegg sets out to describe how the medical profession met the problems created by September, 1939, how the war affected the national health, and how the health problems which arose have been tackled He gives a broad survey, well spiced with facts and figures The title arose out of Lord Hewart's definition of democracy as a system of Government which allows " within agreed limits freedom to criticise " , and the author holds that any system of state medical organisation which shackled this freedom would harm medicine and the people it serves He points out that after this war the individual doctor will have to work in closer cooperation with his fellow doctors rapid extension of medical knowledge and techniques compel this, Medical care will have to be administered to the patient by larger medical units, and in these the doctor will have to surrender some of his present freedom of action " So long as initiative and imaginative thinking are not put into halters by a system that plays for administrative safety, the medical man will gain more than he will lose "

Although the book is written for the general public, it is of considerable interest to the medical reader, who may be slightly startled to see in cold print " No medical service can be other than a repair shop for damaged human machines so long as the people of dem England live in a state of economic insecurity, inadequately fed, and are badly housed " Yet Dr Cleg believes that " the doctor, in relation to his professio work, should steer clear of politics If after caref investigation he concludes that poverty is the root ca of certain diseases and ill-health, his job is to point th out, in season and out The cause of poverty is a matte for political thinkers and economists " This seems somewhat introverted view of the doctor as a democra If we have built a state in which poverty breeds ill heal we have all had a hand in doing it, doctors and layme alike , and the duty of undoing it must also be shar It is not pleasant to picture the medical profession a sort of encapsulated tumour—benign, no doubt, but c off from a responsible part in the activities of the bo politic

Periodicity and Cause of Cancer

J H DOUGLAS WEBSTER, M D Edin , F R C P E, F F honorary director, Meyerstein Institute of Radiothera Middlesex Hospital, London London Bailliere, Tind and Cox Pp 178 12*s* 6*d*

IN following up the experimental observation th periodicity or rhythm in the rate of growth of transplant tumours is sometimes conspicuous, Dr Webster h endeavoured to show that similar fluctuation occurs i human cancer He claims that regular and predictabl fluctuations in growth-rate, time of recurrence and metastasis are characteristic of many carcinomas and sarcomas, and also of leukæmias and Hodgkin's disease The evidence for this claim is set forth in a large number of case-histories, but it is nowhere very clearly stated exactly how the onset of increase or decrease in growth rate is determined nor the date of appearance of a recurrence or metastasis Dr Webster appears to depend upon the observations and complaints of the patients , but he claims to find an almost mathematic ally exact periodicity even with such an erratic source of information, and to have been able to predict the date of onset of a change in growth-rate, a recurrence, or the appearance of metastases in a number of patients In those cases where predictions were made the patient were told to present themselves for examination at th time the change was due and the author believes th predictions were correct to within a week in 60 cases

Venereal Diseases

E T BURKE, M B Glasg director of L C C Whitechap clinic London H K Lewis and Co Pp 549 30*s*

THIS book is well prepared, well written and we illustrated , it is uncommon to find a textbook on an subject so readable from beginning to end Much of th teaching is orthodox, but Colonel Burke held som interesting unorthodox views , it is perhaps unfortuna that he used this medium for stating them so strongl He maintained, for example, that the gonococcus i urethral pus, far from being the intracellular victim o phagocytosis, is attached to the outer wall of th leucocyte and achieves its greatest virulence and mo rapid growth in this situation , and he suggested th the gonococcus may be a harmless symbiote, perhaps normal inhabitant of the genital tract, which becom pathogenic only on occasions These are no more th theories , certainly no strong evidence is here produc to support them and they cannot be said to explain th facts even as well as the accepted views

In the treatment of syphilis he strongly advocated th alternating continuous use of arsenicals and bismut rather than the concurrent intermittent method wh has found greater support in this country He recor mended abnormally heavy doses of arsenicals, giv over longer periods than are customary , but the tot duration of the treatment advised for early syphilis shorter than is generally held to be safe His schem of treatment have the disadvantage that the patient required to attend three times a week for most of th period of treatment, and that no bismuth is given for th first three months, during which default is most com mon For each preparation of arsenic and bismuth figure of relative value is worked out, based on the " chemotherapeutic index " or the relationship of the minimum single curative dose to the maximum sing tolerated dose The effectiveness of treatment i

THE LANCET

LONDON SATURDAY, NOVEMBER 1, 1941

NATIONAL WAR FORMULARY

THERE was a time when a doctor could achieve a ir reputation as a prescriber by the liberal use of harmaceutical cocktails such as the compound ncture of cardamon, and by avoiding the more pectacular catastrophes of incompatibility represented by explosive mixtures The advent of ational health insurance, by curbing extravagant prescribing, showed many practitioners the error of heir ways, and not a few physicians were content to ang the blunderbuss in the hall and practise polyharmacy no more Modern war, which is fought as avagely in the realm of economics as on the battleield, has now forced all doctors to exercise more discrimination when prescribing The therapeutic equirements committee of the Medical Research Council stated the position succinctly in their memorandum[1] "Economy in the use of a drug may be necessary in war-time because the drug is imported or because its manufacture at home diverts materials and skill from other essential services" The committee classified drugs into those which we can or must use freely (A), those with which we must be careful (B), and those which we must give up altogether (C) Based mainly on this classification a National War Formulary[2] will shortly be issued by the Ministry of Health, and its importance can hardly be overstated The general practitioner is specially concerned, for the N W F will replace the National Formulary for N H I purposes on Dec 1, before which date all nsurance practitioners and pharmacists will receive a copy But the new formulary is not intended exclusively for N H I patients, as its children's section bears witness, it is hoped that all practitioners will amiliarise themselves with the N W F and use it when prescribing for their private and hospital patients as well

Comparatively few doctors are sufficiently well nformed on the dry bones of materia medica to appreciate the more subtle reasons for avoiding this or hat drug as a contribution to the war effort They will therefore be glad to have the guidance of the section on war-time prescribing The reasons for some of the "Don'ts" are at once apparent, particularly those referring to confections, glycerin and alcohol On the other hand, it will come as a surprise to many that they must go carefully with such commonplace substances as linseed, starch and soap liniment (high alcohol content) We referred last week (p 489) to the urgent need for economy in aspirin, and this is mentioned in the formulary, though it includes mixtures and tablets containing aspirin If the results of recent research[3] are accepted, it follows hat five grains of aspirin have as powerful an analgesic action as ten There seems therefore to be no pharmacological justification for the practice (as common among doctors as laymen) of taking "a couple of aspirins", the essential thing is that the dose should be absorbed, by grinding it up, chewing it or taking it in suspension There are some helpful remarks on proprietary preparations, the abuse of which has become the blight of modern therapy To quote the formulary "Before prescribing any proprietary preparation the medical practitioner should consider carefully whether the needs of the patient would not adequately be met by the use of a drug or preparation which is identical or of reputed analogous therapeutic effect Particularly should he refrain from prescribing proprietary preparations of foreign origin" Because of skilful publicity and their convenience these preparations tend to accumulate in the doctor's therapeutic armamentarium, and the prescriber is likely to continue to use the original trade-name long after the identical substance has become official—usually under a name which has some bearing on its composition but not necessarily easier to remember on that account There can now be no excuse for such extravagance

In this country we are well supplied with works of reference on materia medica, but our B P, our B P C and our Martindale tell us little about the relative effectiveness, availability and cost of the preparations they describe Sweet indeed are the uses of adversity which has compelled a committee of distinguished medical men and pharmacists to come to grips with these aspects of prescribing The advice which the N W F offers has been made necessary by the difficulties of supply, but there has clearly been a careful search among pharmacological title-deeds in deciding the claims of each drug Exception can be taken to few of the successful candidates, though it is difficult to justify the inclusion of opium in a lotion, the addition of sodium bromide to the sleeping draught containing chloral hydrate merely spoils the end-point of the latter drug, and mist brom et arsen is based on the long-exploded belief that a small dose of Fowler's solution prevents bromism There is a welcome departure from the so-called classical prescription, with its tiresome insistence on basis, adjuvant, corrective and vehicle, and there is evidence of a determined effort to eliminate superfluities and go straight to the point A diagnosis having been made and drug treatment decided on, this booklet shows how simple it is to prescribe for the patient The legacy of elaborate polypharmacy bequeathed to us has here been decisively repudiated; let us hope that this wholesome decision, forced on us by the war, will remain ours by choice with the return of peace

INSUFFLATION OF THE FALLOPIAN TUBES

SINCE the procedure was first described by RUBIN in 1920 insufflation of the fallopian tubes has been largely practised by gynæcologists in this country, and various modifications of RUBIN's original apparatus have been made, notably those of BONNEY and PROVIS This minor operation, however, largely because of its simplicity, is sometimes misapplied. KING,[1] who surveys his results in 635 insufflations, sets up six indications for insufflation—as part of a routine investigation in cases of primary and secondary sterility, as a help in the differential diagnosis in obscure pelvic conditions, to determine the state of the residual tube after salpingectomy for any reason,

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Economy in the Use of Drugs in War-time M R C War Memorandum No 3 1941, p 3

H M Stationery Office Pp 70 6d

[1] King, G Caduceus, 1930, 19, 161

ability would affect school progress and afforded a guide to general ill-feeding Malnutrition might also be suspected from "external evidence" such as the family income or a history of artificial feeding without due care to supplement the diet with, for example, iron in one or other form Conditions of stress were important in accentuating the effects of defective nutrition Growth in childhood provided such stress and infection increased it, making it all the more important to assure the adequate nutrition of the child

The question of physiological stress was underlined by Dr W C W NIXON The increased demands of the body during pregnancy might well be sufficient to reveal a border-line state of deficiency In Hong-Kong, beriberi frequently made its appearance during the latter half of pregnancy Vomiting in the early stages might increase the deficiency of vitamin B_1 Such mild and often neglected complications of pregnancy as œdema and pins-and-needles might well be due to mild deficiency of this vitamin Many women dying of beriberi during pregnancy had had œdema for a month or two before the diagnosis was obvious Recalling the incidence during pregnancy of dental caries, anæmias, cramps, œdema, fatigue and pins-and-needles, Dr Nixon asked whether, in the light of newer nutritional knowledge, it was not more likely that they were all signs of inadequate nutrition rather than necessary physiological concomitants of the pregnancy state

NUTRITION OF FARM ANIMALS

Mr C CROWTHER, Ph D , began by comparing the problems of animal nutrition with those of humans The nutrition of farm animals was concerned chiefly with attaining as economically as possible a specific product This did not necessarily involve the optimal nutrition of the animal and indeed might intentionally produce a pathological state The worker in animal nutrition had many advantages over his colleagues studying human nutrition His subjects offered a much greater freedom in experimentation, were more passive and hence less likely to interfere in the experiments, and lastly were much more uniform as regards genetic constitution On the other hand, in determining the adequacy of an animal diet it was difficult to assess the quantity of available carbohydrate since cellulose was in part assimilable The problem of the protein, too, was complicated in ruminants by the bacterial synthesis of non-protein nitrogen into amino-acids The calculation of the energy value of the diet was also more involved than with human diets The problem of supplying specific sources of vitamins did not often arise in the nutrition of the farm animal, especially when grazing In considering the effects of such supplements, it was necessary to bear in mind the other constituents of the diet, since their effects were often more than simply additive

Mr H H GREEN, D Sc , reviewed some of the commoner deficiency diseases of animals Vitamin deficiencies were not common except in animals intensively reared in stables, batteries or styes In such conditions, deficiency of vitamin D might occur in poultry and of nicotinic acid in pigs Mineral deficiencies, on the other hand, were not uncommon Aphosphorosis, for example, was well known in South Africa Deficiency of the trace elements—copper cobalt and possibly manganese—also occurred Swayback disease amongst lambs appeared to be due to deficiency of copper, and possibly also of cobalt

Mr JOHN HAMMOND, D Sc , F R S , discussed the question of the total energy and protein of the diet Animals kept on a low plane of nutrition for a short while after birth are not only smaller than normal at the end of this period but go on being small into adult life The weight of animals fed for long periods on a low plane of nutrition may be less than half that of litter mates receiving a larger amount of food Not only the size of the body but also the relative proportions of the different parts are greatly affected by controlling the food intake at different levels These effects, too, produced in young animals, may persist to adult life even if the diet has subsequently been increased

DISCUSSION

Prof J L MAXWELL, M D , stressed the importance of detecting early signs of deficiency He suggested that pain in the back and legs, and instability in walking of occurring in pregnancy were possibly early signs vitamin-D deficiency It was necessary also to bea mind that deficiencies were likely to be multiple ra than single

Prof E -J BIGWOOD said night-blindness in Au tri 1918 appeared first in pregnant women, another exa of the effect of pregnancy revealing a latent deficien In a prisoners' camp in Germany the Russians devel scurvy and the Rumanians developed pellagra altho all were given the same deficient diet With regard the question of saturation with a factor such as vita C, it had often been asked whether this was neces identical with the optimal intake If guineapigs, on the few species of animals which can develop scurvy, a allowed a free choice of diet they become satura with vitamin C Moreover, the amount of the vita in the blood reaches the same level as that of ot species of animals in whom scurvy cannot be p duced but for whom nature synthesises the requ vitamin C

Dr DAGMAR WILSON appealed for the standardisa of the signs of early deficiency so that workers could trained, as in India, to recognise them easily She h been able to recognise several cases of angular stoma in Oxfordshire school-children

Mr GEOFFREY BOURNE, D Sc , pointed out that amo the early signs of vitamin-B_1 deficiency were increas irritability, lassitude and a general deterioration i mental alertness In the detection of early deficiency he had found the Gothlin test for capillary fragility of use in showing a lowered intake of vitamin C in patients with peptic ulcer

Mr S K KON, D Sc , suggested that a further test for malnutrition was the estimation of vitamins in the milk of nursing mothers Tests already begun showed that there was a considerable drain on the vitamin reserves of the mother and that the amount of vitamin is now considerably lower than that found in 1934 by Dr Harris

Prof H D KAY, D Sc , said that although as Dr Crowther had pointed out the provision of extra suppl of vitamins was not perhaps essential for all classes farm animals it would considerably affect the nutrit value of the animal product as far as their use in hum nutrition was concerned Thus, the amount of vit A in milk was dependent to a very large extent on amount ingested by the cow

Prof OTTO KESTNER recalled some of his work protein deficiency in Germany in the last war He pointed out that while vegetable proteins might singly of low biological value, together they might act com mentarily so that defects in one might be made by another

Dr S W SWINDELLS hoped that one of the obj of the new society would be to disseminate accu knowledge of nutrition

Dr E H WILKINS looked forward to the adoption simple tests for malnutrition and mild deficiencies wh would be easily applicable by medical officers of hea He instanced the importance of a study of posture children as a guide to nutritional status

Dr ROBERT SUTHERLAND wished to see empha aspects of nutrition which would lead to the adoption generally satisfactory diets, rather than those which to the development of studies of deficiency diseases, assessment and then specific cure

Sir JOSEPH BARCROFT, referring to the present sta of laboratory methods in the diagnosis of defici disease, recalled the similar position which arose af the introduction of such diagnostic aids as the elect cardiogram by Mackenzie and Lewis Clinicians w at first sceptical as to their usefulness, but th mainly because the apparatus was costly and the t nique specialised He felt that laboratory method the study of malnutrition would soon reach a state recognition and applicability comparable to that enj today by the technical methods used in cardiology far as the question of the separate study of the va nutritive factors was concerned, he felt no apprehen that this would detract from a proper study of malnu tion as a whole He looked forward to the time whe knew enough [illegible] synthetic diet as embolism are much less in the conscious than the sthetised patient, for the diagnosis is immediate ne one and masked in the other. On the thera- ic value of insufflation KING is wisely guarded in claimed that 17 5% of his sterility cases became gnant after the operation, and nearly half of these under two months, an observation confirmed by ny subsequent writers Such a result is more pirical than scientific yet the figures are impressive conclusion must be that insufflation is a useful cedure, that it should be carried out as an out- ient rather than an inpatient operation, that a nographic apparatus gives the best and only tain evidence of the functional behaviour of the es, and that if due regard is paid to the indications l the danger signals it is safe

THE MENTAL HOSPITAL PICTURE

IT is not perhaps generally realised how great a ntribution the mental hospitals of the country have ide to the Emergency Medical Service Large mbers of beds had to be found at the outbreak of r, and a considerable proportion of them were ovided by the mental hospitals, some of which were ptied for the purpose, while others renounced asured new blocks or sizeable annexes Most of e big mental hospitals have given up a quarter of eir beds This meant that patients had sometimes be overcrowded Moreover, shortage of nursing id medical staff, darkening of wards by protective ast walls and blackout curtains, and other unavoidble war restrictions have impaired standards in eatment and living conditions At one large hostal, for example, a modern block for newly admitted ses and a newly opened villa for convalescent tients were vacated and handed over to the E.M S , provide 250 casualty beds and a nurses' hostel hereafter treatment of early mental cases had to be rried on in the wards of the old hospital, where rading and segregation were difficult In this hosital, as elsewhere in the country, the number of oluntary patients admitted has fallen, but the reducion does not indicate that facilities for the treatment f such patients have been seriously limited; cerainly in the London area not a single application or voluntary treatment has been refused through ack of accommodation Taking the country as a whole, 100 admissions are made up of 40–60 certified, 0–12 temporary and 30–40 voluntary patients he falling off in total admissions that has been reported reflects the common experience that war does not increase the incidence of psychosis and neurosis n London the drop in new admissions has been far reater than it was in the last war, probably owing to vacuation Nevertheless, in some areas, patients who for social reasons ought to be in a mental hospital re not being accepted, or are being discharged, because medical superintendents say quite fairly that hey must keep their accommodation for the acuter ases These less acute patients may be found causing mild difficulty in their homes or in reception areas by behaviour which would not be tolerated in peace-time On the other hand, many patients of both sexes with relatively mild mental and emotional disorders are being absorbed into regular employment, and are nding occupational therapy in jobs for which in peace-time they would never be taken on, and perhaps in time to come we shall have to plan the rehabilitation of psychopathic people on the lines thus artificially produced by war It is possible, of course, that more patients who would normally seek treatment as voluntary cases in hospital are being seen and treated at outpatient clinics, of which there are 203 distributed over the United Kingdom and Northern Ireland , but no such increase has been reported Indeed, in many of the clinics situated in large cities there has been a decided falling off in attendances as a result of evacuation In general the position is that the mental hospitals though hampered by the sacrifice of accommodation which has been made to the E M S , by shortage of doctors, and even more serious shortage of nurses are standing up bravely to their job, and deserve much credit for maintaining a vital social service approximating to peace-time standards under heavy difficulties

SCHOOL MEALS

OF the five million children in our elementary and secondary schools only 300,000 are now getting a meal at school and, while in some areas school meals are provided for a third of the children in others there is no provision at all In the reception areas children often have to travel several miles to school with no chance of returning to their temporary homes for a midday meal , if there is no meal at school they have to subsist on frugal packet lunches put up by harassed foster parents These nosebags were inadequate in peace-time and must be more so now when cheese and meat are scarce foreign fruit has disappeared and home-grown substitutes are expensive Moreover, with the vastly increased employment of women in munitions there is often no-one to prepare meals at home and supervise their consumption As speakers in the Women s Parliament pointed out in their session reported on another page, universal school meals would not only be a great step towards ensuring adequate nutrition of our children, but would also release more women for industry than any other measure In the House of Lords on Oct 21 Lord WOOLTON foreshadowed a rapid expansion in school-meal organisation The Exchequer is greasing the ways with an additional grant of 10% towards their cost, making the average rate of grant 80%, and school canteens are to receive priority supplies of food The cooking depots which local authorities have been holding in readiness for feeding the community if communications or normal domestic arrangements were put out of action are to be adapted for the children, and the British Restaurants are also to help with cooking school meals Where new kitchens must be started local authorities will be able to draw on the Ministry of Food's central pool for their equipment

These steps are encouraging, but as the *Times* pointed out in a leading article on the morning of Lord WOOLTON s announcement it will hardly be possible to provide a midday meal for all schoolchildren in war-time unless some English variant of the Oslo meal is adopted This has already been attempted successfully in the East End of London, in Glossop and elsewhere The theoretical principle behind the Oslo meal is that if at one meal in the day highly protective foods, chosen from dairy foods, greengroceries, the oily fish and whole cereals, are given it will not matter much what foods are chosen by the child s parents for the rest of the day The to confirm the success of a sterilising operation , as a routine after salpingostomy or uterotubal implantation , and as a therapeutic measure in maintaining or improving tubal patency His four contra-indications should be noted First and foremost is menstruation or any other type of uterine bleeding The only proper time to perform insufflation is in the week succeeding menstruation , if this rule is broken safety is sacrificed and the test is vitiated Yet how many hospital insufflations are done haphazard at any time in the intermenstrual phase ? Secondly, any acute or subacute pelvic inflammation, notably cervicitis, for here the danger of retrograde infection is very real The third and fourth—pregnancy and severe constitutional disease—are self-evident

KING's technique differs from the accepted practice in several important points, the most striking being that he eschews special preparation and anæsthesia and performs his insufflation in the outpatient clinic This alone saves patient, surgeon and institution much time and money and his results and those of American gynæcologists conclusively prove the safety and efficacy of the proceeding A careful bimanual examination is made to rule out any pelvic contra-indication The patient is then placed in the lithotomy position, suitably draped, and the vagina, cervix and cervical canal are carefully cleansed with an antiseptic such as 5% mercurochrome or Dettol A uterine sound is passed after gently grasping the cervix with a fine volsellum, and this gives minimal discomfort to all but the most nervous patients A special uterine cannula with a gas-tight joint at the cervix is inserted and an assistant turns on the gas KING uses carbon dioxide and limits himself to a flow of 30–60 c cm per minute, and this in normal cases should be all that is necessary to demonstrate patency , he never exceeds a pressure of 200 mm of mercury The apparatus is so connected that the behaviour of the tubes is recorded permanently on a kymograph While the investigation is proceeding the assistant auscultates both iliac regions for the intra-abdominal passage of gas, while the operator sees that no leakage takes place at the cervix, watches the recording needle and keeps an eye on the patient The resultant graph will divide patients into four main types normal patency, tubal spasm, tubal stenosis and complete tubal obstruction In cases of normal patency, and these comprised 50% of KING's series, gas passed at a pressure of under 100 mm and well-marked oscillations at the rate of 3–5 per minute were recorded on the kymograph, due to normal tubal peristalsis The presence of these waves, which increase in frequency and vigour as the time of ovulation approaches, establishes normal behaviour of the tubal musculature beyond doubt The graph obtained with one patent tube is no different from that with both patent , hence the importance of auscultation on each side of the abdomen KING only encountered tubal spasm in 3 5% of his series, and this figure agrees closely with that of RUBIN Here the gas does not pass until a high pressure is reached, sometimes approaching 200 mm of mercury Thereafter it passes readily and the graph then obtained differs in no way from that of a tube of normal patency It is doubtful whether any clinical importance is to be attached to tubal spasm, and to overcome this some workers give a routine dose of atropine before examination

In cases of tubal stenosis, where inflammation thickened and fibrosed the tubal wall with fo of strictures or kinks, with or without peri adhesions, the kymograph will show absence or impairment of peristaltic activity This occurred in 12 5% of KING's series, and he rightly points o that in this class of case Lipiodol injection will gi a normal picture, yet this is the very tube that most likely to be associated with sterility, sin though patent it is largely functionless or subfunctional Insufflation in these cases is often painfu probably from the stretching of adhesions, whe in normal patency it is as a rule painless Tub obstruction was encountered in 34% of KING's cases, a figure which again agrees with that of RUBIN Such an obstruction may occur at the cornu, in th tube, or at the abdominal ostium If at the corn no gas passes, of course, and the patient experien a midline pain of uterine distension If the obstruc tion is at the abdominal ostium the pain may b referred to one or other iliac fossa The gra obtained in tubal obstruction is characteristic, wit a flat plateau at or near 200 mm Hg, which i sustained until the gas pressure is released Certain symptoms may be experienced by the patient during the test There may be slight pain as the uterus and tubes are distended with gas, passing off as the gas enters the peritoneum , more severe central lower abdominal pain or iliac-fossa pain usually indicates a blockage at the cornu or the abdominal ostium respectively Any severe pain is a signal to stop the examination Shoulder pain is diagnostic of pneumoperitoneum and thus of tubal patency It was noticed by KING in 157 patients, especially when they assumed the standing position at the conclusion of th examination , it was invariably slight and transitor and often not remarked on unless a special questi was put In all cases of patency an X-ray or scre examination will reveal gas under the diaphragm

Certain dangerous sequelæ occurred in 17 of KING' cases Many of them were mild, such as nausea i 5 cases, vertigo in 3, fainting in 1 and a hysterical attack in 1 In 5 cases there was severe pain, probably due to the presence of hydrosalpinx, which i naturally a contra-indication to insufflation The were 2 cases of suspected gas embolism, a dange which has been used as an argument against insuffl tion Both of these patients quickly recovered I the first a pressure of 200 mm Hg was used and o rising she complained of malaise and precordial pa and started to cough violently, producing a modera amount of blood-stained frothy sputum She had rapid pulse and was cyanosed After 20 minute these symptoms passed and after resting another minutes she was allowed up and felt well A tentative diagnosis of gas embolism of the utero-ovarian vei was made The second case was similar except that the patient had a slow pulse of 40 , she recovered i 4 hours Both these patients had blocked tubes and both were insufflated rather late in the cycle, on th 11th and 16th day The lessons to be learned fro them are that in tubal stenosis prolonged insufflati is dangerous and the amount of gas used should n exceed 50–75 c cm If any unusual symptoms ari during the test it should be stopped at once If the operator is alive to the dangers and contra-indications there is no reason why these unpleasant reaction should deter him from its performance The dangers experimental wounds A disc of rabbit blood-clot s introduced into a pocket made between the dense rous layer deep to the platysma and a similar sheet vering the deep musculature of the haunch on either le On one side 0 25 g of the drug was also inserted ctions of the wounds were examined at various stages healing up to 2 weeks Glynn found no histological idence that any of the three sulphonamides inhibited e formation of collagen or pre-collagen fibres, or the velopment of new blood-vessels The macrophage sponse likewise did not seem to be impaired though ere was evidence of diminished phagocytosis in the eated wounds Sulphathiazole and sulphapyridine ersisted in crystalline form up to 5 and 7 days respecvely but the sulphanilamide was completely dissolved ithin 24 hours An attempt was also made to estimate e quantitative effects of these sulphonamides by broblast counts at 5, 7 and 14 days With sulphanilmide no significant difference was found on comparing he treated wounds with their controls, a very slight hibition of fibroblast proliferation could be attributed o sulphapyridine and sulphathiazole On the other and, sulphanilamide was found to have a slight but efinite toxic action on striped muscle Sulphapyridine ad a still slighter action while sulphathiazole had none t may thus be concluded that while it is safe to use all hree drugs in the local treatment of wounds, it would be referable to use sulphathiazole for wounds of the face, ands and forearms where the minimum of scarring is esirable

MUSCLE ATROPHY

The reaction of a muscle to the severance of its nerve s as a rule divided into three phases In the first period, asting about a week, there are few changes in the muscle, morphologically or chemically But the emergence of slow contraction and rising chronaxie at the end of the first week indicate that important changes are hen taking place The beginning of the second phase s characterised by the onset of spontaneous rhythmical ontractions—fibrillation—which can be seen in the xposed muscle or where the cover is thin—e g, in the ongue by the reflected light A more delicate method or detecting, and for recording, fibrillation is the lectromyogram as Denny-Brown and Pennybacker[1] ave shown At the same time as the fibrillation starts, here begins a rapid progressive atrophy of the muscle, emonstrable in the reduction of its volume and weight he transition to the third phase is gradual, when the ross-striped substance disappears and the interstitial brous tissue proliferates the fibrillation ceases, and the uscle is gradually converted into a non-excitable and on-contractile tissue, histologically something intermediate between scar tissue and tendon

How does the fibrillation originate, and what has it to o with the atrophy? The first question is not definitely olved yet But it is known that the onset of fibrillation oincides with an increase of the susceptibility of the muscle o acetylcholine, and therefore Denny-Brown and Pennyacker assumed that the fibrillation of the muscle underoing atrophy after denervation is due to excitation of ach muscle fibre by the small amount of acetylcholine rculating in the blood This has been questioned by ccles[2] who found that curare depresses the sensitivity f the denervated muscle to acetylcholine without ffecting the fibrillation J N Langley was inclined o believe that the fibrillation took precedence over the rophy in other words that the atrophy was not one of suse but one of fatigue or exhaustion, "the muscle inadequately protected by its refractory period, driven ven to the utilisation of its own material," as Tower[3] uts it The evidence for this assumption being far from satisfactory, Solandt and Magladery[4] studied the subject experimentally They established the weight-loss curve of rat muscles after denervation, and demonstrated the presence of fibrillation by recorded action potentials They then prevented fibrillation in some of their muscle preparations by giving various drugs, of which quinine and quinidine were the most effective Atrophy still developed in all these preparations though they had never exhibited fibrillation as detected by the electrical method; hence it was concluded that the atrophy of denervation is not due to the fibrillary activity. However, the weight loss in the animals given quinidine was not quite as great as in the controls This is attributed to the fact that the quinidine induced a lethargic condition which rested the denervated muscle or protected it from mechanical injury, and this view was supported by the observation that hypnotics, while not affecting fibrillation, decreased the atrophy to an extent comparable to that brought about by quinidine The results are in keeping with the clinical experience that prevention of mechanical injury—stretching seems to be the most deleterious—may keep the muscular atrophy within limits, more important still, these experimental findings should remove the prejudice against electrical treatment of the denervated muscle which was based on Langley's theory As long as there was reason to believe that muscular atrophy was due to exhaustion by over-activity, some reserve in applying more stimulation seemed advisable This theoretical difficulty is now removed Moreover, the beneficial effect of electrotherapy no longer lacks experimental foundation Fisher,[5] in experiments on rats, found that the electrically stimulated muscle, treatment being applied for 10–20 minutes a day—showed a striking increase of weight compared with the resting denervated muscle of the opposite side

STITCH

The cause of stitch has been much debated, and the decline of interest lately does not imply that it has been satisfactorily explained The theories put forward—contraction of the spleen distension of the spleen, pull on visceral suspensory ligaments, faulty vasomotor regulation with distension of the liver and spleen in 'constitutionally inferior' subjects—were seldom formulated on first-hand information, and none of them explains every variety of stitch Capps[6] has reported the results of a study, lasting several years, of 114 attacks of stitch which he observed personally in 55 people He found them by watching the track team of Chicago University High School, men out of training at an impromptu track meeting at Northwestern University, students engaged in wrestling and basketball, and a few of his friends He also listened to what the professional coaches had to tell him Of his subjects 44 were men and 11 women, and ages ranged from 15 to 65, but only 3 were over 35 He found that the right or left upper quadrant of the abdomen was the usual site of stitch, but it might occur anywhere in the abdomen at the costal margin, at the nipple, in the precordium or—in one case—in the second left interspace The position varied in different people, and often in the same person on different occasions Some described the pain as sharp, some as dull, some as constricting, as a pressure, a cramp or a gnawing It usually passed off quickly, but might last ten or twenty minutes It was invariably brought on by physical exertion ranging from walking to strenuous running, riding, swimming boxing, wrestling skiing squash, or basketball Walking was only a cause just after a heavy meal Training had a variable effect, in 2 subjects attacks of stitch disappeared as training proceeded, in 3 others they persisted This

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Denny Brown D and Pennybacker, J B *Brain* 1938 61, 311

Eccles J C *Med J Aust* 1941 1 573

Tower, S S *Physiol Rev* 1939 19 1

[4] Solandt D Y and Magladery J W *Brain* 1940 63 255

[5] Fisher E *Amer J Physiol* 1939 127 605

[6] Capps R B *Arch intern Med* July, 1941 p 94

Norwegian public-health services, on the advice of Prof CARL SCHIOTZ, chose milk (about $\frac{3}{5}$ pint), half an orange, hard rye bread with butter and cheese, wholemeal bread and butter, and a whey cheese or cod-liver paste The meal was finished off with half an apple or a raw carrot This meal is highly protective, giving satisfactory amounts of calcium and iron and vitamins A, B, C and D It is easy to prepare and demands no cooking, so that kitchens and dining-hall can be largely dispensed with

If the authorities could be induced to envisage anything but the hot cooked meal as essential in feeding the young we should have gone a long way towards solving the problem of safeguarding the health of the school-child, for this Oslo meal is a better safeguard than the ordinary hot meal There would remain the resistance of school-teachers and parents, for the children, conservative as they often are as regards the contents of cooked meals, usually take to an Oslo meal The staff have "never heard of such a meal" and the parents are apt to feel that their children are being defrauded by being given cold uncooked foods That this kind of meal solves the problem of inadequate equipment is clear from the experience of domestic-science teachers who have been allowed to introduce a meal of the Oslo type because the demand for school meals had outrun the school equipment In one such school the Oslo meal largely invaded the province of the cooked meal English variants are not hard to devise The milk should be the same in meal, though there is no objection to giving it hot flavoured with cocoa or coffee if it is thought e that some hot food should be served Whole bread could take the place of the *Knackebrod*, a vitaminised margarine the place of butter Apples and raw carrots are still available The main problem lies in supplying what the half orange, the cheese, and the cod-liver paste supply If oranges are unobtainable watercress, mustard and cress, and raw turnip or swede will take their place, or sandwiches with filling of chopped raw cabbage and parsley may be used The cheese and cod-liver paste supply calcium and vitamin D, but these could as well be obtained from fresh herrings and sprats, or more simply from tinned herrings and salmon, and there should be no difficulty with the simplest of appliances in converting these into a paste to spread on bread If we wish imitate the Norwegians in giving a teaspoonful of cod-liver oil daily throughout the winter this can be incorporated in the fish paste In the *Times* of Oct 11 the director-general of Norwegian health services says that the significance of a hot meal has been overestimated, and it seems that all the benefit of hot food, with some others, can be obtained from a cold meal with a hot drink This looks like being the way in which school meals for all can be achieved All that is now required is imagination and the dropping of our British resistance to the unusual in catering

Annotations

BLACKWATER FEVER

THE cause of the paroxysmal hæmoglobinuria which gives blackwater fever its name has long been disputed It is known to be associated with malaria, although parasites may not be found in the patient's blood Is there a specific strain of parasites which is specially liable to cause hæmolysis of red blood-cells in excessively large quantities? Do patients have hæmoglobinuria because their red cells, possibly from long exposure to malarial attacks, are exceptionally liable to hæmolysis? Is there a hæmolysin in the patient's blood responsible for the destruction of the red cells? Foy and his co-workers[1] have tried to answer these questions by studying the results of injecting blood from blackwater-fever patients into unaffected people, and conversely by transfusing normal blood into blackwater-fever patients The results in one woman are presented in detail This was a typical case with black, acid urine containing oxyhæmoglobin and methæmoglobin, and with methæmalbumin in the blood-plasma, no malarial parasites were found in her blood Twenty-five c cm of this patient's blood was injected intravenously into a normal healthy man Eleven days later, although he had been kept strictly away from possible outside infection, the man developed a typical malarial attack and *Plasmodium falciparum* rings were found in thick films of his blood, but he did not develop hæmoglobinuria This confirmed Foy's previous experience with a series of 106 lunatics who were given intramuscular injections of blood from blackwater-fever patients, several of the recipients developed malaria, but none showed hæmoglobinuria From these results he concluded that there is no specific hæmolysing strain of malarial parasites The patient herself was given three blood transfusions from three different normal donors, and although these raised the red-cell count at first it was soon reduced to its former level, the hæmolysis continuing unabated From this it is concluded that normal cells are just as liable to hæmolysis in a blackwater-fever patient's blood stream as are the patient's own cells At the time of the transfusions the patient's reticulocyte count was low and the rise and fall of the red-cell count seemed definitely related to the effect of the transfusions and subsequent hæmolysis, later, when the reticulocytes rose, recovery set in Foy therefore infers that a circulating hæmolysin is the active factor that produces the intense hæmolysis of blackwater fever The fact that no recipient of blackwater fever blood developed hæmoglobinuria he attributes to insufficient dosage or immediate neutralisation of the hæmolysin This research has certainly cleared the ground and it is interesting that, like other workers on paroxysmal hæmoglobinurias,[2] his first conclusion points to a hæmolysin So far, however, the hæmolysin remains theoretical—its presence has yet to be firmly demonstrated Fairley, also working on this point, thinks that it is an intracellular lysin and cannot be detected by ordinary means Whatever the final answer, it is clear that the information obtainable from studies of blackwater fever can usefully be applied to hæmolytic disease in general

SULPHONAMIDES AND TISSUE-DAMAGE

REPORTS from various sources have so far indicated that the local use of sulphonamides in the treatment of wounds has little or no damaging effect upon the tissue The brain tolerates powdered sulphanilamide and sulphapyridine surprisingly well, as Russell and Falconer[3] demonstrated, and this might be regarded as a fairly severe test On the other hand Bricker and Graham[4] have found that the oral administration of sulphanilamide to dogs with experimental wounds seemed seriously to inhibit the fibroblastic response On the strength of this Glynn[5] has investigated in rabbits the local effects of sulphanilamide, sulphathiazole and sulphapyridine on the development of granulation tissue of the grown citizens were all persuaded to take part ie campaign. By the spring of 1940 the incidence of xworm in the schools had been reduced to 28% nwhile pupils and teachers had been studying soil ution and had come to the conclusion that it could be prevented, in their county, by building sanitary privies. Each child then made a report on the sence or absence of such a facility at his home, where t privy existed he reported on its site and condition, in this way a map of sanitary conditions in the nty was compiled The schools then sponsored a ject for the construction of privies Members of the ent-Teacher Association gave the lumber, the health artment provided the plans and chose the site and er bodies were responsible for labour and transport of kers Between the autumn of 1936 and the spring 1940 approximately 3500 privies were built

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[1] Foy, H, Kondi, A and Moumjidis, A *Trans R Soc trop Med Hyg* 1941, 35, 119

[2] *Lancet* May 24, 1941, p 667

[3] Russell, D S and Falconer M A *Lancet*, 1940, 2, 100

[4] Bricker, E M and Graham, E A *J Amer med Ass* 1939, 112, 2593

[5] Glynn, L E *J Path Bact* 1941, 53, 183

her studies undertaken in the schools covered immuni- ion against smallpox, typhoid and diphtheria, provi- n of school meals, a campaign for better home gardens d home canning, all resulted in a substantial advance standards, the full effects of which on health will be parent in a few years time

A similar story is told of Appomattox, Virginia, where e school-children and their mothers joined in making a rvey of the drainage and water-supply of every farm- use The value of safe water and possible sources of ntamination were studied in school, and then the ldren set about planning improvements in their home ter-supplies Finally committees of pupils visited rious farms and tried "to sell the idea of a better water- pply" As a result springs were fenced to keep cattle t, curb and housing were provided for an open well, rings were cleaned, water was piped for stock, and her practical advances were made One boy paid four rsuasive visits to a family in whose unprotected water- pply mosquitoes were breeding, he failed to convince em that something ought to be done about it, but he rned a lot about the difficulties of achieving and main- ining a high or uniform standard in public health

The report is full of stories of such victories and defeats d it is significant that the victories greatly predominate the English reader the striking thing is the plastic and endly relationship which seems to exist between icial bodies and the public Might not our own well- iced bureaucracies look askance at a public health in in which school-children were expected to play a icial and responsible part, or at a map of sanitary ilities which depended on the direct observation and port of the people using them ?

GERMAN VIEWS ON BLOOD-TRANSFUSION

IN war time as in the good old days of peace it is worth ile to find out what the other fellow is thinking or ing but this becomes increasingly difficult as foreign rnals get scarcer E Schulz, in a review of German od transfusion methods (*Dtsch med Wschr* July 18, 779), says that the direct arm-to arm technique is the t, though the fatality with this method is still 0 5% ing anticoagulants citrate gave rise to rigors but arin did not Clotting was also retarded by storing od in containers with paraffin-lined walls But the ndard way of storing blood in Germany seems to be to x it with an equal volume of doubly distilled water taining 0 5% sodium citrate and 4% glucose Of od substitutes, physiological saline and a crystalloid ation named "tutofusin are stated to remain in the ulation for only 1–2 hours, but serum (fresh, stored or ed) and a colloid called "periston ' which is said to e no pharmacological properties remain in the ulation for 12 hours No hint of the composition of ofusin or periston is given Emphasis is laid on the ue of blood transfusion for conditions other than emia or hæmorrhage For example, numerous small nsfusions of stored blood are recommended in gas grene Immuno transfusion is used for sepsis, typhoid, diphtheria, influenza, erysipelas and typhus, and replacement transfusion—combined bleeding and transfusion—is recommended for acute toxæmia Schulz is dogmatic about the quantities to be used, more than 400–600 c cm should, he says, never be given at one time owing to the possibility of heart damage, which is more likely to occur if blood substitutes are used But for the hæmoconcentration of burns a blood substitute such as 30% glucose solution, periston or serum is preferred In the treatment of shock only 200–250 c cm of blood or substitute should be given, but for fluid replacement 400–600 c cm is allowed Such rigid standards, although they may serve to prevent over treatment by enthusiastic novices, cannot be in the interest of the patient It must surely be better to treat the patient according to the deficiency from which he is suffering, and the limits Schulz sets will then often be exceeded

CHILD ENDOWMENT

BY an act which came into force early this year a federal system of child endowment has been introduced in Australia From July 1 a payment of 5*s* per week will be made for each child under 16 years of age in families containing more than one child, and a similar allowance will be made to children in approved charitable institutions Normally the endowment will be paid to the mother and must be used for the child's "maintenance, training and advancement" It is estimated that about a million of the 1,830,000 children in Australia under the age of 16 belong to families with more than one dependent child so that the annual cost of the scheme is some £13 000 000 Two millions of this will be gained by abolishing income-tax abatements for each child after the first (so that the 5*s* will not in some cases be a clear gain) two millions from general revenue, and nine millions from the proceeds of a new pay-roll tax From the short account of this important legislation given in the *Ministry of Labour Gazette* for September, 1941, it appears that this tax is payable by all employers with a pay-roll of over £20 a week and is at the rate of 2½% on all wages, salaries, commissions, bonuses or allowances paid in money or kind The working of this scheme will be watched with interest in this country Meanwhile a similar but localised movement to ease the position of families with young children is reported from Birmingham Acting on the advice of its salaries wages and labour committee the city council has decided to give married employees 2*s* 6*d* a week for every child of school age, an innovation held to be more appropriate to wartime conditions, and fairer, than a general advance in wages for married and unmarried alike The alternative method now to be widely extended is to provide a good midday meal for all school-children This has the special advantage that it reaches not only necessitous children but also those whose mothers find it difficult, with or without endowment, to combine work of national importance in factories or elsewhere with the task of running a household Appliances, staff and suitable premises may be hard to come by, but such difficulties are not to stand in the way, one way or the other we shall bridge the slough of despond through which too many families with young children have had in the past to journey.

AT the Royal College of Surgeons of England on Tuesday, Nov 4 at 2 30 P.M., Mr L R Braithwaite will deliver a Moynihan lecture on the ileo-gastric syndrome Two Imperial Cancer Research Fund lectures will be given by Dr W E Gye F R S, director of the fund On Nov 6, at 3 30 P.M, he will speak on cancer of the breast, and on Nov 13, at 3 30 P.M., on filtrable tumours Dr A P Cawadias will deliver the Thomas Vicary lecture on Nov. 26, at 2.30 P.M. His subject will be hermaphroditism All these lectures will be held at 1 Wimpole Street, W 1, and doctors and students are invited to attend.

variation is well recognised by coaches An attack rarely disappears if the exertion is continued so that it has no relationship to second wind Cold weather seems to be a factor In a cross-country race run in a temperature of 15° F 40 out of 60 competitors had to give up because of stitch On another occasion one team "warmed up" outside in the severe cold and were able to finish the race, whereas their opponents warmed up indoors and all except one developed stitch Deep breathing usually increased the pain, bending over towards the side of the stitch, or pressure over the site, usually relieved it Capps suggests that the symptoms and the variability of the pain can be explained as being due to ischæmia of the diaphragm The relation of the pain to exertion, the compulsion to stop exertion, the relief on resting, and the precipitating effects of a full stomach and of cold resemble findings in angina pectoris and intermittent claudication, and give grounds for considering the ætiology of stitch alongside that of these proved ischæmic conditions That the pain is one sided can be explained by supposing that one side is affected first, thanks to the interruption of exercise the other side escapes The relief of the symptom by pressure over the painful spot or by bending towards the affected side could be explained by the consequent limitation of diaphragmatic movement Capps mentions the agonising stitch-like pain of uncontrollable laughter, laughter is associated with a series of rapid contractions of the diaphragm, and "laughter, holding both its sides" is certainly commoner after a large meal The theory that stitch is a referred pain from angina of the diaphragm to the intercostal nerves is a fascinating one, but the mechanism is as yet not definitely established Stitch in the shoulder might be expected on this hypothesis, but this was not observed though sought for Further evidence could be obtained by blocking the intercostal nerves involved in the supposed reflex, and possibly by observation of the diaphragm with X rays The theory must also be weighed in the balance of clinical observation

INTRASTERNAL TRANSFUSION

ANYONE with much experience of blood transfusion must have been baffled by patients with non existent veins, with veins which persist in becoming blocked (particularly where long and slow transfusions are required), with veins so collapsed or contracted in shock that they will not allow the transfusion fluid to pass, and by those cases in which every vein has already been used up This problem seems to have been solved by Tocantins and O'Neill,[1] whose preliminary tests have been most successful They found that saline solutions were absorbed rapidly from rabbits' bone-marrow and they adapted this finding to blood transfusion in man In adults the sternum is used, preferably the manubrium or midway between the angle and the xiphoid process In children under three years the upper end of the tibia or the lower end of the femur is preferred The technique is not difficult and can easily be mastered on the cadaver Tocantins and O'Neill use an instrument consisting of a gauge-15 needle housing an inner gauge-18 needle which in turn contains a stylet Three lengths are desirable—2, 3 5 and 5 cm—and once inserted the needle is prevented from penetrating more deeply by a collar held by a set screw The site chosen is first anæsthetised down to the periosteum with procaine, and the double needle is then pushed and twisted down to the periosteum at right angles to the skin Next the needle is tilted to about 30° with the skin and the anterior plate of the bone is perforated This is recognised by a lessened resistance The collar is then adjusted and the stylet removed A syringe containing about 1 c cm of saline is attached to the inner needle and gentle suction should bring some marrow into the syringe Not more than 0 5 c cm of marrow is a and the inner needle is removed and flushed out the saline and reinserted Saline is alternately inj and aspirated through it to displace air from the o needle Finally 1–2 c cm of saline is injected into marrow, the inner needle removed and rubber tub filled with saline leading from the reservoir is attac to the outer needle Speed is essential because marr clots easily At first the flow is only about 2–4 c c per minute but it quickens in about a quarter of an ho With a head of pressure of about 100 cm the rate of t in adults has been up to 25 c cm per minute and in t tibia or femur in children up to 4 2 c cm per min A successful infusion can only be given into a va bone-marrow and this will contain very little fat, so th the danger of fat embolism is said to be non ex Tocantins and O'Neill had no untoward reactions wi 52 infusions in 33 adults and 7 infants

EVERYBODY'S BUSINESS

IN the United States health education has long b valued as a tool by public health workers T recognise, as a recent report[1] from the American Pub Health Association shows, that even with adequa sanitation, immunisation and enforcement of laws, n community can achieve its highest possible standard of health unless it has been educated to the job To be wholly effective any programme would have to be universal, reaching every section of the public and taking into account both local and general public health requirements No such universal plan is yet available, but individual ventures are afoot in many states, and a committee was set up by the association to study some of these, this report gives arresting accounts of them Local programmes may have the drawbacks of paro chialism, but they also have its advantages, for, as th report says, "it is a sound, democratic, self relia procedure for a group of people, with the help of specia qualified leaders, to find their own health problems a to seek the needed information through which they c solve these problems" The committee studied health programmes in action in 26 communities in states Many of these communities had made great of the schools in their plan, judging that the ch influence on the parent was likely to be considera advertisers indeed have long guessed as much and o plan campaigns which reach the parent through t child Moreover, as the committee point out, the sch is the only social agency employing trained educa in the ratio of one to every forty people The u approach was to get the children first to observe make lists of the health needs of their community, t to analyse these in the classroom and study how s problems are being met elsewhere, and finally to plan solution of their local problems which would be with the means of the community

A campaign against hookworm in Bulloch Count Georgia is a good example of the method The zone c mittees of the schools learned through the state hea department that 60% of the school-children were infe with hookworm, in one school the figure being as h as 83% and in another as low as 13% Here was a c munal as well as a personal problem First the sch teachers had to be taught about hookworm and to t a test set by the health department, which also supp literature and films for the teachers to use later in classrooms Then the pupils studied the hookworm, life-history, the way it spreads, and how those inf can be treated They went home and told their pa about it, no doubt graphically Plans were then la for treating infested children and adults and for prev ing further soil pollution The schools, the health dep ment, the doctors, the parents of the children and t of the grown citizens were all persuaded to take part e campaign. By the spring of 1940 the incidence of worm in the schools had been reduced to 28% while pupils and teachers had been studying soil tion and had come to the conclusion that it could be prevented, in their county, by building sanitary privies Each child then made a report on the nce or absence of such a facility at his home , where privy existed he reported on its site and condition, in this way a map of sanitary conditions in the ity was compiled The schools then sponsored a ect for the construction of privies Members of the nt-Teacher Association gave the lumber, the health rtment provided the plans and chose the site, and r bodies were responsible for labour and transport of kers Between the autumn of 1936 and the spring 940 approximately 3500 privies were built

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[1] Tocantins, L M and O'Neill, J F *Surg Gynec Obstet* 1941, 73, 281

[1] Community Organisation for Health Education A report committee of the Public Health Education Section and t Health Officers Section of the American Public Health As tion, 1941

er studies undertaken in the schools covered immuni- ron against smallpox, typhoid and diphtheria, provi- of school meals, a campaign for better home gardens home canning , all resulted in a substantial advance tandards, the full effects of which on health will be arent in a few years time

similar story is told of Appomattox, Virginia, where school children and their mothers joined in making a vey of the drainage and water supply of every farm- se The value of safe water and possible sources of tamination were studied in school, and then the dren set about planning improvements in their home er supplies Finally committees of pupils visited ous farms and tried "to sell the idea of a better water- ply." As a result, springs were fenced to keep cattle , curb and housing were provided for an open well, ings were cleaned, water was piped for stock, and er practical advances were made One boy paid four suasive visits to a family in whose unprotected water- ply mosquitoes were breeding , he failed to convince m that something ought to be done about it, but he ned a lot about the difficulties of achieving and main- ing a high or uniform standard in public health

he report is full of stories of such victories and defeats it is significant that the victories greatly predominate the English reader the striking thing is the plastic and ndly relationship which seems to exist between cial bodies and the public Might not our own well- ced bureaucracies look askance at a public health n in which school children were expected to play a cial and responsible part, or at a map of sanitary lities which depended on the direct observation and ort of the people using them ?

GERMAN VIEWS ON BLOOD-TRANSFUSION

n war time as in the good old days of peace it is worth le to find out what the other fellow is thinking or ng, but this becomes increasingly difficult as foreign rnals get scarcer E Schulz, in a review of German od transfusion methods (*Dtsch med Wschr* July 18, '79), says that the direct arm to arm technique is the t, though the fatality with this method is still 0 5% ng anticoagulants, citrate gave rise to rigors but rin did not Clotting was also retarded by storing od in containers with paraffin lined walls But the ndard way of storing blood in Germany seems to be to it with an equal volume of doubly distilled water taining 0 5% sodium citrate and 4% glucose Of od substitutes, physiological saline and a crystalloid ition named "tutofusin" are stated to remain in the ulation for only 1–2 hours, but serum (fresh, stored or d) and a colloid called "periston" which is said to e no pharmacological properties remain in the ulation for 12 hours No hint of the composition of ofusin or periston is given Emphasis is laid on the ie of blood transfusion for conditions other than mia or hæmorrhage For example, numerous small nsfusions of stored blood are recommended in gas grene Immuno transfusion is used for sepsis, typhoid, diphtheria, influenza, erysipelas and typhus, and replacement transfusion—combined bleeding and transfusion—is recommended for acute toxæmia Schulz is dogmatic about the quantities to be used , more than 400–600 c cm should, he says, never be given at one time owing to the possibility of heart damage, which is more likely to occur if blood substitutes are used But for the hæmoconcentration of burns a blood substitute such as 30% glucose solution, periston or serum is preferred In the treatment of shock only 200–250 c cm of blood or substitute should be given, but for fluid replacement 400–600 c cm is allowed Such rigid standards, although they may serve to prevent over treatment by enthusiastic novices, cannot be in the interest of the patient It must surely be better to treat the patient according to the deficiency from which he is suffering, and the limits Schulz sets will then often be exceeded

CHILD ENDOWMENT

BY an act which came into force early this year a federal system of child endowment has been introduced in Australia From July 1 a payment of 5*s* per week will be made for each child under 16 years of age in families containing more than one child, and a similar allowance will be made to children in approved charitable institutions Normally the endowment will be paid to the mother and must be used for the child's "maintenance, training and advancement" It is estimated that about a million of the 1,830,000 children in Australia under the age of 16 belong to families with more than one dependent child so that the annual cost of the scheme is some £13,000,000 Two millions of this will be gained by abolishing income-tax abatements for each child after the first (so that the 5*s* will not in some cases be a clear gain), two millions from general revenue, and nine millions from the proceeds of a new pay-roll tax From the short account of this important legislation given in the *Ministry of Labour Gazette* for September, 1941, it appears that this tax is payable by all employers with a pay-roll of over £20 a week and is at the rate of 2½% on all wages, salaries, commissions, bonuses or allowances paid in money or kind The working of this scheme will be watched with interest in this country Meanwhile a similar but localised movement to ease the position of families with young children is reported from Birmingham Acting on the advice of its salaries, wages and labour committee the city council has decided to give married employees 2*s* 6*d* a week for every child of school age, an innovation held to be more appropriate to war-time conditions, and fairer, than a general advance in wages for married and unmarried alike The alternative method now, to be widely extended is to provide a good midday meal for all school-children This has the special advantage that it reaches not only necessitous children but also those whose mothers find it difficult, with or without endowment, to combine work of national importance in factories or elsewhere with the task of running a household Appliances, staff and suitable premises may be hard to come by, but such difficulties are not to stand in the way , one way or the other we shall bridge the slough of despond through which too many families with young children have had in the past to journey

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Special Articles

SOLUSEPTASINE SPRAYING IN THE PROPHYLAXIS AND TREATMENT OF COLDS*

W R THROWER, M D LOND , M R C P

THE application of various sprays and other solutions to the upper respiratory passages enjoys general popularity for its supposed effects on acute catarrhs, but no scientific evidence has ever been advanced which would justify the widespread adoption of any particular prophylactic or therapeutic measure of this kind Properly controlled research on " colds " is difficult to carry out on the scale necessary to produce results likely to bear statistical analysis Several large experiments have been conducted in the past to evaluate some of the more promising agents for controlling colds, such as vaccines, vitamins and ultraviolet light (Bashford 1938, Sherman 1938, Diehl et al 1938, Read 1939) The results, however, were disappointing

Among matters affecting health in crowded air-raid shelters the question of what to do about colds featured largely but no existing method of prophylaxis or treatment seemed sufficiently established for immediate application , yet something had to be done and done quickly Having in mind the usefulness of sulphonamides in controlling the secondary invaders of the common cold (Yates 1939, Elyan 1938, 1939), the feasibility of using these compounds was reviewed by the Horder Committee, for if even the unpleasant sequelæ of colds could be reduced it would be a distinct therapeutic advance The prophylactic use of sulphonamides by mouth is open to serious limitations under the best conditions, and their widespread use among shelterers would be hazardous There was some evidence that the course of common colds might be influenced by the application through an atomiser of a solution of disodium-*p*-(γ-phenyl-propyl-amino)benzenesulphonamide-α-γ-disulphonate, commonly called Soluseptasine, though a solution of this sulphanilamide derivative similar in all respects to that used for the present investigation in the form of nasal drops did not produce very striking results in a small-scale experiment (Dudley Hart 1941)

To apply a soluble sulphonamide in solution to an epithelium possessing the particular characteristics of that in the nose is a very different matter from placing sparingly soluble compounds into purulent wounds, concerning which opinion has been expressed elsewhere (Thrower 1940), or into carefully investigated wounds of the type described by Colebrook (1941)

Certain limitations are imposed by any field trial, and such weaknesses as may exist in the scheme finally adopted for shelters derive from the necessity of making the trial simple and capable of speedy completion Such simplification was more than justified in the light of experience gained by working and living among shelterers, and the practical limitations of similar surroundings on any such future trial should be remembered Unqualified census figures from individual shelters are misleading for various reasons The floating population of all shelters is high, owing to social visits and similar causes This irregularity can be lessened by the ticket system of entry Quiet nights are immediately reflected in poor attendances, and with an early " all clear " many naturally return home Arrival and departure times are variable, depending on such diverse factors as the closing times of public-houses and families waiting for treatment " until Dad comes from work " The mass exodus in the morning raises its own problems Ailments totally unconnected with the one being investigated are suggested as being due to the test, and this leads to defection in the control as well as in the treated group The idea that " they are doing something " about upper respiratory infections has considerable popular appeal, but the need for regularity, always important but doubly so in any trial, is unappreciated by the public at large Persuasion is the only approach possible, since there is not even the discipline o hospital outpatients or the health service of a undertaking Treatment at an entrance doorway impracticable, and plans for each shelter must be d on the spot Mass treatment at medical aid posts not work

As originally conceived, the trial was planned determine whether the routine spraying of nostrils w have any effect on the incidence of colds, but sepa records were made to determine whether treatm shortened the period of malaise and local discom Solutions of various compounds in different stren were tested privately on volunteers but all w abandoned for various reasons, with the exception 10% solution of soluseptasine in water containing w/v glycerin to lower surface tension For control group the solution used was normal salin

One basement-type shelter was selected for trea cases, and one in an adjacent London borough for con cases, no-one knowing the nature of the solutions u The general conditions in these shelters were compar in that they were in the basements of modern flats a housed people of similar social type The ave nightly population during November, 1940, was appr mately 250 in each shelter, but the numbers dec with quieter nights, to rise again with more aerial acti different people, however, often taking the place the former occupants The general decline in all shel populations, apart from staffing difficulties, made t obtaining of reliable statistics in immediate furthe trials of this nature so unlikely, except under unmanageable conditions, that two tube stations were chosen for further trials, as probable sources of quick results A tube station of simple design was selected, the up platform being used for treated cases and the down platform serving as control The net numbers treated here agai reflect the problem of the floating population and defec tions As a control against the first station, anothe one was used, but the results proved worthless f statistical assay owing to sociological difficulties Th results obtained in basement shelters cannot be compar with those obtained from tube stations owing to t entirely different nature of the surroundings

TECHNIQUE AND RESULTS

A mixed group of men, women and children we sprayed in each nostril with the appropriate sol night and morning with three puffs from an ordi nasal atomiser, the total quantity used being kep constant as possible at about 0 6 c cm (i e 60 soluseptasine)

For the guidance of other workers a few prac points are worth recording To those who are laryngologists it is remarkable what a wide vari there is in the size, shape and direction of the na passages possessed by an unselected crowd of pe Some practice is needed with individual cases to be that the atomised solution comes into wide inti contact with the nasal mucosa In ordinary pra among patients who may have to treat themselves it be important to ensure that this proper applicatio effected Constant use of atomisers shows how and unreliable many of them are Metal nozzles essential so that quick sterilisation in a flame is po when numbers of patients have to be treated In large-scale treatments constant supervision by a me man is necessary in the early stages, not only to rea the public but also to train nurses or other helpers in requisite technique

No epistaxis or signs of general toxicity occurred either group Subjects in both the treated and co groups, particularly the former, remarked that t tended to have wetter noses than normally, and m some pronounced cases of this wetness have been reco as colds on single occasions when diagnosis by a qua person was not possible , these doubtful cases have excluded from both groups before the assessment results There were no complaints of nasal conge or obstruction, while chance sampling with a n speculum revealed no abnormalities Some subj with colds in both groups claimed relief of sympt immediately after the spraying

A log was kept showing the occasions on which were sprayed night and morning, and recording the ation of colds, including those already in existence he trial commenced, the first 36 hours of these xcluded People who said that they were suffer- n a cold often claimed relief in 12 hours (when the cord was made), but these " colds," as mentioned have been excluded from the total figures The erage period of observation despite the large rs treated is due to the chronic absenteeism, while who received less than seven days' treatment have xcluded

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* Based on the report of an investigation carried out on behalf of the Horder Committee on Health Conditions in Air raid Shelters (Ministry of Home Security and Ministry of Health)

hylaxis—In the basement shelters 57 treated s were observed for an average of 1 5 weeks, and %) had colds Of 70 controls observed for an e of 2 weeks, 39 (55%) had colds In the tube is 115 persons were observed for an average of 2 8 , and 12 (10 4%) had colds Of 90 controls ed for an average of 2 5 weeks, 18 (20%) had colds will be seen that in the basements there were rtionately more colds in the treated than in the l subjects, whereas in the tubes the reverse applied ariations in both cases were greater than could plained by mere chance, but I cannot put forward ther explanation Both basement shelters had mics of colds during the experiment

atment—In the basement shelters the average ion of colds has been roughly assessed from the cols as 60 hours in the treated and 199 hours in ontrol group In the tube stations the average ion was 28 9 hours in the treated and 49 8 hours in ntrols

difference in duration of the colds in the two types elter may have been due to the better ventilation reater space per person in the tubes, or it may, of e have been due to greater virulence of the organism icing the epidemic colds in the basements No clinical pathology was possible, so that the nature of the colds could not be determined

CONCLUSIONS

In the small controlled experiment completed no case was made out either for or against the prophylactic spraying of nostrils with a solution of soluseptasine The practical limitations to success in such a procedure suggest that no useful purpose would be served by continuing this in the shelters at present The basis is admittedly small, but the figures do suggest a reduction in the average duration of colds in both the treated groups compared with the controls This confirms the clinical impression concerning soluseptasine which justified the trial being carried out, and a repetition of the work is desirable on people living in closed communities suffering from colds, using the technique developed during the present investigation Observations in connexion with general hygiene which must affect the incidence of upper respiratory catarrhs were outside the scope of the experiment

Credit for the expedition of the trial is due to Dr G H Oates and Dr H A Bulman, medical officers of health, and my thanks are due to the scientific staff of Messrs May and Baker Ltd for technical assistance, and to Mr Bradford Hill, D Sc , for checking the results

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MEDICINE AND THE LAW

Damages against Chiropodist

Colston *v* Frape, a recent case at the Barnstaple ty court, a woman recovered £62 15*s* damages with for injury to her foot She had visited a chiropo- or treatment of her corns , he advised her that her required treatment When she paid a second visit is purpose he took hold of her foot with both hands twisted and jerked it with some force Such was vidence, and she complained that, in consequence e wrench, she suffered pain and could not now walk ell as formerly The defendant, who described elf as a chiropodist and specialist in the fitting of , said that he formed the opinion that the plaintiff suffering from some form of pressure on the nerves , enied wrenching her foot or inflicting worse pain she was already experiencing He had manipulated oot in order to " free the nerves and strictures ", dmitted that this might have caused some local gnation " to flare up The judge held that the podist, though neither responsible for the original ition of the foot nor negligent or unskilful in his ment, had been at fault in his diagnosis or advice did not know what was wrong, he ought to have ed the plaintiff to see a doctor The court awarded ges for the injury due to the wrong treatment being nistered after the primary injury had occurred judge did not fail to point out that the plaintiff had tarily submitted to the treatment and knew quite that the chiropodist was not a surgeon We have l in these columns other cases where a patient's in an unqualified practitioner has been inadequately rded The Medical Act set up a Register because, preamble declares, it was ' expedient that persons ring medical aid should be enabled to distinguish fied from unqualified practitioners " This is no ntage to patients who prefer to get their manipula- surgery from a chiropodist

Professional Monopoly

spite of such cases the uninstructed public will theless continue to speak as though registered practi- rs possessed a monopoly of practice in surgery and cine If one wants to see a true professional poly at work, one should turn to the legal pro- on Penalties await any unqualified person who dares to " act as a solicitor " or sue out any writ or process as such or begin or defend any legal proceeding in the name of any other person or who, " for or in expectation of any fee, gain or reward," draws or prepares a will or other legal document The new Solicitors Bill, which has passed through Parliament with an ease the more surprising because its clauses have no intimate connexion with the national war effort fortifies an already formidable organisation An unauthorised person will have the onus of proving that he did not act for or in expectation of a fee Every solicitor will have to join the Law Society, though this requirement will not operate until a poll of all practising solicitors has shown a two-thirds majority in its favour Another interesting feature is the creation of a compensation fund to relieve the losses suffered by members of the public through acts of dishonesty or breaches of trust committed by solicitors or their clerks To this fund every solicitor will have to make a fixed annual contribution not exceeding five pounds Shall we yet see all registered medical practitioners compelled by law to contribute to a pool for guaranteeing patients against the consequences of professional negligence ?

E M S Surgeon's Libel Action

One of the surgeons appointed by the Ministry of Health to deal with war and air-raid casualties under the Emergency Medical Service had occasion recently to claim damages for defamatory statements suggesting that he had been inconsiderate, incompetent and negligent in the exercise of his professional duties The plaintiff was Mr G H Lawson Whale, F R C S , who had been appointed to the Hampstead General Hospital After an air-raid on Hampstead a year ago a mother and two daughters attended at the hospital One of them was discharged at once , another had a hæmatoma near her mouth and the medical practitioner who attended to her asked Mr Whale's opinion about tracheotomy After making an examination Mr Whale advised that the operation was unnecessary Three weeks later Mr Thomas Sargant, in whose house the three women lived addressed to the secretary of the hospital a letter complaining that the surgeon who attended to them was " callous and brutal in his attitude to them "; he was " chiefly concerned to get them out of hospital as soon as possible ", he " succeeded in his harsh manner in reducing all the patients to tears ' Later Mr Sargant wrote that the surgeon in question was Mr Lawson Whale Mr Whale naturally took action upon these damaging statements As his counsel explained, he did not seek punitive damages but merely asked for a verdict which would discourage such allegations as Mr Sargant made The three women were not Mr Whale's patients , it was no part of his duty to interfere in their treatment unless invited to do so Mr Sargant had been told that he was misinformed , he had, however, refused to accept the statement Mr Whale denied in the witness-box that the hospital was conducted in the spirit of getting rid of patients as quickly as possible Mr Justice Atkinson asked if the Ministry of Health had issued any instruction for turning patients out on a war-time rather than a peace-time standard Mr Whale replied that he had always found it easy to keep patients there as long as he would have done in normal times The hospital staff had been warned to regard themselves as a casualty clearing station rather than as a base hospital , actually they had found it possible at all times to act as a base hospital Mr Arthur Gray, F R C O G , a colleague at the hospital, expressed the opinion that the three women were not in fact suffering from shock

Mr Sargant gave evidence on the second day of the hearing and explained his motives His original letter had said that he made his protest as a ratepayer , in his written defence he had pleaded that the occasion was privileged inasmuch as he addressed the hospital as a citizen, taxpayer and ratepayer of Hampstead, in good faith and without malice, under a sense of duty to someone who had a corresponding duty in the matter and in the honest belief that the contents of his protest were true If the occasion were privileged Mr Whale would not succeed unless he could prove malice Having heard Mr Sargant's evidence, Mr Whale felt satisfied that the defendant had acted in good faith He himself had been concerned merely to protect his reputation against what seemed the malicious attack of a busybody He was now prepared to withdraw the action and pay the defendant's costs , Mr Sargant on his side acknowledged that his letter had been too strong and expressed his regrets The judge approved the settlement In his view the occasion of the letter was undoubtedly privileged It was important, he observed, that it should be made clear that there had been no plea of justification , Mr Whale's course of action implied no admission that complaint was well founded So long as there was no reflection upon Mr Whale, his lordship was satisfied with the result , he did not wish it to be thought that this termination of the case reflected upon the plaintiff in any way

SCOTLAND

THE SCOTS HOSPITAL PROBLEM

ON Oct 14 the Secretary of State for Scotland, replying in the House of Commons to a question on hospital policy, said that he was having consultations with the bodies concerned and could not at that stage add anything to the general statement made by the Minister of Health The bodies concerned are presumably the voluntary hospitals, the local authorities and the Nuffield committee The Minister of Health in his general statement foreshadowed some special measures applicable to Scotland in the formulation of hospital policy, and doubtless these special measures will be under discussion at the meeting to which Mr Johnston referred The difference between the hospital problem in Scotland and that in England is essentially one of degree Scotland, as is well known and as was brought out in the report of the Committee on Scottish Health Services, is not nearly so well provided with hospital beds as is England If, as Mr Johnston said in opening the Ayrshire Central Hospital recently, it is the aim of the Government in their plans for the post-war hospital service to ensure that proper treatment is available to every person in need of it, the question of adequate provision in Scotland is one that is bound to be compelling It is probably true, as the Secretary of State said at Ayr, that there are large numbers of people suffering unnecessary pain or discomfort, unable to pull their full weight, the condition of many of them deteriorating He wants to remove that reproach to our hospital system, and he wants to develop the hospital service in the form of a kind of partnership amongst the various hospital authorities, and especially to see the greatest possible cooperation between tary hospitals and local authorities, so that every may fill the roll best fitted to it in a coordinated on a regional basis The Secretary of State de implication, to retain the voluntary hospitals doubtless he must be giving serious thought as t best method of giving necessary state aid to t whether through the agency of local authorities c He must be concerned, too, to know how best to the ad-hoc hospitals erected under the auspices c department and directly administered by it hospitals were primarily designed to fill gaps i treatment of war casualties, but it would be prepo to allow them to fall into disuse when the war b though there may be a strong Treasury urge in direction It seems probable that these hospital have to be retained as important entities in a coord service involving local authorities, voluntary ho and the Department of Health Whether the last will wish to continue to administer these ho directly is one of the intriguing but comparatively problems that beset the Secretary of State

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ARGENTINA

AVIATION

VICE of air ambulances for both official and private been established under the control of the national ment of health When used for private patients rge is 50 centavos a kilometre Three machines manently attached to this service in the sparsely ed regions of the Chaco and the southern terri- Analysis of the effects of aviation on both and sick people has led Prof M R Castex and his ies to conclude that of the cardiac and circulatory rs only cases of myocardial degeneration can safely ned by air, and that patients with respiratory ns other than bronchitis or chronic pleural disorders n-exudative nature should also avoid flying

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BREAST-MILK CENTRE

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PSITTACOSIS

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HEART DISEASE

10 000 school children examined in Buenos Aires had organic heart disease, 2% being acquired and the remainder congenital It is hoped that early recognition of cardiac lesions will improve the prognosis. for Prof Rafael Bullrich estimates that the mortality from cardio-articular rheumatism is at present as high if not higher in the Argentine than in any other country and a speaker in the Senate said that 2 4% of Argentine children under 14 die from the disease According to Macera and Costa Bertani the fatality from acute rheumatism in children under 15 is 22% in Buenos Aires and 12 5% in Rosario

Professor Bullrich has also made a clinical and statistical study of people over 60, and in the last ten years he finds that circulatory diseases accounted for 43% of the deaths between 60 and 80 ; if nephritis is included (and nearly all cases in this age-group are circulatory in origin) the figure rises to 47% Since 540 000 of the 13½ million population of the Argentine are over 60 the social significance of these diseases is clear The number of hospital beds for such cases is insufficient but much may be hoped from the work of the Institution for Social Assistance to the Cardiac of which Professor Bullrich is director This institution, which is a voluntary one and has been running for three years undertakes the care of pregnant women nursing mothers and children with cardiac lesions promotes the organisation and equipment of dispensaries and colonies for their treatment and puts forward legislation on behalf of workpeople with heart disease At a congress of the institution recently held in Buenos Aires it was urged that clinics for heart disease should be established in the Argentine such as already exist in Britain and the U S A Dr Luis Sabathie who has lately published an extensive monograph on the subject emphasised the inadequacy of purely medical methods in treatment One remarkable statement made by subsequent speakers was that 70% of anarchists and other revolutionaries suffer from some physical disability which prevents them from following a normal calling

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WOMEN CONFER ON INDUSTRY

THE second session of the London Women's Parliament held on Oct 27 at the Conway Hall was attended by 371 delegates representing 211 groups which included coöperative organisations guilds trades unions discussion groups and education committees Mrs NAN McMILLAN recently president of the National Union of Women Teachers took the chair

Miss MARY CORSELLIS, the organiser was able to inform the meeting of the results of the first session Improvements had been reported from factories to which the L W.P had sent delegates The Parliament had been recognised by the Minister of Labour suggestions on milk rationing and the differential distribution of oranges had been adopted An investigation of conditions in factories had been carried out and an inquiry into the provision of day nurseries and into school feeding was foreshadowed

Discussion at the second session ranged over a bill to regulate supplies and distribution of food and a series of proposals designed to remove the obstacles now preventing women from playing their full part in industrial production

The speakers were lucid and brisk, much more concerned with facts than theories Among them were councillors, teachers, transport workers ambulance drivers clerks, housewives nursery school supervisors. canteen managers and workers from clothing, munition and aircraft factories They had many abuses to point out but there was a striking growth, during the meeting of the conviction that it was not by individual and intermittent grumbling that these could be remedied but by the deliberate and combined action of the women doing the jobs The factors held to be largely responsible for keeping women from keen participation in the work of production were low wages insufficient day nurseries long working hours and consequent shopping difficulties bad canteens and inadequate transport

WAGES AND WORK

Of these perhaps low wages received least attention in the discussion although the hardship caused by this factor is sometimes great Some girls under 20 are unable to earn a wage on which they can get enough to eat In most factories women are paid much lower wrote that the surgeon in question was Mr Lawson Whale Mr Whale naturally took action upon these damaging statements As his counsel explained, he did not seek punitive damages but merely asked for a verdict which would discourage such allegations as Mr Sargant made The three women were not Mr Whale's patients, it was no part of his duty to interfere in their treatment unless invited to do so Mr Sargant had been told that he was misinformed, he had, however, refused to accept the statement Mr Whale denied in the witness-box that the hospital was conducted in the spirit of getting rid of patients as quickly as possible Mr Justice Atkinson asked if the Ministry of Health had issued any instruction for turning patients out on a war-time rather than a peace-time standard Mr Whale replied that he had always found it easy to keep patients there as long as he would have done in normal times The hospital staff had been warned to regard themselves as a casualty clearing station rather than as a base hospital, actually they had found it possible at all times to act as a base hospital Mr Arthur Gray, F R C O G, a colleague at the hospital, expressed the opinion that the three women were not in fact suffering from shock

Mr Sargant gave evidence on the second day of the hearing and explained his motives His original letter had said that he made his protest as a ratepayer, in his written defence he had pleaded that the occasion was privileged inasmuch as he addressed the hospital as a citizen, taxpayer and ratepayer of Hampstead, in good faith and without malice, under a sense of duty to someone who had a corresponding duty in the matter and in the honest belief that the contents of his protest were true If the occasion were privileged Mr Whale would not succeed unless he could prove malice Having heard Mr Sargant's evidence, Mr Whale felt satisfied that the defendant had acted in good faith He himself had been concerned merely to protect his reputation against what seemed the malicious attack of a busybody He was now prepared to withdraw the action and pay the defendant's costs, Mr Sargant on his side acknowledged that his letter had been too strong and expressed his regrets The judge approved the settlement In his view the occasion of the letter was undoubtedly privileged It was important, he observed, that it should be made clear that there had been no plea of justification, Mr Whale's course of action implied no admission that complaint was well founded So long as there was no reflection upon Mr Whale, his lordship was satisfied with the result, he did not wish it to be thought that this termination of the case reflected upon the plaintiff in any way

SCOTLAND

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THE report of the department of local government and public health for the year ended March 31, 1940, records a decline in the incidence and mortality of the principal infectious diseases, in infant mortality and in maternal mortality The number of notifications of infectious diseases—6116—was the lowest since 1930, and about 1900 fewer than in 1938 This reduction was mainly due to a fall in the incidence of scarlatina and of diphtheria, the latter probably due to the campaign of preventive immunisation carried out in recent years by the county medical officers of health Yet there were still 2097 cases of diphtheria with 245 deaths and 2779 cases of scarlet fever with 43 deaths Compared with the previous year, typhoid notifications had risen from 254 to 385 and the number of deaths from that disease from 46 to 56 Many of the cases were traced to carriers In a local epidemic in co Kerry, with 103 cases and 8 deaths, infection was spread by separated milk from a creamery The milk was apparently infected by a case of typhoid in one of the farms supplying the milk In the creamery the cream was pasteurised and converted into butter, but the separated milk was sold untreated In most of the cases there was definite evidence that the separated milk had been consumed by the patient, no case was traced to the butter There were only 5 cases of typhus, with 3 deaths, and this disease seems to be gradually disappearing Only 76 cases of puerperal sepsis were notified, the smallest number for many years, the number of deaths from this cause was 38, the lowest on record

The infant mortality-rate was 66 per 1000 births, which is lower than that for Northern Ireland (70) or Scotland (69), but higher than that for England and Wales (50) Congenital debility heads the list of the causes of infant mortality, premature birth comes second and diarrhœa and enteritis third The infantile death-rate in urban areas was 83 per 1000 births—90 in Dublin—and the rate for rural areas was 55 *Mortality from tuberculosis had increased*—1 13 per 1000 of the population as against 1 09 in the previous year But these are the two lowest figures ever recorded There are no trustworthy statistics to show the incidence of the disease, as notification is only mandatory where the sputum or other infective discharge is liable to spread infection This useless order, dates back to 1919 and has always hampered the campaign against tuberculosis Nevertheless, owing to the great effort which was made to assure notification and certification it is probable that the increase was not real The medical officer of Cavan said "The generation now growing up has little or no conception of the universal dread of this plague which prevailed when the campaign against tuberculosis was initiated thirty years ago" Most of the medical officers of Eire have worked hard to overcome this dread, which lived in Ireland long after it had died elsewhere, and because of their efforts and the growing enlightenment of the people concealment of tuberculosis is gradually passing, but it is still prevalent, especially in the west In 1939 135,404 school-children were examined Dental defects were observed in 46 6%, l disease of the tonsils or throat in 19 1% Treatment these conditions is provided free where necessary

Che administration of the Milk and Dairies Act by local authorities has been on the whole satisfactory, d legal proceedings for non-compliance with statutory quirements have been successfully instituted, though e report adds that some local authorities were uctant to take action on the recommendations of eir medical and veterinary advisers This seems to derstate the case, for many local authorities fail to preciate the importance of the act and are unwilling prosecute negligent milk-producers while the local stices fail to impose adequate penalties in the cases ought before them

During the year 952,936 new cases were attended by e 646 dispensing medical officers It seems, therefore, at about a quarter of the population of Eire received edical attendance under the Medical Charities Act ie income of the Hospitals Trust Fund for 1939 was er £1,202,600, and the expenditure £367,800 Grants £270 384 were made to poor-law and county hospitals, id £209,822 to voluntary hospitals, of which £126,072 as to meet current expenses

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It is planned to establish a division for the sanitary supervision of aircraft in the department of health, with a view to checking the spread of infection by aircraft arriving from infected regions Aviation is on the ncrease in the Argentine In 1938 there landed in Buenos Aires 770 aircraft carrying 7300 passengers whereas in 1940 the figures were 1800 aircraft and 15 800 passengers Aircraft may carry infected insects, but there is also the risk that passengers may still be in the incubation period of an infectious disease when they arrive and so will not appear ill

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The government has established a non-profit-making centre in Buenos Aires for extracting, preserving and distributing surplus breast milk The old mothers'-milk stations were mainly based on the wet-nurse system but this centre obtains its milk from normal mothers, and it is found possible to take 200–300 grammes from many mothers without depriving their own children The donors' family histories are inquired into, and they undergo a periodic clinical, radiological and serological examination During 1940 over 5000 litres of milk were supplied to 1200 babies from 350 donors The price charged ranged from 7*s* a litre down to nothing according to the means of the recipient, more than half of the milk was supplied gratuitously

PSITTACOSIS

During the pandemic of 1929–30, which involved Buenos Aires and part of northern Argentina, about 200 cases of psittacosis were reported Then in the next nine years there were only isolated cases, but in 1939 an outbreak in Buenos Aires produced 27 cases of which 13 (48%) died The disease mainly attacks adults of 45–55 and hardly ever children Men and women are affected equally, and bird-dealers are, as might be supposed, the commonest sufferers Cold weather seems to favour the propagation of the disease, and the incubation period is 7–14 days During this last epidemic hæmorrhagic skin lesions have been observed No treatment has been of any avail

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Of 10 000 school-children examined in Buenos Aires 4% had organic heart disease, 2% being acquired and the remainder congenital It is hoped that early recognition of cardiac lesions will improve the prognosis, for Prof Rafael Bullrich estimates that the mortality from cardio-articular rheumatism is at present as high if not higher in the Argentine than in any other country and a speaker in the Senate said that 2 4% of Argentine children under 14 die from the disease According to Macera and Costa Bertani the fatality from acute rheumatism in children under 15 is 22% in Buenos Aires and 12 5% in Rosario

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Discussion at the second session ranged over a bill to regulate supplies and distribution of food, and a series of proposals designed to remove the obstacles now preventing women from playing their full part in industrial production

The speakers were lucid and brisk, much more concerned with facts than theories Among them were councillors, teachers, transport workers ambulance drivers, clerks, housewives, nursery school supervisors, canteen managers and workers from clothing, munition and aircraft factories They had many abuses to point out, but there was a striking growth, during the meeting, of the conviction that it was not by individual and intermittent grumbling that these could be remedied but by the deliberate and combined action of the women doing the jobs The factors held to be largely responsible for keeping women from keen participation in the work of production were low wages, insufficient day nurseries, long working hours and consequent shopping difficulties, bad canteens and inadequate transport

WAGES AND WORK

Of these perhaps low wages received least attention in the discussion, although the hardship caused by this factor is sometimes great Some girls under 20 are unable to earn a wage on which they can get enough to eat In most factories women are paid much lower wages than men , thus inquiries made by the organising committee in a large number of factories showed that a woman in engineering now earns a minimum of 38*s* In Government training centres this is the starting wage, and after three tests she gets 47*s* , a man earns 22*s* 6*d* more throughout the training course When a woman leaves the centre and starts work in a factory she drops back to 38*s* plus a bonus for piece work , but in explosive factories many processes are too dangerous for piece work The average earnings for an adult woman in engineering today are below £2 10*s* (equivalent to 39*s* before the war) When she has paid for food, lodging and transport she may find herself only a few shillings in pocket at the end of the week If she has to contribute to the care of her children, or send money home to her family she may have less than enough for food National Service officers have been obliged in some cases to release a woman from nationally important work on the ground that the pay did not enable her to support herself This is made worse by the fact, which came out clearly in discussion, that many women, though trained for and capable of skilled work, are being used in factories as cheap labour to do routine jobs which could be entrusted to a newcomer, and are thus being prevented from earning higher rates of pay

Miss G **Rowland**, speaking of the large engineering factory at which she works, said there was no collaboration between the Government training centres and the factories Women trained as toolmakers would go to the factories and be set to work on some other task She estimated that 50% of women fail to get employment in the job for which they have been trained , and recently workers at her factory had decided to arrange a small conference between delegates from the factory and instructors from the centres to discuss better collaboration in the district Miss **Norah Brown**, a member of the organising committee of the L W P , pointed out that there had been a 33% increase in fatal accidents in factories in the past year Some of these are doubtless the outcome of fatigue due to long hours—a ten-hour day and a 56-hour week is common—some to lack of training , but an increase in legal penalties for such accidents, she thought, showed that the management had been responsible for some

FOOD AND SHOPPING

The hours worked make shopping problems serious for women Mrs **Hanson**, a transport worker, said that in Birmingham women employed in the factories only had Saturday afternoon on which to do all the buying-in for the week , the shops were then so crowded that many of them could not even buy their rations The city council, when approached, said that this was a national problem, and that they could do nothing until some national plan had been devised In Finchley it seems they are more progressive , there, Councillor Mrs **Diana Pym** said, the food committee has organised passes for women workers so that they can get their proper share of goods in the shops She suggested that shops might arrange to stay open later on one night a week The problem of shopping would of course be much eased if there was more provision for communal feeding and for school meals for children The topic of school meals was very close to the heart of the meeting Mrs **Mary Marston** pointed out that they were especially necessary where the mother went out early to work at the factory , she dared not leave the children alone in the house with a fire burning, so she usually brought them along to school They hung about, turning somersaults on the railings and getting rather cold, until school opened, and then had nothing to look forward to at lunch-time except a sandwich of doubtful ingredients—and " no little bit of pudding " Other speakers agreed in disparaging such " nosebag meals," and all felt that the Government should be pressed to carry out its promise of universal school feeding

The lack of day nurseries, however, was felt to be the paramount factor keeping women out of industry at present Mrs **Carter**, of the Society for the Provision of Nursery Schools and Day Nurseries, said that local authorities had the power to set up nurseries but many of them had not done so They thought that mothers could always find a neighbour to look after children , such authorities, she said, were inexorably " minder-minded " The society was working hard to get mor nurseries set up, and much was to be hoped from th conference on war-time nurseries to be held under th chairmanship of Lord Horder on Oct 29

CANTEENS AND HYGIENE

The need for good canteens was also discussed freely Again much turns on the confidence existing between th management and the workers Some employers provid no canteens, some hand the canteen catering over to contractor who makes little attempt to provide good food or serve it tolerably In other firms the workers take a share in running the canteen and can see to it that the food and service are good Mrs **Towers** told how she had worked in a West Country factory where a canteen was ultimately provided after much pressure , but the food was uneatable and she finally found herself doing 12 hours a night, seven nights a week, and travelling an hour each way, on a diet consisting largely of tea and cigarettes Faulty diet of this kind cannot fail to cause ill health and absentee-ism Poor hygiene in the factories must add to the danger , little was said about this during the discussion, but investigations by the organising committee show that ventilation and heating are grossly defective in some factories and that toilet facilities may fall below the level of the most elementary hygiene and decency Thus in one factory three basins are filled with hot water in which 60 girls have to wash their hands , in another there were recently 200 cases of impetigo, and a department employing about 200 had five washbasins and four towels , in another girls have to ask for a pass to go to the toilet and there is no ventilation in the lavatories, which are permanently blacked out

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The session passed unanimously the bill to regulate supplies and distribution of food by registration and rationing, control of prices, school feeding, and by the provision of canteens and communal kitchens

In England Now

A Running Commentary by Peripatetic Correspondents

The student of human nature who wants a new field for observation should try the wardroom of one of H M ships in war-time Excluded for months on end from all normal associations—from the good earth (whoever has experienced the nostalgia for a patch of land in which to dig, bred by months of unrelieved seascapes, can understand the popularity of gardening among sea-going men), from trees, animals, weather that could be remotely related to a modest idea of summer, and above all from the companionship of the opposite sex—members of the mess settle down each to an individual level, some giving more in one way others in another, and a few taking more than they give I fancy they all go through a cycle, almost as regular as the menstrual one, of depression followed by elation, each phase of depression always lasting for the same number of days There are some people whom nothing seems to shake, and who are nearly always ready with a smile and a joke , and yet occasionally when off their guard they too seem a little less ready with their banter than usual Once in a blue moon there comes the big day when it is possible to entertain for an hour or two some of the ladies of E N S A who so heroically come to the most outlandish places to cheer the troops The change in atmosphere on the morning of the party fully justifies Freud in assuming sex to be the root of all behaviour The mess is split into three parties There are the less junior members who have a wife and family tucked away somewhere and who are not really in the running " But if we were, by Jove " You have to watch this lot pretty carefully or they will have sneaked her away into a corner before you have had time to get your cigarette-case out Then there are the quiet, introverted kind who will probably take a bad fall if they have not done so already, and who will probably marry late They enjoy the party and hand the drinks round beautifully, but do not get a chance to develop an attack in the short time and limited field available in the wardroom The third type is the thorough extrovert who makes, in a specified time, more noise and greater impression on the target than anyone else , they remind one of a barrage from the close-range weapons They usually sweep the girls off their feet at the first encounter and beat off all opposition for the duration of the party

Alas the ladies have come and gone Tomorrow we shall be back to our old selves again and the difference will be as that between leavened and unleavened bread I think I know to which of the last two groups I belong but it must be time for a change All I got was a glimpse of a blonde head and a well-turned ankle and a good view of the back of the Commander's neck

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The course of propaganda never did run smooth , in an evacuee hostel it becomes a kind of switchback, even though you have the ear of your public and were once a doc yourself At our hostel two cases of diphtheria broke out at the end of June within a day or so of each other One of the patients was a twin, and both of them were called Angela so that a general air of confusion must be expected in this account which can only be distinguished from "The Comedy of Errors" by differences in style Well then · the twin, Angela A aged 5 had been immunised with her sister four or five months before awkwardly enough and she had had no known contact with a case of diphtheria But Angela B aged 6 had only been back for a few days after four weeks in hospital with scarlet-fever We had already had a stormy time with scarlet fever, so we were glad enough to submit to a full-dress investigation Throats were swabbed and offers of immunisation were scattered broadcast Angela A., however had shaken the confidence of our mothers Had she not been immunised and had she not "got it ' after all ? She had They shook their heads at our glib arguments pinning their judgment to facts as inopportunely represented by the case of Angela A Only 8 mothers out of the 30 thought our guess was better than theirs and allowed their children to be immunised The swabs all came back negative, and there were no more cases until the two Angelas returned from hospital, 6 weeks later Ten days after the return Angela A. s twin sister Brenda A developed symptoms and was sent to hospital Here was a smack in the eye for propaganda The medical officer of health came and took swabs of Angela A s throat, and the Klebs-Lœffler *bacillus* was grown from her postnasal discharge Back she went to hospital Rather sheepishly we brought up the topic of immunisation again The mothers didn't think a lot of it they were too polite to say so, but they sniffed rather eloquently But help was on the way Angela A. had sunk us, but her twin Brenda with a nice sense of fair play, threw us a lifebelt She came home in a fortnight, never having had a positive swab This was a test case, and one which nobody could sniff at Twins I mean, everyone knows how ready twins are to catch the same thing , and then Angela and Brenda A. had been inseparable after Angela came back from her attack in hospital If Brenda hadn t got it, it must have been because of that immunisation It was as clear as mud I began a telling campaign based on these arguments, and went on to talk of winter—blackout—close quarters —closed rooms Gradually they came round, and now, at the beginning of October all the children are in the thick of being immunised and we have had no more infectious cases That s a bit of luck

* * *

What are the motives behind the thousands now being bled to help stock the blood-banks and the tens of thousands who await the call ? And what do they imagine happens to them when they are bled ? Some enrol to experience something new, others because they think or their doctors have told them, that they suffer from blood pressure whereas a very few are actuated by the desire to secure the interest and possible admiration of their circle , the vast majority, however are moved by loyalty to their country s cause and a genuine desire to give their blood because it is needed Most of the volunteers are phlegmatic and their desire to serve costs them little in anxiety or discomfort But an important minority must resolve conflicts and overcome fears and doubts before reporting for duty, and these deserve the full sympathy of the phlebotomist In peace-time they are represented by those relatives who loathe nothing more than the thought of giving blood and who would never volunteer were it not for a loved one in need Some of the volunteers, who have had no opportunity of discussing the matter with one who has been "blooded,' imagine that an artery will be opened in the arm and that the blood will be caught in some sort of vessel (presumably on the down-throw) , later stitches will be put in (if the bleeding *can* be stopped) and the exsanguinated victim will be sent home in the hopes that new blood will be made during the week-end It says a lot for the altruism of these apprehensive realists that they have steeled themselves for the ordeal In small towns, the dangers of giving blood are often magnified by stories circulating of oozing which the doctor could not stop of bleeding which recommenced that night in the pictures of faints at the tea-table of lumps in the arm of "the septics ' and of all manner of conceivable ailments attributed to blood-letting On the other hand some expect an operation as trivial as the grouping test—"I find my bus doesn t go for another twelve minutes so I thought you might take my blood now

The introspective volunteer will arrive at the centre with a dread of experiencing pain (often they compare their feelings to those experienced in the dentist s waiting-room), a fear of seeing blood especially his own, and of making a fool of himself in the presence of others In case our donor-elect happens to be of this stamp one cannot expend too much thought and care on him when he is called on for the first time It is a natural and deeply rooted instinct to feel faint at the sight of one s own blood and even the thought of it will cause some people to feel squeamish It is, therefore an injustice to resent the attendance at the bleeding centre of those who are *not* very stable in their vasomoter systems, and to regard them contemptuously as "neurotic" The fainting is a "protective ' reflex for the consequent fall of blood-pressure helps both to lay the subject flat and also to arrest the hæmorrhage It is as well to satisfy oneself that the volunteer is in good health and willing the fact that the candidate was well on enrolment two years ago is *no* guarantee that he or she is fit to be bled now. We find it adds enormously to the comfort of the donor if he receives a small intracutaneous injection of procaine prior to the insertion of the ' donor needle The two who in error received an injection of sal volatile were presumably of the phlegmatic type or they would have complained or can this diffusible stimulant have anæsthetic properties yet to be explored ? It was only when we set about reviving a colleague's wife with a tot of procaine that we realised that the dispenser had put up both these substances into similar bottles

How grateful we are to those who perfected the present M R C needles and the bottle with its fashionable waistline ! A wider neck perhaps would have been preferable, being *more* readily adaptable for bottling gooseberries during the close season for blood, but otherwise we have no complaints It is unnecessary, and uncomfortable for the donor to employ too great a pressure on the sphygmomanometer cuff. While the needle is being introduced through the anæsthetised spot an initial rise to about 50 mm Hg is desirable and the donor should be *told to squeeze* a bandage or a one ounce screw-capped bottle in his fist. As the blood begins to flow the pressure can be lowered *to 30 or* 20 mm and it is surprising how often no pressure at all is needed even if the donor has partially relaxed his hold on the bandage or bottle Some of our volunteers turn the scales at fifteen stone while others are barely seven It is unfair to bleed *them to an* equal *extent* The maximum donation should be 420 c cm and some subjects are best cut down to 300 c cm or *even* less In these days everybody is an allotment holder and a fire-watcher, in addition to doing more than an ordinary day s work The *bone-marrow tax* therefore should not exceed 5–7% and it should be collected at the most convenient time for the taxpayer—*after business hours*, or on Saturday afternoons and Sundays

* * *

"Doctor, here's your hat ! " A book of medical reminiscences was published by an American doctor a few years ago with this engaging title I did not read the book for I knew that, for me, the title was all How many times has my decrepit tile been handed to me with these words A lady arrived at the nursing-home for her confinement with my hat among her luggage, and refused to return *it to* me until her baby was born Black hats in her system of hagiology were lucky ; even my promise to find her a black cat in exchange was of no use It had to be a hat, it had to be a black hat and it had to be mine If this was my hat's strangest experience it has had another more humiliating One of the difficulties that a doctor has about a hat is its safe lodgment in his patient's house Too few halls are today decorated with a hat-stand or even a hat-rail The hat, however, must be left in a position that is at once obvious and unobtrusive, the staircase lintel, if such there be, is the position of choice "I will look in to see David again on Tuesday, Mrs Jones," with one's hand travelling lightly down the banister, "I'm sure that by then we shall find him (ah, yes, this is mine," as one's hand comes directly against a familiar object) "very much better" Nothing could be more simple and one is on the doorstep, hat in hand The lintel absent or inadequate, it is necessary to look around for another lodging It was thus that I was one day searching a hall when I saw a coffin-like glass case in which fish of varied colours were swimming I trustfully put my hat on the top of this miniature aquarium I was mistaken, for its sixth and upper side was open to the air My hat was rescued by the proprietor just before it completely submerged, and was returned to me with a goldfish inside This problem will in any case be solved by the too swift passage of the summer, for the doctor who can put on his overcoat and leave his hat behind him must suffer from amnesia to an unusual degree Three further clinical points about this interesting disorder It must be of recent origin, since any late Victorian or early Edwardian physician who walked down the garden-path without his silk hat on his head must have suffered irreparable loss of prestige Secondly, the malady is not entirely specific since it may embrace other objects, such as stethoscopes and ophthalmoscopes Thirdly, in advanced cases the symptom may be displayed in unusual circumstances A few days ago the gardener brought in a forage-cap which he had found lying at the foot of some raspberry-canes He had his theories about this cap One was that the cook, his friend, had been receiving the licentious soldiery in the summer-house, the other that the thieving, scrounging so-and-so's had been after his peas My wife restored calm when she recalled that a few nights before I had put on my Home Guard uniform for the first time and had mowed the lawn in full kit to accustom myself to these unusual garments The night was warm, the grass was long, the mower was stiff and I was sweating uncomfortably round the forehead I discarded my convict cap Thus a few days later it was held in front of me, a poor shrunken thing "Major, here's your cap!"

* * *

The autumn health publicity campaign of the Ministry of Health has begun, and great things are promised us H M Bateman in his posters and Arthur Askey in his comedy film can be relied on to do their stuff, and there are to be window displays and talks by the B B C But on the literary side, it seems, there is to be no high art, just three very plain statements hardly worth the name of slogans—"Coughs and sneezes spread diseases Trap the germs by using your handkerchief Help to keep the nation fighting fit" Not very lively, are they? And unless we use paper ones, which are scarce these days, it seems to me that our handkerchiefs will merely trap the germs temporarily and release them later on the unsuspecting housewife or maid at the wash tub So as an unofficial Poet Laureate, spurred to action by grave current events, I submit the following metrical version which may point the way to saving a deserving life without mentioning any particular brand of disinfectant

Coughs and sneezes spread diseases
Trap the germ before it seizes,
Do not think our slogan cranky,
Wrap the devil in your hanky
So you'll keep the nation fit,
Able then to do its bit,
Healthy, well and superhuman—
All except the washerwoman

* * *

It surprises me that no peripatetic correspondent has commented on the unique position which the cigarette holds in these troublous times Though it cannot be counted as foodstuff or munition of war it has gained for itself a special controller, a special commission to buy supplies from abroad, and a special place in th lend Act I have read or heard the number of of cigarettes that are smoked every day and t sands of tons of tobacco that are imported eve but having no memory for figures I have made calculations If, I said, one in twenty of the smokes cigarettes (surely a modest estimate) average consumption per smoker per day is 5 (again a modest estimate), then some 10 cigarettes are smoked every day which at 1s 6d means £37,500 going up in smoke daily Now, little doubt that the cigarette has become an part of our social system It serves as introdu strangers on a train journey, it breaks the icy a ness among distant acquaintances assembled for a it is the hall-mark of the gentleman when the over If you cannot produce a well-stacked silver cigarette-case, or worse still, if you refuse t one from such a case, you are suspect for the rest evening The cigarette relieves the monotony tedious day (many a man never smoked till he army), it soothes the distracted mind, it alla pangs of hunger, it may even, according scientists, disinfect the air we breathe And w its virtues have been extolled, we have to smoking is but a bad habit—a habit which can us broken without detriment to the habitue, a habit many folks never acquire and are none the worse lack of it For some it is a form of worship church-going, they cannot do without, but for us it is a self-indulgence which with a little eff could well give up We might even class the smo the road-hog who uses petrol for pleasure, but that be hitting at the liberties of the British wor man? Some smokers defend themselves by to the revenue which tobacco brings in, but in these when every inch of shipping space is needed for dities to beat Hitler that is a poor excuse May I that I confess to a sneaking envy and admiration pipe-smoker? The only thing about him that is the time he wastes in filling his pipe Now w quite another kettle of fish, it is home-produced, is tenths tax, and only the very rich can consume too of it, so that to drink the stuff is a real act of patrioti Being a Scotsman who has lately forsworn the weed, like to be overflowing with virtue and good spirits

On the related subject of food, I'd put the " g w vegetables" campaign among our few triumph —of this war I don't know how much extra food it produced, but it has sent many of us townsfolk ba the land to discover or re-discover the virtue of up mother earth It has been a hobby and a healer as well as providing the physical exercise that indoor worker needs, it has also been a great lev giving employer and employee a common bond of inter It has even supplanted "shop-talk" when mem our fraternity forgather I wonder if they cultivate allotment and vegetable patch in Germany

BRITISH HOSPITALS ASSOCIATION

Sir Bernard Docker had a cheering statement to the annual meeting of the association on Oct 24 For first time the association is distributing money As agent of the Government it is remitting the 50% grant of additional salaries being paid to the nursing staffs of the pitals (*Lancet*, Sept 6, p 292) The council have adopt statement of policy explaining the relationship between association and the Nuffield Provincial Hospitals Trust, is largely an attempt to define terms Wherever pract the term "coordination of hospital services" will be u instead of "regionalisation" The association is calling erstwhile regions "areas" and will try to make their ries conterminous with those of the Nuffield "divisic Areal committees will deal with the special problems of voluntary hospitals apart from those they have in with the council hospitals Sir Bernard regretted that lation had not put upon voluntary hospitals a share of responsibility for providing hospital accommodation Bernard also spoke of the anxiety felt by many hospit about the shortage of staff owing to the refusal of the Minis of Labour to regard hospital work as war work His rema were strongly endorsed in the discussion which followed it was even suggested that some hospitals might have to c because the necessary lay staff was no longer available

Parliament

FROM THE FLOOR OF THE HOUSE

MEDICUS M P

IT was in the first year of this world war that I left e House, in June, 1940 to be precise, and it is in the ird year of the war, in October, 1941, that I return to is column Not that Service commitments kept me vay from the House entirely—it is laid down in gulations that an M P shall get leave to attend to his rliamentary duties—but such visits as I could make ere different The House to which I return is different o A Service colleague saying good-bye to me said, Well, keep 'em up to it We support the Government it no-one is infallible" The House I left in 1940 had ist rallied to the new Government to meet a mighty iock—the House to which I return in 1941 is remaking ie forms and procedure of the House to meet the rcumstances of a war in which Parliament is a chief of ie forces fronting the enemy There is active and onstructive criticism There is provision being made r the first time in modern parliamentary history, for ie taking of votes and recording the division of opinion hen the House is in secret session There is criticism f the somewhat clumsy expedient of an official non-overnment spokesman speaking from the "Opposition" ench (which supports the Government) so as to carry ut the "opposition" duties without which the parliamentary machine does not function There is an icisive bite in many questions put to ministers in which real opposition, in matters of detail, expresses itself But out of details in Parliament spring principles on hich Governments may be attacked

* * *

There have lately been several occasions in Parliament n which the voice of criticism has reached full opposiion strength—but not an opposition on party lines A lebate *on proposed changes* in Service pay and dependints' allowances introduced by Sir Walter Womersley, Minister *of Pensions,* and *supported* by Mr Wilfred Paling, the parliamentary secretary, was received with a inanimous *chorus of fierce criticism* from Labour, Liberal and Conservative alike The House wanted a straightforward *increase of dependants' allowances* The Minister offered an increase of grants to be made hrough the machinery of the Unemployment Assistance Board This lining up of Army and other Service dependants outside the offices of the U A B appealed neither to Viscount Hinchinbrooke in the uniform of a Midland regiment, nor to Miss Ward a member of the War Grants Committee with an expert knowledge of all the details of the grants, nor to Mr Dobbie, another member of this committee

The Minister tried to bluff it out and his parliamentary secretary backed him up but, most astonishingly, Sir Walter Womersley said in a broadcast the same evening, that the proposals were received by Parliament with "general approval" Chase my parliamentary secretary round the Speaker's chair—as Mr Nat Gubbins M P, might say! Briefly this scheme for dependants was rejected by the mass opinion of the House on the ground that it was administratively unworkable and that it was unjust The Minister still smiles about it in public—but behind the scenes desperate efforts are being made to evolve something more acceptable—and the House is not likely to be complaisant And ministers can be changed if necessary

* * *

Another occasion was a debate on the refusal by Mr Morrison as home secretary to allow Mr McGovern to visit North and South Ireland Mr McGovern is a member of the Maxton party of three who are against the war but who state that they are anxious to do nothing to impede the war effort One of Mr Morrison's reasons for the refusal was that he did not consider that Mr McGovern's visit to Ireland "would be helpful" to the national effort But is it Mr Morrison's business to decide that? It was argued, by the Conservative M P who brought the matter up before the House that this was not Mr Morrison's business—that it was essential to the M P to be as free and unfettered as possible in carrying out his duty as an M P The criticism of the Home Secretary by all parties in the House was so hostile that the Prime Minister had to come to Mr Morrison's rescue And there was an uneasy questioning about whether there was "any danger of a division" not in the House, *but in the lobbies outside*

No matters of this kind touch on the House s support *for the Prime Minister* he stands head and shoulders above all his ministers in the cabinet and out—indeed it is a *pity some of them are not taller* As criticism develops—as a result of the revelations of the Gort dispatches, as a result of criticism with regard to British aid to Russia, and as a result of other matters which crop up—individual ministers' reputations may be damaged and they may even be dropped But the Prime Minister strengthens his hold on the House

* * *

One disadvantage of the McGovern debate was that it cut down a debate on the health of the nation to a half-day Mr Ernest Brown had recently made a statement on the inquiry to be held on the relations of voluntary and publicly controlled hospitals in the future A useful piece of work, but not of priority importance at the moment Medical man-power, the rise of tuberculosis and its relation to the conditions of war-production and existing epidemics of typhus in Europe are all of greater urgency The interim report of the Shakespeare committee on medical man-power, which has been written but not published is known to be a purely interim proposal for the setting up of regional committees The setting up of a method of close coördination of all branches of medical work in the war will need to be pursued by other and more vigorous means if this is to be effective One of the speakers in the debate was Prof A V Hill, who spoke in favour of a state medical service without defining the machinery of the service The B M A Medical Planning Commission PEP medical and health committees of other organisations and much discussion in committees in and around Parliament are all considering the problem of the health and medical service of the nation And in the new parliamentary session—the present session is ending shortly—a larger scale debate on health and medical questions is to take place

It is hoped that this debate will give opportunity for consideration of the health aspect of food rationing, of the increase of health services in war factories and generally of how, to keep the nation—as one member said in the last debate—fighting fit for the work of production

Our Nutrition Policy

In the pleasantly informal atmosphere of the luncheon hour on Oct 21, Lord LISTOWEL in the House of Lords gave the *Government an opportunity to describe* how they were safeguarding the children's food in war-time The problem was not *controversial* but it was urgent The Government's milk scheme and school meals were our new antidotes to poverty and malnutrition and Lord Listowel hoped they would become no less permanent a feature of our social services than free education Indeed teachers have discovered that a school meal is a practical demonstration of character training and dietetics, and is as valuable as regular classes or organised games

Lord WOOLTON said that war had altered the whole nature of the nutrition problem As a result of the equalising effect of the ration book the nation was living on a diet which was based on the average needs of the family But it was not designed to meet the needs of special classes of the community and there was some danger that those who required special consideration either for the growth of their bodies or for the maintenance of more than average physical strength, might find the ration-book diet insufficient At present there were 5 million children in the elementary and secondary schools and only 300,000 were receiving meals in school The provision of school meals was uneven in a few areas as much as 30% of the children were having meals in school, in others there was little or no provision Not all local authorities had realised the implications of the war-time diet scale, and there was no doubt that many had met with difficulties regarding equipment premises and finance Yet in some areas up to 50% of the parents would like their children to have dinners in school and are willing to pay for them

The Chancellor of the Exchequer had now agreed that from Oct 1 the grant in respect of the provision of meals for children attending public elementary schools was to be increased by a further 10%, with an overriding maximum of 95% of the loss incurred The minimum rate of grant would now be 70% and the average rate approximately 80% Priority supplies would be provided to enable school canteens to serve balanced meals of the type which medical and scientific advisers considered necessary for the growth and health of schoolchildren These provisions would apply to all schools The cooking depots for use in emergency, which had been set up by local authorities and were now lying idle, were to be brought into action now and kept bright and polished in the daily service of the children of the nation They were capable of providing 300,000 meals a day, and the number would be increased to 400,000 British Restaurants and emergency meal-centres would also play their part, and their equipment, subject to suitable safeguards, would be used and where it was necessary to start new kitchens equipment would be available from the Ministry's pool The President of the Board of Education was seeking to raise the proportion of children receiving milk under the milk in schools scheme from the present 60% to as near 100% as possible To this end the whole cost of providing free milk to necessitous children and handling the milk in the schools would be reimbursed by the Exchequer

So much for children But, Lord Woolton pointed out, we have not only to preserve life but to defend liberty The principle adopted to secure the health of children—to see that they should be fed where they were congregated—had also been adopted for industrial workers Canteens would be divided into three groups, according as they catered for the heavy worker, the medium-heavy worker and the sedentary worker, and the Government would provide the appropriate food accordingly Before the end of this year 85% of the mining population would have a supplementary ration served at the pit-head

Lord HORDER, in welcoming the Minister's statement, said that so far no overt signs of malnutrition were to be seen among our people, but if we delayed until malnutrition appeared we might have waited too long, for malnutrition left a permanent scar Evacuation had undoubtedly acted as a deterrent against deficiency diseases in children, because sun and air were essential in preserving nutrition But we did not know how far our children might be from malnutrition , for science could not measure the margin of safety Children were at the mercy of chance in any rationing scheme, for with most mothers knowledge marched a good way behind affection, and school was the only place where defects might be made good and hazards warded off He felt that this was a red-letter day in the annals of children's nutrition Everybody must help and they must aim at as many meals as possible in as short a time as possible

The Battle of the Books

The Minister of Information lately said that ink has done much to sustain and improve the modern social system It is the staple of freedom, knowledge and entertainment But ink can do nothing without its colleague paper, and Lord SAMUEL received warm support in the House of Lords on Oct 23 when he pleaded for some indulgence for the publishers of books. Noble Lords seemed to feel that paper-saving might well begin in Whitehall Entertainment and education are part of our war effort and the public are seeking both today from books in a greater measure than ever before Libraries and universities are unable to obtain school books and technical books which they have ordered, and Lord HORDER sent a message to say there is an urgent need for the release of paper for printing books for the doctor, the medical student, the nurse and the civil defence worker He gave as an example from his own knowledge an excellent book on first-aid which is out of print and cannot be reprinted for lack of paper, and added that the "chaotic state" of the printing and binding trades are causing from 4–6 months' delay in the publication of what books there is paper for Knowledge of science could not be maintained unless there are books to feed it Lord SAMUEL pointed out that the paper used for books is obtained from home sources and is only 1 5% of what the country uses for other purposes We must concentrate on the war, but what are we fighting for, Lord Samuel asked We are fighting for the intellectual and spiritual things which we value and it would be a tragedy if they were to be trodden under in the fight The Archbishop of CANTERBURY held that we cannot be effectively at war unless we are sometimes prepared to get outside it and above it, and for many books were the easiest means Restriction of paper unfortunately by no means meant that only the best books were published Lord ESHER thought that the publishers had perhaps not done all they might to solve their labour problems Lord ELTON said that the books we exported project Britain abroad, and declared the least pretentious book was a better form of escapism than alcohol or astrology He warned his listeners that a too severe restriction of paper might easily slide into a kind of censorship Lord SNELL replied for the Government regretfully, but said the book trade had received more favourable treatment than newspapers or periodicals He admitted his own indebtedness to books and looked forward to the day when they would once more provide unrationed nurture for our times Lord SAMUEL thanked him for the spirit rather than the substance of his reply and acclaimed him as a literary Doctor Jekyll and an official Mr Hyde

QUESTION TIME

School Meals in Scotland

Replying to a question Mr T JOHNSTON said I hope to secure an immediate and substantial development of school meals service by arranging for advantage to be taken of facilities provided by the Minister of Food, and where these are not available by encouraging education authorities to make their own provision The financial aid available to education authorities is being increased Parents who are able to pay will be expected to pay Scots Law presently permits food to be provided for necessitous children only when the child is unable by reason of lack of food to take full advantage of the education provided But malnutrition should be prevented, and a short bill, designed to give education authorities power to supply food free of charge to necessitous cases without waiting for evidence of malnutrition, will be introduced in the near future

Tuberculosis in Scotland

Mrs A HARDIE asked the Secretary of State for Scotland in what districts in Scotland the increase in notified cases of tuberculosis had taken place —Mr JOHNSTON replying gave the following figures —

1938			1939			1940			1941 (first 41 weeks)		
Pul	Non pul	Total	Pul	Non pul	Total	Pul	Non pul	Total	Pul	Non pul	Total
4793	2772	7565	1657	2140	7097	5200	2504	7704	4548	1988	6536

Pul = pulmonary

Infant Mortality in Scotland

The latest infant-mortality figures available for Scotland are those for the first six months of this year Comparing these rates with the average of the rates for the first six months of the three years 1937, 1938 and 1939, the burghs showing the largest percentage increases are Dumbarton, Rutherglen, Hamilton and Paisley Considerable increases are found in the counties of Nairn and Sutherland, but the small number of births in the first six months of 1941 renders any comparison unreliable (Mr JOHNSTON replying to Mrs HARDIE)

War-time Nurseries in Scotland

Ten local authorities in Scotland have submitted definite proposals for the establishment of war time nurseries, and these proposals, which provide for 39 nurseries, have all approved Of the 39, there are 2, each accommodating 40 children, in full operation, and 14 which were already in pa operation at the date of the circular are being brought into fuller operation (Mr JOHNSTON replying to Mr McNEIL)

Deaths after Vaccination

In reply to a question the MINISTER OF HEALTH stated the deaths of children under five assigned to vaccinat numbered 5 in 1938, 1 in *1939 and* 6 in 1940 , but I *am* advised that this classification does not rule out the probability that such deaths may have had other contributory causes

Registrar-General's Reports

Sir Ernest Graham Little asked the Minister whether he ould secure the resumption of publication of the Registrar-eneral's Reports, cessation of which constituted a serious ndicap on medical research, and was successfully avoided the last war —Miss F Horsbrugh replied The prepara- on of these reports has not been discontinued, though it is gretted that war time conditions have delayed the comple on of the report for 1939 It has been decided, however, to int in the first instance a very limited edition of this volume hich will be held by the Registrar General and made avail- le for consultation and study by Government departments d other bodies or persons having an acknowledged interest its contents The interests of medical research will receive mpathetic treatment under this arrangement

Doctors for Pensions Appeal Tribunals

Mr W W Wakefield asked the Minister of Pensions if, view of his recent undertaking that he would consult the inister of Health as to the supply of doctors for pensions ppeal tribunals, he could now state what was the present osition.—Sir W Womersley replied I have stated that I hall keep the matter of pensions appeal tribunals constantly mind in the light of the findings from time to time of the hakespeare Committee I am asking that committee to give e their views on the availability of suitable doctors for ppeal work

Hospital in Antigua

Dr H. B Morgan asked the Under Secretary of State for he Colonies whether the Colony Hospital in Antigua, British Vest Indies, was still in the state it was in February, 1939, adly in need of repair, with rotten floors, leaking roofs, roken doors and poor sanitation, whether temporary epairs had yet been done, and when it was proposed to ebuild the hospital properly so that good medical work for he island inhabitants might be done —Mr G Hall replied Owing to the financial position of the colony it has only been ossible in recent years to effect the minimum running repairs o the Holberton Hospital in Antigua The question of ebuilding the hospital, which is agreed to be necessary, has een considered by *the comptroller for development* and welfare in consultation with the governor Plans will be rawn up by a qualified hospital architect now in the West ndies This architect will shortly be undertaking a survey f hospital buildings in *the Eastern Caribbean colonies* and British Guiana, financed by a grant under the Colonial Development and Welfare Act

Medical Board Rejects

Sir Robert Young asked the Minister of Health whether he was aware that many men were turned down for the various forces by the medical boards on account of physical disability, and placed in class III *or* IV, *and whether he* would consult with the War Office, in the interests of the future health of the nation, so that each man should be informed of his particular physical disability, when if it was anything requiring attention he could consult his own medical doctor or officer —Mr E Brown replied I will communicate with the Minister on the matter

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Bee Stings —Mr S B Ralston of Bearsden, Dumbartonshire, writes I have worked with bees for some 20 years, using a veil but with bare hands, and therefore have a large experience of stings A moderate number of stings have little effect, except a slight local redness and later itchiness, with no swelling, but 20–30 stings have had a more severe effect, and recently even fewer than 20 The effects are, successively (1) a feeling of heat and stuffiness inside the veil, (2) increasingly heavy pounding of the heart, (3) rush of blood to the head, with bloodshot eyes, (4) a sick feeling but no vomiting, (5) giddiness tending towards momentary unconsciousness (6) gradual recovery with profuse perspiration, (7) nearly full recovery in about two hours The attack itself seems to take a long time, but actually is only a matter of minutes The procedure I adopt is to lie flat on my back with my head slightly raised, I do this at once in the garden, but well away from the hive Then when the giddiness is over I go indoors and take a warm bath and get a very necessary change of clothing Finally I sleep for an hour or two

Letters to the Editor

MALNUTRITION IN THE COLONIES

Sir,—You have drawn attention to the subject of planned nutrition for our Crown Colonies in your leader of Oct 4, and I hope you will go on turning a kindly eye on this subject for the benefit of the less well informed at home Little was really done before the war, though the Moyne Commission brought out the appalling state of nutrition in the West Indies, one of our oldest colonies In Africa, medical development has largely been due to the keenness of individuals rather than to a defined nutritional policy This is borne out by the dearth of nutritional appointments and of postgraduate training facilities, and by the lack of standing committees directed to the study of nutrition Nor have educated Africans taken much share in a problem which is primarily their own A more active policy was being foreshadowed at home before the war in the Colonial Advisory Report no 1 Report no 2, which was that of the colonies themselves, showed how little active concern for nutrition they had displayed up to that time The work of the Medical Research Council, Dr Platt's visit, and the proposal to establish research scholarships before the war all show awakening interest Credit for what has been done so far, however, must go largely to men like Stannus, Lowenthal, Pillat and Wilson, who spent the greater part of their lives in Africa and contributed much of what is known about tropical malnutrition They knew their environment and the people they lived among—essential preliminary knowledge for most research in Africa, since Africans are shy of inquirers until they know and trust them The Alfred Jones Laboratory was an excellent example of the value of continuity, but is now closed down If nutrition is to be tackled seriously in our tropical possessions this can best be done by men who live there Its study needs a director and whole-time staff and the same backing as that given to the sleeping-sickness campaign in recent years Most of the medical advisers at home and the directors of medical services in the colonies have had a greater interest in medicine and hygiene than nutrition, there have been few Sir Thomas Stantons We need permanent nutritional departments at home and in the colonies, staffed by men who are not only qualified for the work but are vocationally interested in it

Moreover, colonial nutrition is judged from too narrow an angle What collateral partnership is there between the study of nutrition and research in agriculture and fisheries, veterinary science, animal and plant nutrition? It is the job of agriculturists to improve the cereal crops which are so badly needed in Africa, to check the growing of uneconomic crops, to prevent soil erosion, and to fight pleuropneumonia and rinderpest in cattle To the Africans agriculture has always appeared as a child of the political administration and its potentialities have never been recognised There has been little constructive attempt to create interest in nutrition, few know, for example, that Kew Gardens introduced new foods and the first orchard crops to Africa In many cases those orchards have been left desolate, or have become local botanical gardens, merely decorative and no longer serving the purpose for which they were intended Lack of continuity is responsible, Kew is forgotten and unhonoured by the present generation in Africa

Essential partners in African malnutrition are the venereal diseases Gonorrhœa is endemic and widespread and is responsible for the bulk of physical unfitness among recruits for much lost labour and for shortened expectation of life It is as much a disease of poverty and ignorance as leprosy, but instead of being of Biblical antiquity it has come with the changing world we have created for Africa—with our trade development and with the breakdown of old laws which have been replaced only in part by new ones Even today we can do relatively little for lepers, but for gonorrhœa we now have specifics and could do much

Perhaps after the war we shall hear more about the colonial research fund, and perhaps more research facilities will be given to Africans and those whose interest is in the country Since war broke out we have for children attending public elementary schools was to be increased by a further 10%, with an overriding maximum of 95% of the loss incurred The minimum rate of grant would now be 70% and the average rate approximately 80% Priority supplies would be provided to enable school canteens to serve balanced meals of the type which medical and scientific advisers considered necessary for the growth and health of schoolchildren These provisions would apply to all schools The cooking depots for use in emergency, which had been set up by local authorities and were now lying idle, were to be brought into action now, and kept bright and polished in the daily service of the children of the nation They were capable of providing 300,000 meals a day, and the number would be increased to 400,000 British Restaurants and emergency meal-centres would also play their part, and their equipment, subject to suitable safeguards, would be used, and where it was necessary to start new kitchens equipment would be available from the Ministry's pool The President of the Board of Education was seeking to raise the proportion of children receiving milk under the milk in schools scheme from the present 60% to as near 100% as possible To this end the whole cost of providing free milk to necessitous children and handling the milk in the schools would be reimbursed by the Exchequer

So much for children But, Lord Woolton pointed out, we have not only to preserve life but to defend liberty The principle adopted to secure the health of children—to see that they should be fed where they were congregated—had also been adopted for industrial workers Canteens would be divided into three groups, according as they catered for the heavy worker, the medium-heavy worker and the sedentary worker, and the Government would provide the appropriate food accordingly Before the end of this year 85% of the mining population would have a supplementary ration served at the pit-head

Lord HORDER, in welcoming the Minister's statement, said that so far no overt signs of malnutrition were to be seen *among our people, but if we delayed until malnutrition appeared we might have waited too long*, for malnutrition left a permanent scar Evacuation had undoubtedly acted as a deterrent against deficiency diseases in children, because sun and air were essential in preserving nutrition But we did not know how far *our children might be from malnutrition , for science could not measure the margin of safety* Children were at the mercy of chance in any rationing scheme, for with most mothers knowledge marched a good way behind affection, and school was the only place where defects might be made good and hazards warded off He felt that this was a red-letter day in the annals of children's nutrition Everybody must help and they must aim at as many meals as possible in as short a time as possible

The Battle of the Books

The Minister of Information lately said that ink has done much to sustain and improve the modern social system It is the staple of freedom, knowledge and entertainment But ink can do nothing without its colleague paper, and Lord SAMUEL received warm support in the House of Lords on Oct 23 when he pleaded for some indulgence for the publishers of books Noble Lords seemed to feel that paper-saving might well begin in Whitehall Entertainment and education are part of our war effort and the public are seeking both today from books in a greater measure than ever before Libraries and universities are unable to obtain school books and technical books which they have ordered, and Lord HORDER sent a message to say there is an urgent need for the release of paper for printing books for the doctor, the medical student, the nurse and the civil defence worker He gave as an example from his own knowledge an excellent book on first-aid which is out of print and cannot be reprinted for lack of paper, and added that the "chaotic state" of the printing and binding trades are causing from 4–6 months' delay in the publication of what books there is paper for Knowledge of science could not be maintained unless there are books to feed it Lord SAMUEL pointed out that the paper used for books is obtained from home sources and is only 1 5% of what the country uses for other purposes We must concentrate on the war, but what are we fighting for, Lord Samuel asked We are fighting for th intellectual and spiritual things which we value and would be a *tragedy if they were to be trodden under* the fight The Archbishop of CANTERBURY held that w cannot be effectively at war unless we are sometim prepared to get outside it and above it, and for man books were the easiest means Restriction of pape unfortunately by no means meant that only the bes books were published Lord ESHER thought that th publishers had perhaps not done all they might to solv their labour problems Lord ELTON said that the bool we exported project Britain abroad, and declared th least pretentious book was a better form of escapis than alcohol or astrology He warned his listeners th a too severe restriction of paper might easily slide in a kind of censorship Lord SNELL replied for th Government regretfully, but said the book trade ha received more favourable treatment than newspapers periodicals He admitted his own indebtedness t books and looked forward to the day when they woul once more provide unrationed nurture for our time Lord SAMUEL thanked him for the spirit rather than th substance of his reply and acclaimed him as a litera Doctor Jekyll and an official Mr Hyde

QUESTION TIME

School Meals in Scotland

Replying to a question Mr T JOHNSTON said I hope secure an immediate and substantial development of scho meals service by arranging for advantage to be taken facilities provided by the Minister of Food, and where the are *not* available by *encouraging education authorities* make their own provision The financial aid available education authorities is being increased Parents who a able to pay will be expected to pay Scots Law present permits food to be provided for necessitous children on when the child is unable by reason of lack of food to take fu advantage of the education provided But malnutritio should be prevented, and a short bill, designed to give educ tion authorities power to supply food free of charge t necessitous cases without waiting for evidence of malnutritio will be introduced in the near future

Tuberculosis in Scotland

Mrs A HARDIE asked the Secretary of State for Scotlan in what districts in Scotland the increase in notified case of *tuberculosis had taken place* —Mr JOHNSTON replyin gave the following figures —

1938			1939			1940			1941 (first 41 weeks)		
Pul	Non pul	Total	Pul	Non pul	Total	Pul	Non pul	Total	Pul	Non pul	Tot
4793	2772	7565	4657	2440	7097	5200	2504	7704	4548	1988	65

Pul = pulmonary

Infant Mortality in Scotland

The latest infant mortality figures available for Scotlan are those for the first six months of this year Comparin these rates with the average of the rates for the first si months of the three years 1937, 1938 and 1939, the burgh showing the largest percentage increases are Dumbarto Rutherglen, Hamilton and Paisley Considerable increas are found in the counties of Nairn and Sutherland, but th small number of births in the first six months of 1941 rende any comparison unreliable (Mr JOHNSTON replying to Mr HARDIE)

War-time Nurseries in Scotland

Ten local authorities in Scotland have submitted defini proposals for the establishment of war time nurseries, an these proposals, which provide for 39 nurseries, have all bee approved Of the 39, there are 2, each accommodating 4 children, in full operation, and 14 which were already in parti operation at the date of the circular are being brought int *fuller operation* (Mr JOHNSTON replying to Mr MCNEIL)

Deaths after Vaccination

In reply to a question the MINISTER OF HEALTH stated the deaths of children under five assigned to vaccinatio numbered 5 in 1938, 1 in 1939 and 6 in 1940 , but I an advised that this classification does not rule out the probabilit that such deaths may have had ot few symptoms or because their symptoms are wrongly ascribed to other lesions present

The phrenico-costal sinus contusion was stressed because I feel it is proved that this lesion has an abdominal component to the force causing it, it therefore serves to direct attention to the fact that the abdomen is compressed with the chest—Dr O'Reilly was so much confronted with this aspect that two of his cases had the abdomen opened I fancy his fig 2, the radiogram of case 3, shows a phrenico-costal sinus contusion (these radiograms are of such general interest that it is a great pity they were reproduced as positives instead of negatives—they compare very unfavourably with those of Dr Deaner on the previous page)

The interpretation of the lung changes in any particular case may be so difficult that it is easy to understand them being described as just irregular This is especially true of cases dying some time after the injury when acute pulmonary œdema may complicate the picture Some degree of acute pulmonary œdema is the rule in these cases and the more hæmorrhagic forms of this may mimic the deep and often massive hilar contusions (these can be regarded as the contre-coup lung lesion) The action of morphia in preventing the onset of acute pulmonary œdema suggests that Dr O'Reilly was very wise to use it freely in his cases, the similar action of some anæsthetics indicates that perhaps the dangers of anæsthetics in blast cases has been exaggerated Since acute pulmonary œdema is benefited by venesection each case should be given careful thought before plasma-transfusion or the like is used

While I agree with Dr O'Reilly and Dr Gloyne that the importance of making a diagnosis of blast injury of the lungs is great I do not believe that it is any greater than making a similar pathological diagnosis in road and other peace-time accidents—cases which are almost regularly treated with complete disregard for the lung lesions

Derbyshire Royal Infirmary	G R OSBORN

CEREBRAL HÆMORRHAGE IN AN INFANT BORN BY CÆSAREAN SECTION

SIR,—The morbid findings in an infant, which Dr Lapage (*Lancet*, Aug 9, p 160) attributes to some constitutional factor such as deficiency of vitamin K, are of great interest on account of their strong resemblance to what is seen in patients with infective endocarditis who have been treated by a combination of heparin and sulphonamides This treatment which appears so attractive on theoretical grounds has been associated with fatal cerebral hæmorrhage in a proportion of cases and the brain at autopsy often shows diffuse extravasation involving particularly the white matter of the cerebrum so that large areas are converted into a hæmorrhagic jelly Elsewhere there are hæmorrhages on a smaller scale and having a distribution similar to that described by Dr Lapage The similarity of the pathological findings in the two states is a point in confirmation of the suggestion he puts forward regarding an alteration in the clotting power of the blood

London, S W 3	J H MULVANY

FOOD ADVICE FOR THE WAITING OUTPATIENT

SIR,—The part which doctors and nurses play in aiding the national food policy is at present small because nutrition is a matter on which they are seldom consulted by their patients except in cases of illness, and then it is more often the special diet than the general aspect that arises In spite of the efforts of the Ministry of Food that are everywhere apparent and applauded, enlightenment on the best food to buy within the restricted choice available and the most beneficial methods of cooking it are limited because the ministry lacks the means of reaching the housewife by personal contact A great opportunity to overcome this difficulty exists in the outpatient departments of hospitals and in the maternity and child welfare clinics throughout the country where hundreds of thousands of women congregate daily The initiative to exploit this opportunity should come from those responsible for the hospitals and clinics

At Soho Hospital for Women we are attempting to give advice on food and cooking to a minute fraction of this large group of the population We have been enabled and encouraged to make the experiment by the good offices of Dr B S Platt of the staff of the Medical Research Council and by the cooperation of the London County Council who have been so good as to give us the services of one of their expert advisers on domestic economy and cooking This lady comes to the outpatient department once a week, and having made a typical housewife's daily food purchases on the way demonstrates their uses and abuses This is not done in a formal lecture, which would prolong the outpatients' wait and discourage them, but in talks to a few patients at a time before or after they have been seen by me

The demonstrations are proving popular and the patients and their friends have expressed their gratitude for the service The secretary of the hospital will be very pleased to show the scheme in working to anyone who is interested and will communicate with him

London W 1	W C W NIXON

MEDICAL ASPECTS OF BOXING

SIR —Supposing that boxing has all the disadvantages claimed by Dr Jokl which I would not admit, the advantages obtained by it far outweigh them especially for men in the fighting forces These are courage, pugnacity endurance, activity, quick wittedness and general physical fitness Far more numerous and serious injuries are incurred in football I think Dr Jokl must have the anti-blood-sports mentality Of all the blood-sports boxing is certainly the bloodiest

Kimberworth, nr Rotherham	G E MOULD

ENURESIS

SIR —In your issue of Oct 18 Dr Greene gives us a somewhat turbid criticism of Mr Winsbury-White's valuable article on Enuresis This criticism cannot merit any serious reply if for no other reason than that he uses this quite senseless expression "It would be interesting to know how he *differentiates* these *apparently opposite* groups" in relation to two quite well-known and distinct classes of upper urinary tract dilatation which are clearly and reasonably explained in the author's text Further, he makes the dogmatic statement that Bartholin's glands do not open into the urethra I should be glad if he would produce for me any material evidence he has in his possession which proves this assertion

Guildford	DONALD MACLEOD

RADIOLOGY AS A CAREER

SIR,—I should like to endorse the remarks of "D M R E" That there is no shortage of radiologists is surely borne out by the fact that only about three advertisements for one have appeared since the beginning of the war, three offering a living wage at any rate It is pretty generally admitted that the future of radiology will be in the hands of full-time men in the hospitals Apparatus and running costs are so expensive that proper examinations will soon be prohibitive in private Yet there cannot be a dozen such appointments in Great Britain

The difficulties of radiology as a junior specialty, mentioned by your correspondent, are due mainly to the general staffs of hospitals who still think they know all about it and teach their students that all radiologists are bad They insist on having their work done as and when they wish, giving no chance of organisation to departments whose work is doubled and apparatus halved, and whose coat of arms should be Æsop's man and son and donkey Hospitals will have to face the facts and put in men at worth-while salaries and let them be masters in their own houses Otherwise there will be a shortage of good men, who will not take the present pay and status of technicians The scheme of subsidising half-trained men is typical of the present attitude and will ruin radiology for a generation

D M R

HYDATIDS IN BRITAIN —In referring to Dr Nicolson's paper of June 21 on a pelvic hydatid cyst and the annotation on peritoneal hydatids in the same issue Sir Louis Barnett writes from Hampden, New Zealand Hydatid disease is not so rare in Britain as many people think My personal investigations showed that practically all the large hospitals record a case or two every year, and the Registrar-General's mortality returns are not insignificant been actively concerned about problems of subnutrition at home In our colonies, which have been so generous to us, gross malnutrition is rife in peace as well as war

Parkstone, Dorset D FITZGERALD MOORE

STUDENTS ADVISE THE PRIME MINISTER

SIR,—As signatories of the telegram to which Sir Ernest Graham-Little refers in your issue of Oct 25, we fully realise that few have the knowledge to advise the Government on problems of pure strategy But surely everybody has the right to express his opinion on the general policy which he thinks the Government may be pursuing, or which he wishes it to pursue For the state of public opinion must be a consideration of some weight with the Government in coming to a decision, and the expression of such opinion is a democratic privilege which is not lost once the citizen's vote has been cast

ISAIAH MORRIS JUDY WATERLOW
CYRIL RUBEN

University College Hospital Medical School

SIR,—I trust that Sir E Graham-Little will not lay the flattering unction to his soul that he has disposed, by his letter in THE LANCET of Oct 25, of the 63 students who sent to him and to the Prime Minister the telegram urging more effective British intervention to help Russia In the first place his analogy of the surgeon performing an abdominal operation is far from convincing Unexpected conditions are assumed to be discovered on opening the abdomen which may make the completion of the operation immediately fatal The surgeon pauses, and the *implication is that he is pained and surprised* when the onlooking students call upon him, even shout at him, to do something Why shouldn't they? He gives no explanation to the students of his inactivity Does he expect them to remain indefinitely mute with acquiescence or admiration at his paralysis, which seems to them to be anything but masterly? After all, a pause from June 22 to the present date seems to be an exceptionally long time under the circumstances Perhaps also—leaving the analogy aside—some of the students have read Mr Lloyd George's "War Memoirs" and have developed a healthy scepticism about both politicians and military experts in consequence

Secondly, Sir Ernest seems to be unaware of the undemocratic tendency implicit in his argument If we are told to leave every decision to the "unfettered and consummate judgment" of any one person, this simply amounts to dictatorship On the other hand, criticism and discussion are the essence of democracy and if the authorities keep back important facts they must not be surprised if criticism falls short in certain respects They will, of course, in these circumstancesal ways be in a position to denounce such criticism as ill-informed—a useful dialectical weapon often used as a defence-mechanism, as shown by the extent to which they tend unnecessarily to hold back information even, in some cases, until after the enemy has published it

The 63 students are not the only people in this and other countries who are gravely concerned at our apparent failure to take more energetic action to help Russia, as Sir Ernest will know if he happens to read the papers There may be good, if obscure, reasons for this policy But I hope they are better reasons than those given in Sir E Graham-Little's letter

Harley Street, W 1 FREDERICK DILLON

EVALUATION OF NUTRITIONAL STATUS

SIR,—At the inaugural meeting of the Nutrition Society more time could perhaps have been profitably spent on discussing measurements of the growth-rate of children as an index of nutrition In a recent survey I examined 4000 children in different parts of Great Britain for signs of malnutrition, some both before and after dietary additions As a result I believe that in assessing the state of nutrition in children measurements of the rate of growth are still the most sensitive index Animal experiments strongly suggest that any dietary deficiency, or combination of deficiencies, will be revealed by a decrease in the rate of growth Conversely, in human feeding experiments in this country measurements of growth increments are the only observations that have plainly and unequivocally demonstrated the effects on children of an improved diet In using this nutritional yard-stick frequent measurements of he and weight over as long a period as possible should taken, single measurements are almost useless ther, it is essential to compare a child's growth cu with *contemporary* average curves, which should possible be optimum curves derived from the best fe groups in the population Alternatively, average heigh and weight tables from the recent reports of chief scho medical officers of the large cities may be used W know now that the stature of children is not a fix natural characteristic for a given age but may altered by varying the environment For exampl since 1920 the average height of 12-year-old Lee *elementary-school boys has increased by 2 in and th* weight by 7 lb

Assessing the nutritional state of adults is far mo difficult The epiphyses are fused and no longer m cubits be added to our stature Short of frank deficien disease we have to rely on a close examination of tho tissues which reveal signs of a defective diet most readi —the skin, mucous membranes eyes and blood The observations are not easy to make and their significan is sometimes disputed Perhaps the best index of t state of nutrition in groups of adults, in populations fr from frank deficiency disease, would be the changes incidence of chronic bacterial infection, especially of t respiratory system

The effect of certain other physiological systems whi exert a powerful but subtle influence on nutrition shou be borne in mind when assessing nutritional statu Abnormalities in the psychological system, especial anxiety, may prevent the proper utilisation of ingest food Disorder in the endocrine system—for exampl hyperthyroidism—may cause wasteful utilisation of foo Malnutrition may result from bad ventilation or excess fatigue owing to anoxæmia and lactic-acid accumulati interfering with cell nutrition Lastly, malnutriti may be due to unsuspected organic disease

I raise these points in order to re-emphasise the gre complexity of assessing the nutritional status and dieta requirements of man Although the great bulk malnutrition and deficiency disease can undoubtedly abolished by improving people's diets, there are certa additional factors which complicate the problem F practical, as distinct from experimental, purposes, think it would be of most value to concentrate o watching the growth curves of children and the resistanc to infection of adults as the surest indication of trends the nutritional status of the population

Royal Hospital, Sheffield JOHN PEMBERTON

BLAST INJURY OF THE LUNGS

SIR,—I am sorry that Dr O'Reilly and Dr Gloy have married their interesting account of blast injury the lungs (*Lancet*, Oct 11, p 423) by such a comple mis-statement of my "views" on the subject I ha never suggested that "blast injury is best marked in t phrenico-costal sinus" Their quotation (*Brit med* 1941, 1, 510) should be "Certain parts of the lungs a predisposed to injury Thus we find subpleural 'r markings,' injury in the phrenico-costal sinus regio and deep and posterior lesions in the region of t hilus" If they will refer to the *Lancet* of Aug (p 198) they will see this in diagrammatic form

I do not contend that "since they [i e blast injuri and contusions or crush injuries of the chest] are so oft found together they should be described together," b I do contend that absence of signs of violence to the che wall means little or nothing There may have been usual form of violence to the chest wall or a lorry weig ing 6 tons may have passed right over it, I have t conclusively proved with police photographs and pos mortem findings Conversely the presence of signs damage to the chest wall does not mean that lu lesions found are not wholly or in part due to blast have seen on a number of occasions how, especially elderly people with rigid chest walls, there may extensive fractures of ribs but no lung damage So f no real pathological or clinical distinction has bee shown to exist between cases of pulmonary concussi from (*a*) mechanical causes such as road accident (*b*) bomb explosions, and (*c*) depth-charge explosion &c One outstanding feature is the ease with which t lung lesions can be overlooked, either because they gi

Medical News

niversity of Oxford

On Oct 16 the degree of D.M was conferred in absence on ne Smith.

The Rockefeller Foundation is making a grant of £1000 to e university towards the cost during 1942 of research on the owth of and regeneration of nerves to be undertaken by Mr Z Young in the department of zoology and comparative natomy

niversity of Glasgow

On Oct 18 the following degrees were conferred —

M.D —* H C McLaren (with commendation) and C H Wilkie

* In absentia

M.B Ch.B —J S Frew (with honours) T A. Berry, N C ott John Gilchrist, W A. Maclure, Wallace Barr, A W cLeod, W B Newton, Agnes D D Murray and John Penwick ith commendation), F O Adewole, A b Aiton W A. M kiyemi J M Alexander W. H N Angus Robert Auld A C arry, S G A Bartlett C K Boal Andrew Bowman P D C ackenridge O M Brewster, C H Brown, Johanna J S runton, Walter Burnett W F Caldwell, Janet A Christie homas Cochrane, H B Cowan, G M Cubie J T Cunningham N Cunningham, T M Curran C C Cuthbert, Jean W Cuthbert, K. M Deas, W A Dewar, T M Donald, W A. J Donald, P A uke, P I Shaw Dunn, R L Ewing C S Farquharson, Hugh erguson, James Frame Marion K. Gilmour, Benjamin Guyer A Y *Hamilton*, J M. *Hamilton*, A R Harbinson James emphill, Ruth L Henderson A T Hendry, M J Hood Jack saacs Julius Jacobs, Eileen I Jamieson J S Jeffrey George ohnston D M. Kissen, N M Lamont W H Lang W R C Lang ones Lumsden Mary C Lynas Robert McAndrew W F McCle iont A F McCoubrey W M MacDermid, Archibald MacDonald, oseph McGlone, Robert McIlwraith Mary M McKelvie Allan Mac-innon H A. Maclachlan A G MacLeod D J MacLeod J A acleod N F Macleod J C Meck L G Meiklejohn Edward illar, Kathleen M Miller, W L Milligan P D Muckart, John urphy, John Newton G W Para, W A Parker J B Pettigrew E Potts A R Rennie, T R. A Richmond, David Robertson athan Sher, D W Short A M Smeaton A B C Smith J F mith, F M Steel Janet I Stewart Sylvia J Strachan, Thomas ymington A C Tait G R Thomson J M Urquhart A R G atson J C Wood F W C Yardumian W H Yellowlees, aida B Young M J Young and Violet B Young

cottish Conjoint Board

At recent examinations of the board of the Royal Colleges f Physicians and Surgeons of Edinburgh, and the Royal aculty of Physicians and Surgeons of Glasgow the following ere successful —

L.R.C.P. & S E, L.R.F.P. & S

C E V P Amerasinghe Benjamin Beck G C Cope, T V larke, Thomas Dean, A M A El Far, Yousif Faraony, Ralph riedman, A P. Gemmell M F El Giziri D F P Gordon, David ranet, Benjamin Greenberg, J H Haldane Margaret M Hanretty orman Hornstein, Dorothy L D Johnston, George Johnstone E Klein R I Kynaston, Henrietta Lennon, J K Lotinga H Lunine Herbert Macpherson O P Markandya, H J F itchell E K. Neidich, Jack O Hara, Valaydon Poonoosamy, H Reinsberg C B Robinson, Julius Schneiderman, Robert mith, Theodore Tuller

The following graduates of recognised foreign universities ave also been admitted licentiates —

Szulin Riterband, M D Rome, Else Wolfsohn M D Berlin

uberculosis Association

A meeting of this society will be held at 26, Portland Place ondon, W 1, on Saturday, Nov 8, at 10 30 A.M During the orning six short papers will be read and in the afternoon there ill be a discussion of problem cases and interesting radiograms

Medical Honour

Dr Donald Dunn, house-officer at the London Chest Hospital, has been awarded the M.B E Dr Dunn carried patients to safety single handed when the hospital was bombed

Royal Society of Medicine

A general meeting of the fellows of this society will be held at 1, Wimpole Street on Tuesday, Nov 4 at 3 30 P.M On Nov 5, at 2 30 P.M the section of surgery will meet to discuss streptococcal cross infection in wards The openers will be Prof A A Miles, Prof J Paterson Ross, Dr M van den Ende, and Colonel Leonard Colebrook At 3 P.M on the same day Prof A T Jurasz will read a paper to the section of history of medicine on the foundation of the Polish medical faculty within the University of Edinburgh On Nov 7, at 10 30 A.M, Mr F Watkyn-Thomas will deliver his presidential address to the section of otology He will speak on otitic meningitis Mr E D D Davis has chosen as the subject of his presidential address to the section of laryngology the problems of the otolaryngologist in war He will give it on the same day at 2 15 P.M, at 2 30 P.M Dr A D Marston as president of the section of anæsthetics will speak on the centenary of ether as an anæsthetic

Medical Casualties

Captain E J F Hinde, M.R C S., R.A.M C, has been reported missing at sea during September

In recent casualty lists the following R.A.M C officers were posted as prisoners of war T/Major J M. Fosbrooke, F.R C S E, W S/Captain J E S Carmichael, M.B Edin., W S/Captain A. Mikellides, and Lieutenant R M Solomon M.R C S

Cancer Research Studentship

The council of the Royal College of Surgeons will shortly nominate a Prophit student in cancer research. The studentship will not exceed an annual value of £500 with an allowance of £200 for travelling expenses and the appointment in the first instance will be for one year Applications should reach the secretary of the college, Lincoln's Inn Fields, W C 2 before Nov 22

CORRIGENDUM —The reference to Gurd, F B and McKim, L H on page 429 of Oct 11 should read *Amer J Surg* 1941, 51, 584

Appointments

BAILEY J SHACKLETON M.R.C S examining factory surgeon for Eye Suffolk.

BRAND, W G, M B Edin examining factory surgeon for Adlington Lancs

BUTTERWORTH, JOAN M B Lond D P H asst M O for Hants

GRIFFITHS, H J, M.R.C S, D P H temp asst M.O.H for Newport Mon

HALBERSTAEDTER, MAX, M.B Lond D M.R E senior asst radiologist to St Mary's Hospital, Paddington

HALLIWELL, E O, M R.C.P temp physician to the Hull Royal Infirmary

HUNT A H D.M Oxfd F R C S surgical registrar at the Royal Cancer Hospital (Free) London

KATZ JAKOB M.D Bratislava, D P H Prague temp deputy M O H for Accrington

KLABER, ROBERT, M.B Lond F R.C.P consulting dermatologist to the Luton and Dunstable Hospital

KNOX, EILEEN M.B Brist asst M O H for Huddersfield

LANCHESTER, H C, M A. Camb, M R C S R.S O at Portwey Hospital Weymouth.

NEWMAN, J L, M D Camb M R.C.P D.P H deputy M O H and deputy school M O for Warwickshire

O'REILLY, E J M.B N U I temp asst M.O H for St Helens

* RICHARDS B T, M R.C S L D S D P M medical superintendent of the Langho Colony for Epileptics

ROGERS, KATHARINE, M R.C S, M.R C O G M O (maternity and child welfare) for York.

WYBURN-MASON R M.B Camb M R.C P medical registrar at the Royal Cancer Hospital (Free), London

* Subject to confirmation.

Births, Marriages and Deaths

BIRTHS

DESMOND —On Oct. 9 in Bermuda the wife of Surgeon Lieutenant A M Desmond, F R C S, R.N V R.—a daughter

DUNKERLEY —On Oct 20 at Westerham, Kent, the wife of Dr Arthur Dunkerley—a daughter

MATHESON —On Oct 20, in London, the wife of Mr Iain Matheson, F R.C S —a son

MONRO —On Oct 19 in Singapore, the wife of Prof J K. Monro, M Ch —a daughter

OLDFIELD —On Oct 21 at Harewood Leeds the wife of Major Michael Oldfield F R.C S R A.M C —a daughter

RICHARDS —On Oct 18 the wife of Dr A M. Richards, of Banbury Road, Oxford—a daughter

MARRIAGES

FLETCHER—SEELY —On Oct 24, at Winchester Charles Montague, M.R.C P, only son of the late Sir Walter Morley Fletcher to Louisa Seely

FRASER—BEETHAM —On Oct. 16 at Bermuda, Peter Kennedy Fraser M D Surgeon Lieut.-Commander, R N, to Doris Beetham

HARPER—SPILLER —On Oct 18 Curzon Harper, of Barking, to Violet Spiller M.D of Streatham

HART—MEYER.—On Oct 25, in London Philip D'Arcy Hart, M D to Ruth Meyer

HEWITT—WOOD —On Oct 25 at Watford Edward John Campbell Hewitt M D, R A.M C of Shenley, to Joan Millicent Wood.

DEATHS

ANDREW —On Oct 23 at St Austell Wilfrid Andrew, L M.S S.A

BENOLY —On Oct 22 at New Clips one Notts Nathaniel Benoly M D Würzburg L R C P formerly of Bethnal Green Road London aged 92

BRIDGES —On Oct 22 in Cheltenham Arthur Brodie Hamilton Bridges, O B E, M R C S, major, R A.M.C, late of Kilmington, Devon

REDFERN —On Oct. 23, at Compton Winchester John Joseph Redfern M D Belf aged 80

WARD —On Oct 23 at Bournemouth, John Alfred Ward, M.D Durh, aged 77

Obituary

H E G BOYLE

O B E, F R C S, D A

Henry Edmund Gaskin Boyle was born in Barbados and was educated at Harrison College there before coming to England where he qualified from St Bartholomew's Hospital in 1901 While a student he was president of the Abernethian Society and after qualification he held the post of casualty officer at the Bristol Royal Infirmary He then returned to Bart's as junior resident anæsthetist, rising in due course to be head of the department When he began his life's work the "rag and bottle" methods were universal, but about 1912 the work of Hewitt in this country and Boothby and Cotton in America put gas-and-oxygen on the map and Boyle was quick to grasp its possibilities In the last war he was instrumental in getting the army authorities to realise the importance of the new anæsthesia in shocked patients and the dispatch of his portable apparatus to casualty clearing stations in France undoubtedly saved many lives For these services he was made O B E Boyle made a visit to the United States to see for himself the progress of anæsthetic technique While there he was struck by the value of the Davis gag for dissection tonsillectomy, and on his return he introduced it to British ear nose and throat surgeons He was also one of the pioneers of intratracheal anæsthesia In 1935 the Royal College of Surgeons elected him a fellow and in the same year he received the new diploma in anæsthetics He was one of the first pair of examiners for this diploma and his fairness and acceptability were widely acknowledged

For over 40 years "Cockie" Boyle could be seen nearly every day at Bart's and the number of students who benefited by his practical teaching was enormous He also held anæsthetic appointments at Paddington Green Children's Hospital and St Andrew's Hospital, Dollis Hill, and had a large private practice He was not a ready writer, but he contributed now and then to the medical papers and published with his colleague Mr C Langton Hewer "Practical Anæsthetics" which reached a third edition

Boyle was by nature extremely kind and he had hosts of friends "To an anæsthetist who met him only outside hospital, the characteristics which most impressed me in him," J B writes, "were his joviality, a slightly sardonic sense of humour, readiness to speak at a meeting, and general level-headedness Boyle's earliness in the field with an efficient and not too complicated gas-and-oxygen machine, in the days when that form of anæsthesia was rapidly being established after the last war, has earned for him a lasting name among the anæsthetists" He took a deep interest in student activities, and was a familiar figure in the stand at Richmond for the rugger cup ties His own sport was cricket and he often displayed his skill in the matches between past and present Bart's men

In 1910 he married Mildred Ethel, daughter of J W Wildy and widow of Mr Leslie Green, F R I B A His health had been failing for some years and he died on Oct 15, aged 66

DAVID ORR

M D EDIN

THE sudden death of Dr David Orr on Oct 8 at his home in Edinburgh came as a shock to his friends, for he had just returned from a holiday and seemed to be in good health David Orr was born in 1872 and educated in Edinburgh at George Watson's College He qualified in 1894 from the university, and in 1902 was specially commended for his M D thesis After qualifying he studied diseases of the eye in London at Moorfields Hospital, and for a time was clinical assistant in the ophthalmic wards of the Edinburgh Royal Infirmary From postgraduate studies at Heidelberg and Vienna he returned to Scotland to work with Clouston at Morningside, then at Melrose Asylum, and later he held the post of assistant pathologist to the laboratory of the Scottish asylums In 1898 he was appointed assistant medical officer and pathologist to the Prestwich Asylum, Manchester, and was promoted deputy superintendent in 1911 and medical superintendent in 1924 Unfortunately his health broke down the following year, and he retired to Edinburgh, where he resumed his research in the laboratory of the Royal College of Physicians

Orr was an indefatigable worker, and during his time as pathologist at Prestwich he published important papers dealing with the pathology of acute insanity, the influence of toxins on the central nervous system, and the paths of infection through the lymph-stream in the spinal cord He was familiar with the German, French and Italian literature of his subject, and visited the continental clinics and laboratories In 1909 with R G Rows he published a translation of Lugaro's "Modern Problems in Psychiatry" No-one who worked with him will forget his vivid personality and buoyant enthusiasm He carried with him "the infection of a good courage" and so could "meet all life's ills and accidents with gallant and high-hearted happiness" His main interests outside his work were golf and music He sang well and had a fund of good stories, and an evening in his hospitable home was something to be remembered

He leaves a widow and two daughters

HASTINGS GILFORD

F R C S

Mr Hastings Gilford died at the age of 80 on Sept 6 in Reading where he had set up in practice in 1887 soon after qualifying from Guy's He continued to practise as a general practitioner to the end of his life and many families recognised his skill as an accoucheur and his devotion to children But his consulting practice, both medical and surgical, was also growing—he had taken his fellowship in 1889—and in due course he became surgeon to the Reading Dispensary and during the last war to the Sutherland Hospital for Pensioners With his seeking mind it was inevitable that he should gravitate to the Reading Pathological Society and he read many papers at their meetings Though most of his contributions were surgical he was a pioneer in the study of the ductless glands and his classic paper on progeria was published in our columns (1914, 1, 672) These investigations led him to the study of cancer, and most of his later writings were a challenge to experimental research, for he contended that cancer was not caused by an outside agency acting on the cells but by a disorder of the cells themselves stimulated by civilised man's unnatural ways of living In "Postnatal Growth and Development," published in 1911, he put forward the thesis that development begins with the integration of the cell, which continues with increasing complexity and diminishing impetus up to middle age, then merging into declining phases in which this process is reversed His Hunterian lectures in 1913 dealt with the nature of old age and cancer from this standpoint He continued his studies of the biological and clinical aspects of the subject and "Tumours and Cancer" appeared in 1925, and he also contributed forceful letters to our columns Later under the name of John Cope he set out his views for a wider circle of readers With this bias towards distrust of the conventional Hastings Gilford combined a disarming humility and a receptiveness to the lessons of experience that made him good company for young and old He took much from the town of his adoption and gave more in return

Gilbert Adams Reading

MR G STAFFORD ALLEN, who died suddenly in London on Oct 22, aged 70, was partner in Stafford Allen and Smith Ltd of Long Melford, Suffolk, medicinal herb growers Interest in herbs and gardens was traditional in the Quaker family to which he belonged and he was equally at home in fruit-growing, agriculture and pedigree pig breeding, while his hobby was the rock garden He was a trustee and manager of the Ogilvie school of recovery at Clacton

ORIGINAL ARTICLES

RENAL LESIONS IN TWO CASES OF CRUSH SYNDROME

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PROFESSOR OF PATHOLOGY, UNIVERSITY OF GLASGOW

MARJORIE GILLESPIE, M D GLASG
ASSISTANT PATHOLOGIST TO THE LONDON COUNTY COUNCIL

J S F NIVEN, M D GLASG
LECTURER IN PATHOLOGY, UNIVERSITY OF GLASGOW

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FROM the accounts of the sequelæ of certain forms of crushing injury recorded by Bywaters and Beall (1941), Beall, Bywaters, Belsey and Miles (1941), Mayon-White and Solandt (1941), and others, it is clear that in such cases acute renal insufficiency is relatively frequent While this is accompanied by certain pathological changes in the kidneys, the descriptions of the renal pathology so far available do not appear to offer a completely satisfactory explanation of the gross functional disturbances observed during life Neither do they seem sufficient to provide a clear correlation of this with any previously described form of acute renal lesion In two cases of this kind which we have recently had the opportunity to examine the changes in the kidneys are of a definite and unusual nature We hope that our findings may stimulate inquiry as to whether similar appearances can be detected in the kidneys of other fatal cases of crush syndrome

CASE 1

A woman, aged 18, was admitted as an air-raid casualty to the Hampstead General and N W London Hospital, on April 17, 1941, under the care of Mr Arthur Gray, F R C S She had been pinned under a beam for six hours On admission she was in a state of shock with cold extremities, and the blood pressure was 112/78 mm Hg Both legs had been crushed under debris and there was an area of bruising on the left calf with death of a portion of skin, measuring 5 × 5 in There were also many abrasions of the skin and a fracture of the pelvis was recognised by X rays Steps were taken to counteract shock and the wounds were cleaned and treated with sulphanilamide powder and flavine , 2000 units of A T S was administered intramuscularly The patient received also potassium citrate gr 30 and sulphapyridine 1 g three times a day During the following days the pulse continued poor though the blood pressure had risen There was restlessness and drowsiness without sleeping and vomiting was frequent Some of the daily observations are recorded in the table Œdema appeared in the legs, particularly in the right thigh, on the second day , it increased and became gross on both sides before death Hiccough developed on the sixth day and acute dilatation of the stomach on the seventh , the dilatation was relieved by lavage The pulse became variable, with dropped beats, and the patient died on the ninth day

Observations in case 1

Day	Blood pressure	Fluid intake	Vomiting	Urinary output	Urine	Urinary urea	Blood urea	Hæmoglobin
	mm Hg	c cm				mg/100 c c m		%
1			+	420				
2		1530	+	240	Blood +			
3	140/90	1080	+	120 +	Blood +			
4	145/90	900	+	240 +				
	136/85	510	+	180	Red cells in deposit			
6	165/85	3630	1770	240	Alb +, red cells + granular casts + +		106	85
7	158/80	3600	3720	270	Alb + red cells + granular casts +			
8	165/80	3000	610	420	Tr alb , no blood		200	83
9	130/68				No blood or alb	1000	368	

An *autopsy* was performed (M G) on April 26, twenty-three hours after death There were numerous skin abrasions and the injuries previously mentioned were confirmed A circumscribed area of pale necrosis 6 cm long was found in the right quadriceps femoris muscle Œdema was present in both legs and in the chest wall The heart showed no important change Petechiæ were present in the pericardium and pleuræ The pleural cavities each contained 1500 c cm of clear fluid , both lungs were grossly œdematous No important change was seen in other organs apart from the kidneys These were enlarged (R 242, L 230 g) The capsules were non adherent and the surfaces smooth On section fluid oozed from the cut surfaces The renal cortex was pale and mottled, and in the deep parts there was an opaque whitish zone 2 mm in breadth surrounding the bases of the medullary pyramids, which were darkly congested

Histological examination of the kidneys shows that the general arrangement of the cortex is not disturbed by any antecedent chronic change There is a slight separation of the tubules as by œdema The glomeruli are normal in size, cellularity and blood content Spheroidal masses of homogeneous material, somewhat resembling dead cell bodies, occur in many of the capsules of Bowman , these appear to be albuminous aggregates, for the lining cells of the capsules are, in general, in situ and normal In the *first convoluted tubules* the epithelium is of normal appearance , there is no catarrh or evidence of recent regeneration, while with special stains neither fat nor hyaline droplets are demonstrable Their lumina, sometimes very slightly dilated, contain amorphous debris or rounded masses like those in the capsules , no hæmorrhages or casts are seen in them The *second convoluted tubules* are more conspicuous than normally owing to denser nuclear staining All of them show some pathological change, though the degree of this varies greatly In the majority the alterations are slight, comprising moderate dilatation of lumina, slight basophilia of cell protoplasm and increase in the number and density of staining of nuclei These appearances, which correspond to those seen in regenerated tubules after a mild experimental tubular nephritis, are more pronounced in occasional tubules or in small groups of segments where mitoses can be recognised in the cells around such tubules there is definite plastic overgrowth of the supporting interstitial tissue (fig 1) In many of these second convoluted tubules there are also light casts of orange brown material resembling hæmoglobin which takes the form of beaded filaments or amorphous masses In one or two places in the cortex there are foci of still more severe damage of second convoluted tubules of a type which will be described in the boundary zone where they occur in much larger numbers (fig 2) *Boundary zone* It is in this region, where the straight descending limbs of first convoluted tubules in the medullary rays of the cortex are changing to narrow descending limbs of Henle, that the most remarkable histological picture is observed In any single section the low power reveals large numbers of severe focal lesions affecting the broad ascending limbs of Henle's loops, the segments which lead up to the second convoluted tubules in the cortex (fig 3) These lesions often occur in groups and each group is surrounded by a very definite recent overgrowth of interstitial tissue By examination of serial sections it is in most instances easy to ascertain that each focus implicates not only a tubule but also the thin wall of an adjacent venule The tubule can be traced from comparatively normal conditions above and below to a level where there occurs an aneurysmal bulge of 40–80 μ diameter This is usually filled by a dense mass of albuminous coagulum which stains faintly with eosin and gives a light fibrin reaction The epithelium lining the bulge has suffered especially severe damage and the actively regenerating cells are often thinned out and flattened, the relining being sometimes incomplete This bulging part of the tubule indents the wall of the small venule and often protrudes into the lumen of the latter, while in some instances there is clear evidence that it has actually ruptured through (fig 4) The inner wall of the venule at a point of rupture is covered by a cap of thrombus continuous with the coagulum in the tubule, and frequently a strand of proliferated epithelium is enclosed in the thrombus. Sometimes a considerable strand of proliferated cells extends in the venous channel loosely held in thrombus These proliferating cells in this unusual site can be identified with considerable

Notes, Comments and Abstracts

HABITUALLY AND FOR GAIN

L Farrer Brown, B SC (ECON) LOND
BARRISTER AT LAW

THE innocent looking phrase "habitually and for gain" has made its reappearance in connexion with a proposal that unqualified persons should be prohibited from making nursing their livelihood The midwifery profession had experience of the phrase from 1910 to 1926 Accounts of that experience appeared at the time in annual reports of the Central Midwives Board and of medical officers of health, but a brief recital may be of interest

The Midwives Act 1902 (section 1 (2)) provided that from April 1, 1910 (which was about 7 years after the Roll of Midwives had been established), no woman should "habitually and for gain attend women in childbirth otherwise than under the direction of a qualified medical practitioner" unless she was certified as a midwife Exemption was granted to legally qualified medical practitioners and to "anyone rendering assistance in a case of emergency" Any woman who offended against this provision was liable on conviction before a court of summary jurisdiction to a fine not exceeding £10

A considerable number of prosecutions were undertaken in different parts of the country and fines of varying amounts were imposed on offenders, but in many cases in which there appeared to be a clear breach of the law the matter was not brought into court or the prosecution was unsuccessful because of the loopholes open to a defendant For a prosecution to be successful five things had to be proved

(1) that the defendant was not a certified midwife,

(2) that she had attended habitually,

(3) that she had attended for gain,

(4) that she attended otherwise than under the direction of a doctor, and

(5) that her attendance was not the rendering of assistance in a case of emergency

Proof of the first was easy, but the remaining four often presented difficulties Many magistrates required strict proof that attendance had been habitual and for gain "Habitually" is an elastic term and was a hard thing to prove because evidence was required of attendance under improper conditions in a number of cases and within a recent period "For gain" is ambiguous If payment is not demanded but a present is given as a thank-offering is that gain? Even when the payment of money could be proved, evidence that the defendant had rendered other services at the same time, such as washing clothes, cooking, helping in the house, or looking after the other children in the family, tended to weaken the prosecution's case To prove the payment of money was not without its difficulties For example, the mother states on oath that she called at the defendant's house and paid the defendant's fee for attending at the confinement, but was not given a receipt The defendant denies having received any payment and declares that she attended the mother merely as a friend There is a conflict of statements and in the absence of a witness or a receipt signed by the defendant the charge is likely to be dismissed on the ground that there is no evidence corroborating the mother's statement

"Covering" by medical practitioners provided some offenders with the means of escaping punishment At one stage such covering was by no means infrequent, and the Central Midwives Board therefore brought proceedings against certain doctors before the General Medical Council The first of these cases was in respect of covering in its most open and common form The doctor had arranged with an uncertified woman to "look after" her cases for her "at the modified fee of 7*s* 6*d*" It was proved that three women had been delivered by the uncertified woman, that the doctor had called the next day but not subsequently, that he had not examined the patients, and that he had been paid a fee of 7*s* 6*d* by the uncertified woman in each case He had notified the births—a proceeding clearly designed to conceal that the women had been delivered by the uncertified woman alone The doctor was found guilty by the General Medical Council

The exemption granted to anyone rendering assistance in an emergency was abused This abuse seems to have been facilitated by the attitude of some benches of magistrates and by the desire of many patients to screen the uncertified women who had attended them In one case in the home counties the defendant pleaded guilty, but said that she wished to continue her work as a midwife in the interests of the poor of the neighbourhood Apparently the sympathies of the women she had attended in their confinements, of the magistrates and of the general public present at the hearing were enlisted on her behalf The chairman of the bench stated that they were bound to record a conviction but did so with very great regret, that they would reduce all the defendant's expenses and would only impose a fine of 1s which would be paid by one of the members of the bench The chairman then informed the defendant that in future she could act in the absence of a doctor only when the case was one of emergency, to which she replied "There will be plenty of emergency cases then," and the chairman responded "*We know you are doing a good work*"

A change in the law was made in 1926 The phrase "habitually and for gain" was dropped, and an attempt was made to prevent abuse of the necessary exemption in a case of emergency by placing on the defendant the onus of proving that attention had been given "in a case of sudden or urgent necessity" The new provision,[1] which is still in force, was in the following terms

> "If any person, being either a male person or a woman not certified under this act, attends a woman in childbirth otherwise than under the direction and personal supervision of a duly qualified medical practitioner, that person shall, unless he or she satisfies the court that the attention was given in a case of sudden or urgent necessity, be liable on summary conviction to a fine not exceeding ten pounds"

Exemption was granted to pupil-midwives and medical students attending confinements as part of their training It will be noted that a curious omission in the earlier act was remedied In the 1902 Act the prohibition applied only to unqualified *women* In 1926 unqualified men-midwives were brought within the scope of the prohibition

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BRITISH COLLOIDS LTD (Crookes Laboratories) have withdrawn the following lotions and creams from the general market Lacto-calamine, calamine cream and lotion, zinc cream, and mercury and sulphur scalp lotion These preparations will in future only be supplied on a doctor's prescription

Infectious Disease in England and Wales

WEEK ENDED OCT 18

Notifications—The following cases of infectious disease were notified during the week smallpox 0, scarlet fever, 1195, whooping-cough, 1979, diphtheria, 1002, paratyphoid, 62, typhoid, 16, measles (excluding rubella), 783, pneumonia (primary or influenzal), 624, puerperal pyrexia, 161, cerebrospinal fever, 107, poliomyelitis, 50, polio-encephalitis, 2, encephalitis lethargica, 4, dysentery, 143, ophthalmia neonatorum, 86 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Oct 15 was 1295, including scarlet fever, 168 diphtheria, 267, measles, 19, whooping cough, 530, enteritis 24, chicken pox, 17 erysipelas, 25, mumps, 9 poliomyelitis, 6, dysentery, 17, cerebrospinal fever 14, puerperal sepsis, 14, enteric fevers, 46, german measles, 2, other diseases (non infectious) 56 not yet diagnosed 81

Deaths—In 126 great towns there was 1 (1) death from enteric fevers, 2 (0) from scarlet fever, 1 (0) from measles, 10 (4) from whooping-cough, 11 (1) from diphtheria, 46 (0) from diarrhœa and enteritis under 2 years, and 12 (0) from influenza The figures in parentheses are those for London itself

Sheffield reported 8 deaths from diarrhœa, Birmingham 7, and Manchester 6 In the same week Dublin had 22 fatal cases of diarrhœa and Glasgow 15

The number of stillbirths notified during the week was 180 (corresponding to a rate of 33 per thousand total births), including 18 in London

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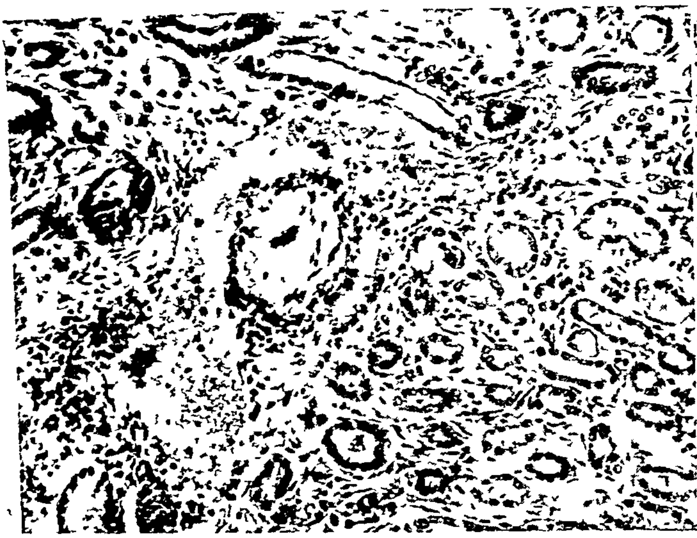
[1] Midwives Act 1926, section 1



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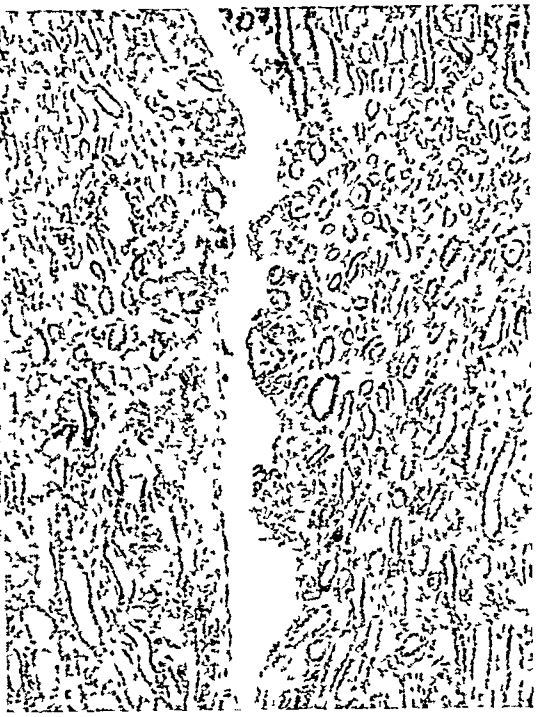

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FIG 4—Tubulo venous lesion in boundary zone Dilated tubule filled with coagulum bulging into venule into which rupture had occurred × 150

FIG 5—Three tubulo venous lesions in which ruptures have occurred × 65

nephritis in man and has been a characteristic finding in experimental tubular nephritis in animals (Dunn, Howarth and Jones 1924)

The most comprehensive descriptions of tubular epithelial changes so far available are by Bywaters and Beall, who mention severe damage in the form of fraying of protoplasm and vacuolation, but also regenerative changes with mitotic division and proliferation These are referred to ascending limbs of Henle and to convoluted tubules generally Mayon-White and Solandt have noted degenerative changes of acute character with pyknosis of nuclei, but mention no special localisation Minami (1923) who, as has been pointed out by Bywaters (1941), gave an account of the renal lesions in cases of similar character, also described only acute changes in convoluted tubules without specific localisation In our own cases the definite epithelial alterations appear to be restricted to ascending limbs of Henle and to second convoluted tubules, and are at a proliferative and healing stage, as might be expected in tubular lesions of over a week's duration The identification of the two sets of convoluted tubules in a previously normal kidney is not difficult Apart from having a wider diameter and taller epithelium, each first tubule forms a compact mass of closely packed convolutions into which no other tubule enters The second, with narrower calibre, lower epithelium and closer set nuclei, is much shorter and pursues an open angled course between the above masses, it therefore appears in sections only as isolated rings or ovals or in small rather loose groups The ascending limbs of Henle which lead to the second tubules are, it may be noted, somewhat similar to these in histological appearance While the anatomical structure and arrangement of the nephrons are now fairly fully established, much as yet to be learned about the functioning of the different parts, but there is increasing evidence that it is in the lower segments that final adjustment of reaction occurs, in man and carnivora as a rule to the acid side.

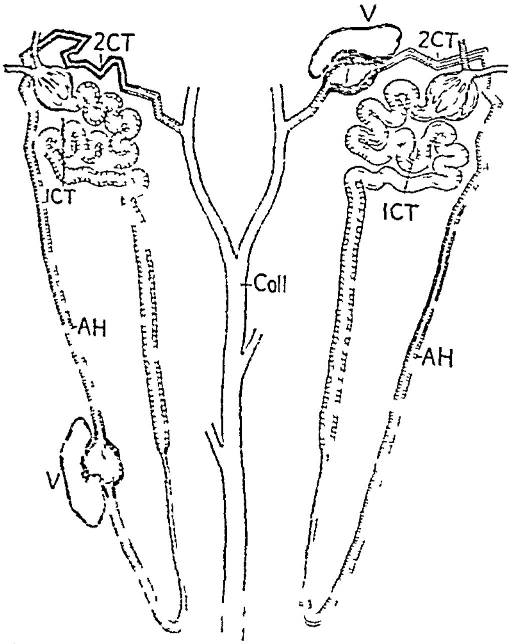
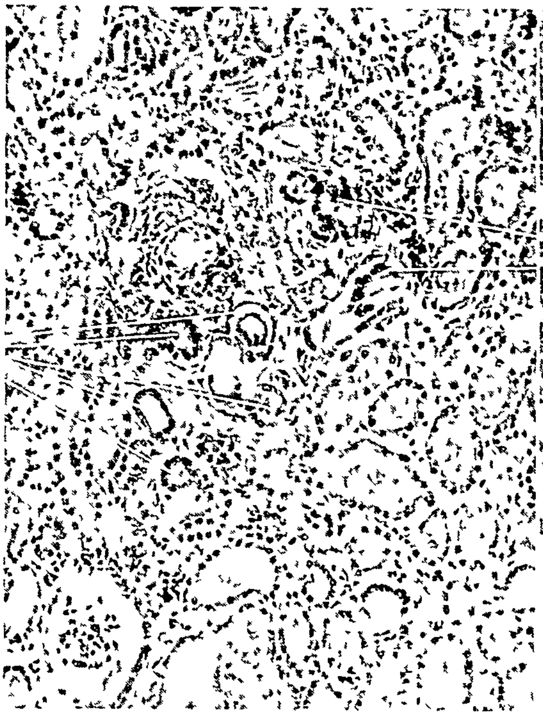


FIG 2—Arrangement of nephrons showing sites of lesions I C T 2 C T = first and second convoluted tubules A H = ascending limbs of Henle's loops Coll = collecting tubules V = venules with severe tubulo venous lesions

It is difficult to find in the diseases of man any analogy for a condition of acute selective damage of the lower segments of the nephron, but evidence drawn from experimental lesions in animals may assist in elucidating the pathogenesis of a lesion of this kind Dunn and Polson (1926) have shown that by the introduction into the circulation of the rabbit of large doses of uric acid in solution, in the form of lithium monourate, severe selective damage can be produced in the ascending limbs of Henle, second tubules and to some extent collecting tubules, while the first convoluted tubules remain normal in appearance Necrosis of the epithelial linings is produced within an hour or so of the injection, and regenerative changes are in full swing by the fourth to eighth day In the regenerative phase the lesions show distinct similarity to those in the present cases, except that tubulo-venous lesions are not found In these animals, just as in uranium or oxalate nephritis where the first convoluted tubules are selectively damaged, there is anuria or oliguria with low urea concentration, and the blood-urea rises These phenomena have been attributed by Dunn and Polson to non-selective reabsorption of filtrate through the damaged walls of tubules into the blood, thus escaping excretion More recently McFarlane (1941) has shown that in the experimental phosphate nephritis of rats, which was described by Mackay and Oliver (1935) and by Duguid (1936), the



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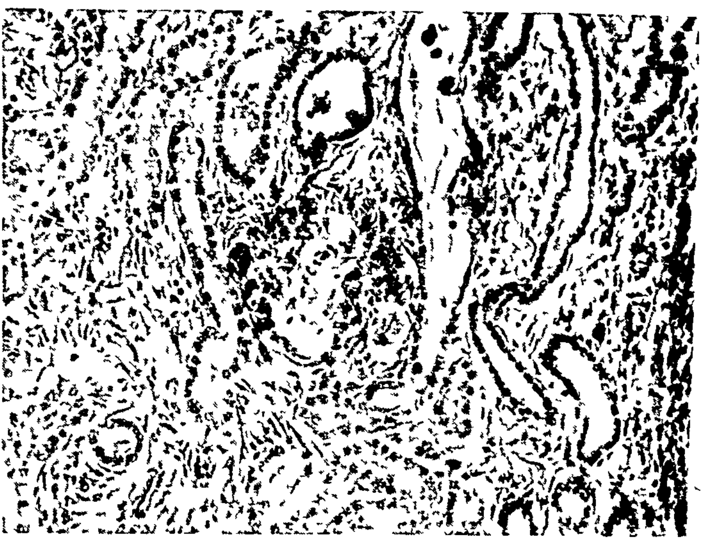

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FIG 1—Moderate lesions of second convoluted tubules in cortex (indicated by white lines) proliferation of epithelium with new cells cast off in some lumina First convoluted tubules all around are normal apart from debris in lumina × 150

FIG 3—Ascending limbs of Henle in boundary zone One intense lesion in centre with dilatation of lumen and active regeneration of epithelium, tubules nearby less affected, normal tubules on left above × 150

certainty as epithelial, the endothelium of the vessel is unaltered except where it has been completely destroyed under the cap of thrombus In many of the smaller foci of this type the albuminous mass protrudes through a gap in the dilated wall of the tubule into the connective tissue outside, and it is not clearly ascertainable that it has entered a venule, though the appearances leave it possible that a very small vessel has been involved The number of these foci of intense tubular damage is in this case very large, so that in a single low-power field it may be possible to identify three to five involving the wall of one of the larger venules of 200 μ diameter (fig 5) *Medulla* Most of the collecting tubules are normal but in a number of them there are orange brown casts of varying size These are mostly light and are composed of beaded ribbons of material resembling hæmoglobin A few are more solid and are large enough to press on the epithelial lining, which is then flattened and may show some regenerative change The evidence of damage of cells is, however, comparatively slight in any of the collecting tubules

CASE 2

A man, aged 51, admitted to hospital on April 17, 1941, was an air raid casualty who had been buried under debris for 8 hours He had crushing injuries of the legs with fracture of the right internal malleolus and laceration of muscles in the right foot The clinical course was characterised by oliguria and hæmaturia, and the blood urea rose from 100 mg per 100 c cm on April 21 to 384 mg on the 24th and 400 mg before his death on the 25th On the 24th the urinary urea was 1 3 g per 100 c cm and chlorides 1 5 g as NaCl per litre The illness was similar to that in case 1

Autopsy—There was no obvious œdema of subcutaneous tissues The heart showed slight dilatation of the right ventricle Both lungs had areas of consolidation in the lower lobes with suppurative softening and there was pleurisy on both sides The kidneys (R 180, L 210 g) were large and of firm fleshy consistence, not fibrous The surfaces were slightly granular and there were a few small areas of indentation of irregular shape On section the cortex was of normal width and aspect, apart from some congestion The pyramids were congested

Histological examination—There are in the renal cortex a considerable number of ill defined areas of partial atrophy of tubules with sclerosis of a few glomeruli, and around these there is some interstitial thickening with lymphocytic infiltration In the medulla also some vertical bands of moderate fibrosis occur These changes, which may have been pyelonephritic in origin, are clearly of old standing and in keeping with this there is some diffuse intimal thickening in arteries and arterioles There remain, however, considerable areas of cortex which have been practically normal, and in these parts there can be recognised lesions of recent date similar to those described in case 1 These lesions comprise the following (*a*) Light brown casts resembling hæmoglobin in second convoluted tubules (*b*) Proliferation of cells in some of these tubules (*c*) The more intense focal lesions with rupture of tubules and extrusion of albuminous material The majority of these are of small size and cannot be seen to enter venules, most of them occur in the boundary zone A few of them, however, are larger and implicate the walls of venules as in case 1 The walls of the venules are thicker in this case and may have been less easily perforated The lesions here appear to be slightly older and more nearly healed than in case 1 (*d*) In the medulla large orange brown casts occur in many collecting tubules and their presence is associated with some appearance of damage and regeneration of epithelium The casts are more numerous than in case 1

DISCUSSION

In the records of fatal cases of crush syndrome the brown casts in the renal tubules have been a conspicuous feature, and similar casts have been described in the urine of cases which recovered (Longland and Murray 1941) The question has been raised whether blockage of tubules by these casts could be the cause of the renal disability, but histological evidence on this point is inconclusive The persistence of casts in the tubules could so easily depend on diminution of filtrate, whether this resulted from an impaired circulation or from some other cause The most important criticism of the blockage theory, however, has been made by Bywaters and Beall, who point out that if tubular obstruction alone were concerned such urine as was secreted should theoretically be of normal composition, coming from unobstructed tubules, but in their experience the urine was little more than a glomerular filtrate (urea-concentration factor 1 6–2 8 in their cases 1 and 2), and this is confirmed by figures taken from Henderson's (1941) chart of a recovered case (concentration factor about 3 3 on the tenth day when the urinary output was about 700 c cm) In our cases 1 and 2 also single observations on the eighth day gave concentration factors of only 2 7 and 3 3 respectively Such extreme degrees of ablation of one of the highest functions of the kidney are of considerable moment and it is no doubt significant that among acute renal conditions the greatest reduction of concentrating power is known to occur when there is severe damage of tubular epithelium This may be observed in mercurial

The temperature remained subnormal except in the terminal phase of the two fatal cases. There were no rigors, and no patient complained of chills. The pulse-rate was variable, but was usually about 80 per min. in most patients. The absence of fever and rigors is one of the main differential points between this condition and catarrhal jaundice.

The urine contained bile-pigments in all cases, and there was albuminuria at some period in four patients. Webster's test[1] demonstrated the excretion of trinitrotoluene in the urine but was not constantly positive in all patients, only becoming so during treatment in some cases. Many of the workers in trinitrotoluene give a positive Webster test; this indicates not intoxication but only excretion of the substance. Leucine and tyrosine crystals were not demonstrated in the urine of any patients.

The blood in all cases gave a positive direct and indirect van den Bergh reaction. No constant changes could be demonstrated spectroscopically, because owing to enemy action adequate facilities were not available. Anæmia was only severe in one patient who developed aplastic anæmia after the jaundice had resolved. The white-cell count showed a leucocytosis of up to 15,000, with relative polymorphonuclear increase in several patients (this has been observed in some apparently normal workers).

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The second fatal case was of special interest, for the jaundice had resolved completely 9 weeks before the patient died of aplastic anæmia, of which there was no sign while the jaundice was present. The post mortem appearances were as follows. Pallor of the skin and some ecchymoses. The fauces and soft palate were ulcerated. The liver was finely granular and somewhat shrunken. The cut surface of the liver showed some pale areas of degenerating liver tissue, and pink areas of developing fibrosis. It weighed 40 oz. The spleen and kidneys showed no gross abnormality. The marrow of two ribs, the sternum, lumbar vertebræ and upper halves of both femurs was reddish, but not as red as typical hyperplastic marrow. Other organs showed no gross abnormality. Sections showed subacute necrosis of the liver, with some fatty degeneration, hypertrophy and fibrosis. Marrow smears showed no evidence of myelocytes or nucleated red cells.

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The true end-results of the condition in these patients cannot yet be estimated, for it is only 6 months since the first patient became jaundiced. The present condition of all the patients may be summarised thus:

One patient has died of acute yellow atrophy (case 1).

One patient developed agranulocytic angina with the blood-picture of aplastic anæmia, and in spite of all treatment died 14 days after readmission (case 2).

One patient has ascites, apparently from cirrhosis, but is now free from jaundice, and the effusion has to be tapped only at increasing intervals (case 3).

Four patients have apparently recovered and are free from all symptoms.

The final result of the four apparent recoveries and the patient with cirrhosis can only be judged when further time has elapsed and liver-function tests have been carried out. The findings in the liver of the second fatal case seem to indicate that a good deal of regeneration of liver tissue can take place, and probably has taken place in the apparent recoveries.

CASE-RECORDS

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CASE 2.—*Unmarried woman, aged 35, started work with T N T on March 10.* On the 31st she noticed nausea, succeeded a day or two later by vomiting; epigastric discomfort and jaundice appeared on April 6. She was admitted to hospital on April 12. There was well marked jaundice, with bile pigments in the urine and pale stools. Constipation was not noted. The temperature and pulse were normal, and no other abnormalities were found. At this time blood examination revealed 5% reticulocytes and no anæmia. The jaundice became extremely deep about May 5 and then faded. A trace of albumin was found in the urine at this time. On June 7 the patient was symptom-free, with no jaundice and a normal lævulose-tolerance test. She was discharged from hospital and went away on holiday.

On Aug. 2 she returned from holiday and was readmitted complaining of sore throat and petechial rash. Blood examination revealed agranulocytosis and aplastic anæmia, which were the cause of her ulcerated throat. The temperature fluctuated about 101° F. and the pulse rate about 110 per min. Daily transfusions of fresh blood, with intramuscular liver extract and pentnucleotide daily failed to influence the condition, and she died on Aug. 16. During this *second period in hospital* there was no jaundice.

CASE 3.—*Married woman, aged 42, with history of three normal pregnancies. Started work at factory on Feb. 7, 1941.* On April 20 she vomited and noticed dark urine; next day she noticed a tinge of jaundice and felt vague epigastric pain. She was admitted to hospital on April 25 with mild jaundice. The temperature and pulse rate were subnormal and remained so. The liver was not palpable, but there was slight tenderness on pressure in the right subcostal region. The urine contained a trace of bile pigments and the blood van den Bergh test was positive both direct and indirect. No other abnormality was detected. The jaundice persisted and the patient vomited once after admission. On

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lesion is again almost restricted to the lower nephron segments, and he agrees with Dunn and Polson in attributing the special localisation of lesions at this level to change of reaction in the filtrate, added no doubt to increase of concentration which has been effected at higher levels.

A feature which appears to be unique among the tubular changes in the present cases is the localisation of the most intense damage at points where the lower nephron segments lie in close proximity to veins. Further confirmation of this occurrence in other cases would be desirable but in our material the frequency of the association is so remarkable as to suggest a definite causal nexus. In uric-acid nephritis there seems to be little doubt that the lesion is determined by precipitation of the agent from a soluble form in which it is relatively harmless to a solid which exerts the destructive effect. It seems possible that in the present cases also a substance of special toxicity is produced in the presence of acid, and that the proximity of venous blood has an influence in permitting a greater swing towards an acid reaction in this area than is reached at other parts.

Nothing certain is known as yet of the nature or source of any toxic agent which may be responsible for the renal damage in cases of crush syndrome. The available facts, however, appear to justify the primary view to which most observers have adhered—that after release of the affected tissue from a compressed and more or less ischæmic state something toxic is absorbed from it into the circulation as the vessels reopen, and that the toxic agent affects the kidney in the course of excretion. The number and kinds of possible toxic agents which could so arise is conjectural and the suggestion that the cast material, which apparently contains myohæmoglobin (Bywaters and Delory 1941), is toxic is not to be ignored. Some light will probably be thrown on the genesis of this condition by experimentation with products obtained from muscle or other tissues. While not attempting to prejudge the results of this investigation, we suggest that both uric acid and phosphoric acid may well come under review as possible toxic agents, seeing that both of these molecules have a well-recognised origin in muscular tissue in the form of inosinic acid.

The part, if any, which may be played in the initiation of this syndrome by lowered blood-pressure consequent on shock has yet to be determined. Bywaters and Beall, while recognising that oliguria may be contributed to by a fall of systemic pressure and also by dehydration, could not attribute primary significance to either of these factors in their cases. There appears also to be general agreement that the degree and kind of renal functional disturbance which develops after crushing of the limbs is quite distinct from any of the sequelæ of ordinary surgical shock, and the exact pathology of the renal lesion itself is required in order to throw some light on this special feature. Maitland (1941) has suggested that the renal failure may be caused by vascular stasis in the kidneys resulting from low blood-pressure and aggravated by hæmoconcentration, while the circulation is flooded by abnormal protein from damaged muscles. It would be impossible at present to deny significance to any of these factors acting separately, but it does not seem a good argument that they would act concurrently in the early hours when injury appears to be inflicted on the kidneys; an accumulation of abnormal products in the blood would imply a fair circulation even through the injured limb, and an important lesion confined to the kidneys would suggest that they had received an adequate dose of the toxic agent from blood which passed through them. The significance of selective involvement of the kidneys in the present cases can hardly be overlooked, and it may be set in contrast to the lack of evidence for damage of other organs—the liver, for example, appears to function normally, for urea formation proceeds unchecked and large amounts accumulate in the blood. In considering possible reasons for specific localisation of damage in the kidneys attention may be drawn to a fundamental observation in experimental nephritis—that renal tubular damage can be most surely produced when the renal blood-flow is normally abundant and the concentrating power of the organs is unimpaired; for these reasons they sustain a more intensive attack by the toxic agents than do other tissues.

SUMMARY

The most definite changes found in the kidneys from two cases of crush syndrome are restricted to the ascending limbs of Henle's loop and second convoluted tubules; the lesions are in a healing stage.

The most severe of the tubular lesions implicate the walls of small venules, into which many of them have perforated.

The special localisation of these lesions may depend on change of reaction in the tubular contents at these levels.

Uric acid and phosphoric acid are substances capable of producing selective damage in these tubular segments.

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THIS is an account of observations on seven patients employed in an ordnance filling factory and suffering from toxic jaundice, apparently caused by trinitrotoluene. The condition is not uncommon under the present war conditions, and early diagnosis and treatment are essential. All our cases have occurred within 6 months of beginning employment at the ordnance factory, and in one fatal case the patient had been in contact with explosives for only 3 weeks when symptoms appeared. Six out of seven cases were in women, three of whom were unmarried; there was no history of pregnancy toxæmia in any patient. Two of the patients died.

SYMPTOMATOLOGY

Nausea or vomiting was the first symptom noticed in five patients; in the remaining two jaundice and cyanosis were the first symptoms. After an interval lasting up to 12 days jaundice was noticed. A constant early symptom was vague epigastric pain or discomfort and anorexia which preceded the appearance of jaundice by several days.

Jaundice appeared in all the patients within 12 days of the onset of symptoms. The colour in the early stages was the lemon yellow of toxic jaundice, to be distinguished from the more greenish yellow of obstructive jaundice. This colour is like that of a one in a thousand aqueous solution of acriflavine, and is really lemon yellow with a trace of orange. It is readily distinguished by clinical students from the colour of obstructive jaundice patients, but may be confused with that of catarrhal jaundice. Difficulty may arise because many of the healthy workers show some orange tinting of the hair and exposed skin from the local action of the explosives. In three of the patients the jaundice increased after admission and became rather darker. A tendency to bruising was noticeable in all the patients whose jaundice was well marked, and petechial hæmorrhages were a prominent feature of both the fatal cases. Cyanosis and anæmia were only observed in two of the patients, and it must be noted that cyanosis is very common in these workers and is not necessarily related in any way to jaundice. The liver was not grossly enlarged in any case, and was only palpable in one patient who subsequently developed signs of cirrhosis.

The temperature remained subnormal except in the terminal phase of the two fatal cases. There were no rigors and no patient complained of chills. The pulse-rate was variable, but was usually about 80 per min in most patients. The absence of fever and rigors is one of the main differential points between this condition and catarrhal jaundice.

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SYMPTOMATOLOGY

Nausea or vomiting was the first symptom noticed in five patients; in the remaining two jaundice and cyanosis were the first symptoms. After an interval lasting up to 12 days jaundice was noticed. A constant early symptom was vague epigastric pain or discomfort and anorexia which preceded the appearance of jaundice by several days.

Jaundice appeared in all the patients within 12 days of the onset of symptoms. The colour in the early stages was the lemon yellow of toxic jaundice, to be distinguished from the more greenish yellow of obstructive jaundice. This colour is like that of a one in a thousand aqueous solution of acriflavine, and is really lemon yellow with a trace of orange; it is readily distinguished by clinical students from the colour of obstructive jaundice patients, but may be confused with that of catarrhal jaundice. Difficulty may arise because many of the healthy workers show some orange tinting of the hair and exposed skin from the local action of the explosives. In three of the patients the jaundice increased after admission and became rather darker. A tendency to bruising was noticeable in all the patients whose jaundice was well marked, and petechial hæmorrhages were a prominent feature of both the fatal cases. Cyanosis and anæmia were only observed in two of the patients, and it must be noted that cyanosis is very common in these workers and is not necessarily related in any way to jaundice. The liver was not grossly enlarged in any case, and was only palpable in one patient who subsequently developed signs of cirrhosis.

very deep according to the amount of T N T present and appears quickly and just as quickly fades If no T N T be present a light brown colour only results and persists

With this simplified technique the test is sensitive to 1 part in 10,000 It does not exclude anthraquinone derivatives (from the purgatives mentioned), which give a similar but pinker colour which persists

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TRIGEMINAL NEURALGIA

A SUGGESTED BASIS OF TREATMENT

W E ADAMS,
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THE view, which many have held, that the paroxysms of trigeminal neuralgia are ischæmic in origin has never received convincing support Even Leriche (1939), who favours this view, admits that the treatment of trigeminal neuralgia by sympathectomy, with the object of producing a vasodilatation of the trigeminal vessels, offers little hope of success Nevertheless there is increasing evidence, both physiological and pathological, that the normal functioning of peripheral nerves is dependent upon the integrity of their blood-supply Koch (1926) has shown that ischæmia of mammalian nerve produces significant physiological changes in the nerve, and that when the ischæmia disappears the nerve returns again to normal Should the ischæmia persist, as in pathological occlusion of the vasa nervorum, more permanent effects result (Woltman and Wilder 1929, Randall 1938, and others)

Unfortunately, little is known concerning the detailed vascular supply of peripheral nerves In the trigeminal, however, the Gasserian ganglion has been shown to be very vascular (Stöhr 1928) and to receive its supply from the internal carotid artery, while the remainder of the nerve resembles nerves elsewhere in receiving a regional blood-supply (Grigorowsky 1928) Since physiological and pathological evidence suggests that the blood-supply of any nerve is not only adequate but also essential for its normal requirements, it seems to us that ischæmia of a nerve, whether angiospastic or otherwise should be considered as a possible factor in peripheral nervous lesions where no other obvious cause presents itself In the case of trigeminal neuralgia this hypothesis deserves the fullest investigation, and should not be rejected merely because of the failure of cervical sympathectomy

The success which has recently been obtained in angiospastic conditions such as Menière's disease (Atkinson 1941) and even in one case of trigeminal neuralgia (Cooper 1938), by exhibiting vasodilator drugs over long periods encouraged us to explore the possibilities of this form of treatment in trigeminal neuralgia In the first cases which were available we tried to induce the paroxysmal pain by administering the vasoconstrictor drugs, adrenaline and benzedrine, believing that its production in this way would suggest an angiospastic basis Abolition, then, of both the induced and spontaneous pains would afford not only circumstantial support for our theory but also a new means of alleviating the pain in those cases which show such vasomotor responses Because it has been found in Menière's disease and nerve deafness to be the most effective vasodilator, we relied mainly on nicotinic acid, and not on acetylcholine which was used by Cooper in trigeminal neuralgia In cases 1–7 treatment with nicotinic acid was begun at once in an attempt to stabilise the dosage It was found, however, that there is considerable individual variation in the response to this drug, and, unless relief was obtained earlier, it was at times necessary to increase the dosage until signs of generalised vasodilatation appeared

CASE RECORDS

CASE 1 —A woman aged 52, with 2½ years' history of supraorbital pain of typical paroxysmal type, accompanied by a facial tic Thorough examination revealed no cause for the symptoms Blood pressure 135/95 mm Hg

During an intermission of the symptoms a preliminary injection of 0 7 c cm of 1 in 1000 adrenaline induced, almost immediately, supraorbital pain—resembling in every respect the usual spontaneous pain—with tenderness over the supraorbital notch During a subsequent spontaneous paroxysm 50 mg nicotinic acid was given by mouth with no apparent effect After 40 minutes a further 50 mg was administered; this resulted in some diminution of the pain after 20 minutes, but did not abolish it A capsule of amyl nitrite was then given This produced striking, almost instantaneous relief—the pain disappeared completely, to the delight of the patient who was able to sleep without a sedative for the first time in many weeks Although she was convinced of the efficacy of amyl nitrite, it was nevertheless probable that it merely augmented the effect of the previous subliminal doses of nicotinic acid Treatment by nicotinic acid, 50 mg t d.s, was then continued, and during the 10 days that the patient was under our observation there was no recurrence of the pain. Injections of adrenaline during this period were ineffective. As in Cooper's case, the facial tic was not influenced by the treatment

CASE 2 —A woman, aged 68, with 2½ years' history of trigeminal neuralgia involving the second division of the nerve Blood-pressure 150/105 mm Hg

At first the patient was given benzedrine sulphate, 5 mg. b d The paroxysms became considerably more frequent, and she complained bitterly of their increasing severity On two occasions a capsule of amyl nitrite relieved the paroxysms. The benzedrine was then stopped and nicotinic acid given, 50 mg b d Over a number of days this treatment reduced the paroxysms in frequency (from 15–20 a day to 3 or 4) and in severity

CASE 3 —A man, aged 48, with 5 years' history of trigeminal neuralgia involving the second division of the nerve After a remission of 2 years the pain had returned with its original severity It appeared 5 or 6 times a day and lasted 1–3 hours Blood pressure 130/90 mm Hg

Treatment with nicotinic acid, 50 mg b d, was started at once and had a definite effect Apart from one paroxysm shortly after the treatment began, the patient had complete freedom from pain for 4 days During this time attempts were made to induce the pain by injection of adrenaline but without effect After 4 days the nicotinic acid was stopped and he was put on benzedrine sulphate 5 mg t d s Attacks of pain recommenced and increased gradually in frequency and severity as the benzedrine was continued Attempts to relieve the paroxysm during this time by giving acetylcholine were without success, probably because it was unable to counteract the constrictor effect of the benzedrine

CASE 4 —A woman, aged 49, with 1 year's history of paroxysmal neuralgia of the second division of the trigeminal nerve Blood pressure 138/90 mm Hg

Treatment with nicotinic acid, 50 mg b d, was begun on July 14, 1941 This was without effect The dose was then increased to 50 mg q d, which produced considerable relief, further improvement resulted on again increasing the dose to 75 mg t d The dosage has subsequently varied between 75 mg t d and 75 mg q d according to the subjective responses This resulted in progressive improvement leading to almost complete relief by the end of the second month of treatment This has since been maintained, and treatment is still continuing

CASE 5 —A woman, aged 62, with neuralgia of the first and second divisions of the trigeminal nerve over a period of several years The pain was typically paroxysmal with short intermissions of almost complete relief Blood pressure 140/85 mm Hg

Treatment with nicotinic acid, 50 mg b d, began on June 19, 1941 At the end of a month the paroxysms had lessened in frequency and severity An increase during the second month to 50 mg t d resulted in further improvement, the patient sleeping better than she had for several months A further increase to 50 mg q d has resulted in almost complete relief except for very occasional "stabs" of pain. Treatment is continuing

CASE 6 —A woman, aged 39, who had been a nurse, with trigeminal neuralgia involving the second and third divisions Unerupted wisdom teeth had been removed with no effect Paroxysms occurred every 2–3 weeks and lasted from 1–2 hours to 10 days Blood pressure 130/80 mm Hg

She was first seen on Sept 3, 1941 during the onset of a paroxysm, which responded dramatically to inhalation of amyl nitrite, disappearing in a little over a minute She was then placed on nicotinic acid, 50 mg q d, in just over 3 weeks this has considerably reduced the severity but not the frequency of the paroxysms Treatment is continuing

May 3 the liver edge was palpable She was given glucose and insulin, and a light low fat diet On May 14 the jaundice was deeper and the liver no longer palpable On June 3 there were œdema of ankles and signs of ascites, and the patient was seriously ill Paracentesis on the 4th yielded 10 pints of yellow fluid, on the 7th 21 pints of fluid was obtained Six further paracenteses were performed between June 18 and Aug 4, during which period the jaundice gradually subsided and the general condition improved On Aug 5 she began to pass more urine, and further paracentesis has been unnecessary On Sept 1 she was improving steadily, with no abdominal distension and no jaundice of the conjunctivæ, although skin pigmentation remained

DISCUSSION

It seems that some people are much more susceptible to trinitrotoluene than others It also seems probable that if workers do not develop some toxic manifestation in their first 6 months they will by then have acquired some immunity, if they are not naturally unsusceptible

Moore [2] showed that the main channel of absorption is by the skin, and it is noteworthy that while dermatitis is common among workers at the factory not one of the patients in this series had been troubled by any skin eruption Apparently there is a susceptibility or sensitivity of different tissues in different individuals

The patient who died of acute liver necrosis had apparently a hyperplastic marrow, and yet the blood-picture showed only a very slight anæmia and no increase in reticulocytes, in the other fatal case, where the liver was apparently able to carry out most functions adequately, there was an aplastic blood-picture, but the marrow was not aplastic Is it possible that the aplastic anæmia which rarely follows trinitrotoluene jaundice is due to inability of a damaged liver to supply some factor essential for hæmopoiesis? In any case, there seems to be justification for treatment with liver extracts during the jaundice The best line of treatment of the developed condition is not easy to lay down, but the importance of prophylaxis is well recognised [3] At the filling factory the precautions include protective overalls and gloves for workers, with supervision of washing of hands, arms, face, and neck after work, ventilation is augmented by a system of vacuum pipes with openings near every worker to remove dust and fumes, proper meals are provided in a canteen, and workers are encouraged to take outdoor exercise and a healthy diet Work in actual contact with T N T is alternated with other work, and weekly medical inspection is carried out to detect any signs of intoxication Unfortunately patients may report sick to their home doctor without notifying the factory medical officer, and if they do not mention that they have worked with trinitrotoluene catarrhal jaundice or other lesion may be wrongly suspected and treatment delayed The earliest possible diagnosis and removal of patients from contact seem to be essential if the present considerable mortality and morbidity are to be reduced

SUMMARY

Seven cases of T N T jaundice occurred in workers in an ordnance filling factory, of whom two have died

The jaundice appeared within 6 months of beginning work at the factory, and was a typical orange yellow

The associated symptoms were nausea, anorexia and epigastric discomfort, liver enlargement and pyrexia were absent, distinguishing the condition from catarrhal jaundice, with which it is likely to be confused

Autopsy on the fatal cases revealed acute yellow atrophy of the liver and hyperplasia of the bone-marrow in one patient, and subacute liver necrosis and a hyperplastic bone-marrow in the other, whose death was due to aplastic anæmia

Treatment was by glucose, insulin and vitamin C

Prophylaxis is important, the main measures being protection of the skin, washing, adequate ventilation of factories, and a healthy life and full diet for workers

I wish to thank my colleagues and the senior medical staff of the hospital for their help and encouragement

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[2] Moore, B *Proc R Soc Med* 1916-17 10, 37

[3] See *Lancet*, 1916, 2, 1026 and 1021, and Legg, T Industrial Maladies, London, 1934

IMPROVED WEBSTER TEST FOR T.N.T. DERIVATIVE IN URINE

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THE test for trinitrotoluene (T N T) derivative in the urine is that introduced by Webster [1] and later improved both by him [2] and by Tutin [3] By a simple modification the sensitivity of the test may be enhanced and a positive result more frequently obtained This modification consists simply in boiling the mixture of urine and sulphuric acid before adding the ether, thereby ensuring a more thorough extraction of the T N T product from the urine The test is further improved, and the chances of detection increased still more, by using four times the quantity of urine recommended by Webster Here is the improved test in detail

Place 50 c cm of urine in a convenient sized beaker (400 c cm) and add 50 c cm of 20% (by volume) sulphuric acid (1 part conc H_2SO_4 + 4 parts H_2O) Mix

Place beaker on tripod, supported by wire gauze, and heat over bunsen flame till the liquid boils

Boil for one minute, allow to cool Cooling may be hastened by running cold water over outside of beaker

After cooling pour the mixture of urine and acid into a separatory funnel of 200 c cm capacity and add 50 c cm of ordinary (methylated) ether Shake up well and then allow to settle for about 15 minutes The lower layer of urine and sulphuric acid is next run off by removing the top stopper and opening the lower tap

The ethereal solution of acidified urine remaining in the separatory funnel is then washed twice with 1% aqueous solution of sodium carbonate This is done as follows Add 20–25 c cm 1% aqueous sodium carbonate, shake up, and after allowing to settle for 5–10 min run off the lower layer Repeat (*If the person has been taking purgatives* such as rhubarb, senna, cascara, phenolphthalein—which yield anthraquinone derivatives—the sodium carbonate solution will show a reddish violet colour)

After this treatment with sodium carbonate the ethereal solution in the funnel is washed with water, as follows Add 50 c cm tap water, shake up, allow to settle for 15 min, then run off the lower layer as before (Occasionally a troublesome emulsion forms in the ethereal extract while washing with water but it is easily dispersed by adding a few drops of absolute alcohol and shaking gently)

Now place 5 c cm of the ethereal extract, so washed and prepared, in a test tube and quickly add, without shaking, 5 c cm of a 5% alcoholic solution of potassium hydroxide (5 g caustic potash dissolved in 100 c cm of methylated spirit or absolute alcohol) A violet cloud indicates a positive result The liquid in the test tube should be watched carefully, *for the colour develops quickly* and just as quickly fades The intensity of the colour varies from the faintest tint to a deep violet according to the amount of T N T in the urine

The unused ethereal extract remaining in the separatory funnel need not be thrown away but may be collected and later separated off from any T N T by distillation It may then be used again in other tests

For the routine everyday urine examination of workers in T N T factories the technique may be simplified as follows

Apparatus required Two ordinary test tubes (7 in × ¾ in), Bunsen burner or spirit lamp

Reagents required 20% (by volume) sulphuric acid, ordinary (methylated) ether, 5% alcoholic solution of potassium hydroxide (freshly prepared)

Place about 10 c cm of urine into one test tube, add about an equal quantity of the 20% sulphuric acid, shake and bring to the boil, cool thoroughly under the water tap

When cold add about 10 c cm of the ether and shake well, allow to stand a few minutes till ether floats to the top Pour some of the supernatant ether into the other test tube and to it add about 2 c cm of the 5% alcoholic potassium hydroxide solution A dirty reddish purple colour develops *at once* if T N T is present The tint varies from faint to very deep according to the amount of T.N.T. present and appears quickly and just as quickly fades. If no T.N.T. be present a light brown colour only results and persists.

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[1] Webster, T A *Lancet*, 1916, 2, 1029

[2] Webster, *Spec Rep Ser med Res Coun Lond* No 53, 1921

[3] Tutin, F *Lancet*, 1918, 2, 554

With this simplified technique the test is sensitive to 1 part in 10,000. It does not exclude anthraquinone derivatives (from the purgatives mentioned), which give a similar but pinker colour which persists.

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CASE-RECORDS

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During an intermission of the symptoms a preliminary injection of 0·7 c.cm. of 1 in 1000 adrenaline induced, almost immediately, supraorbital pain—resembling in every respect the usual spontaneous pain—with tenderness over the supraorbital notch. During a subsequent spontaneous paroxysm 50 mg. nicotinic acid was given by mouth with no apparent effect. After 40 minutes a further 50 mg. was administered; this resulted in some diminution of the pain after 20 minutes, but did not abolish it. A capsule of amyl nitrite was then given. This produced striking, almost instantaneous relief—the pain disappeared completely, to the delight of the patient who was able to sleep without a sedative for the first time in many weeks. Although she was convinced of the efficacy of amyl nitrite, it was nevertheless probable that it merely augmented the effect of the previous subminimal doses of nicotinic acid. Treatment by nicotinic acid, 50 mg. t.d.s., was then continued, and during the 10 days that the patient was under our observation there was no recurrence of the pain. Injections of adrenaline during this period were ineffective. As in Cooper's case, the facial tic was not influenced by the treatment.

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At first the patient was given benzedrine sulphate, 5 mg. b.d. The paroxysms became considerably more frequent, and she complained bitterly of their increasing severity. On two occasions a capsule of amyl nitrite relieved the paroxysms. The benzedrine was then stopped and nicotinic acid given, 50 mg. b.d. Over a number of days this treatment reduced the paroxysms in frequency (from 15–20 a day to 3 or 4) and in severity.

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Treatment with nicotinic acid, 50 mg. b.d., was started at once and had a definite effect. Apart from one paroxysm shortly after the treatment began, the patient had complete freedom from pain for 4 days. During this time attempts were made to induce the pain by injection of adrenaline but without effect. After 4 days the nicotinic acid was stopped and he was put on benzedrine sulphate 5 mg. t.d.s. Attacks of pain recommenced and increased gradually in frequency and severity as the benzedrine was continued. Attempts to relieve the paroxysm during this time by giving acetylcholine were without success, probably because it was unable to counteract the continuous effect of the benzedrine.

CASE 4.—A woman, aged 49, with 1 year's history of paroxysmal neuralgia of the second division of the trigeminal nerve. Blood-pressure 138/90 mm. Hg.

Treatment with nicotinic acid, 50 mg. b.d., was begun on July 14, 1941. This was without effect. The dose was then increased to 50 mg. q.d., which produced considerable relief; further improvement resulted on again increasing the dose to 75 mg. t.d. The dosage has subsequently varied between 75 mg. t.d. and 75 mg. q.d. according to the subjective responses. This resulted in progressive improvement leading to almost complete relief by the end of the second month of treatment. This has since been maintained, and treatment is still continuing.

CASE 5.—A woman, aged 62, with neuralgia of the first and second divisions of the trigeminal nerve over a period of several years. The pain was typically paroxysmal with short intermissions of almost complete relief. Blood-pressure 149/85 mm. Hg.

Treatment with nicotinic acid, 50 mg. b.d., begun on June 19, 1941. At the end of a month the paroxysms had lessened in frequency and severity. An increase during the second month to 50 mg. t.d. resulted in further improvement, the patient sleeping better than she had for several months. A further increase to 50 mg. q.d. has resulted in almost complete relief except for very occasional "stabs" of pain. Treatment is continuing.

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CONCENTRATED SERUM IN HEAD INJURIES

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A CONCENTRATED solution of human serum was suggested as a valuable agent in reducing raised intracranial pressure by Hughes, Mudd and Strecker in 1938 They made observations on patients with raised pressure chiefly sufferers from cerebral tumour and found that the reduction of pressure continued for longer after injection of serum than after 50% sucrose solution This use of concentrated serum seems to have been largely neglected, probably because of difficulty in obtaining it Now as a result of the M.R C blood-transfusion service concentrated serum can be reconstituted from the dried serum which is prepared on a large scale for ease of storage and transport I have used concentrated serum as a means of reducing intracranial pressure in a small series of patients suffering from head injuries

METHOD

Five-times concentrated serum has been used, this is made by adding 40 c cm. of sterile distilled water to the dried solids obtained from 200 c cm of human serum There is some difficulty in getting the dried serum to dissolve in this small quantity of water but if the mixture is shaken well and left in the incubator for an hour solution will take place In each case 40 c cm of reconstituted concentrated serum has been injected intravenously It is important to keep the serum at blood temperature till the injection is given otherwise the solution becomes viscid and difficult to inject. 2–3 minutes have usually been taken for the injection of 40 c cm Since the serum is obtained from pooled blood no preliminary blood-grouping is necessary

The cases treated have been men with recent closed head injuries in whom severe headache with a high cerebrospinal-fluid pressure has been present They have previously been treated by dehydration, magnesium-sulphate enemas and ordinary analgesics Serum has only been used when these measures have failed to relieve their symptoms. Cases of this type are comparatively uncommon and care must be taken that compressive lesions are not present before serum is administered

Repeated lumbar punctures have been used to estimate fall of pressure though these have not been repeated as often as scientific accuracy would demand because of the condition of the patients This method was criticised when Hughes and his colleagues (1938) originally presented their results to the American Neurological Society and more recently by McKissock (1941), the main criticism being that the fluid may continue to escape through the hole in the dura made at each puncture and that this leakage may cause a fall of pressure Hughes and his colleagues did a control series of experiments in dogs using continuous lumbar-puncture recording and found that their results from repeated puncture were confirmed by the continuous record We have found that in late punctures after serum administration the C S F pressure may rise after an earlier fall, and this suggests that continued leakage of C S F. cannot be an important factor in determining the fall of pressure A continuous lumbar-puncture record has scientific advantages over repeated punctures, but I have not felt justified in attempting it in the rather restless post-traumatic patients to whom serum has been given

RESULTS

Blood dilution—The degree of dilution of the blood has been estimated by hæmatocrit readings All the blood samples taken from a patient have been centrifuged at the same time at the end of the period of observation so that comparable readings would be obtained Examples of hæmatocrit readings in these cases, expressed as percentage of packed cells, were.

Before serum	52	42 5	41	47	47
Time after serum					
70 min.	49	41	36	37	47
3 hr		41		43	
6 hr	46		37	44	47
8 hr.		42	40		
18 hr	52				

It will be seen that about 5% dilution of the blood had usually occurred after 70 min Sufficient readings have not been made yet to enable us to say for how long dilution continues or when the hæmatocrit readings return to normal In the last case no dilution of the blood took place

Lumbar-puncture pressure—A group of 6 patients were treated in this way Lumbar puncture pressures expressed in mm of water, were as follows

Case no	1	2	3	4	5	6
Before serum	280	200	275	235	300	300
Time after serum						
70 min	230	150	80	145		300
3 hr		180	75		250	300
6 hr	150		110		300	..

In 5 cases there was a fall in C S F pressure In case 6 the pressure was very high at the beginning and no fall was obtained, and in this case also no dilution of the blood was shown by hæmatocrit readings It is possible that a larger amount of serum should have been given to this man The most considerable fall of pressure was obtained in case 3 where it fell from 275 to 80 mm in 80 min and remained at 75 mm 3 hours after injection; 6 hours afterwards it had risen to 110 mm

Clinical results were good except in case 6 where the lumbar-puncture pressure remained unaltered and the clinical condition unchanged In 4 of the cases severe headache was the outstanding symptom and was dramatically relieved, though it was noticeable that the lumbar-puncture pressure had fallen before the headache started to decrease, usually the pain became less some 70–90 minutes after the serum had been injected, and had stopped in 2 hours In 2 cases there was never any return of headache, but in the other 2 there was some return of pain a few days later In case 5 headache was not an outstanding feature but this man was abnormally drowsy with rapidly developing focal signs due to contusion of the left parietal lobe His drowsiness became less and there was no further increase in his parietal syndrome after the administration of serum The pulse-rate remained unchanged after serum administration even when, as in most of the cases it had been abnormally slow before serum was given This supports Denny-Brown s (1941) thesis that the slow pulse-rate in these cases is not the direct result of raised intracranial pressure but is due to some other factor—he suggests medullary contusion

No untoward result of serum injection has been seen except that one man developed local urticaria in the arm into which the injection was being given The patients have been noted to be unusually constipated after treatment, presumably as a result of withdrawal of fluid from the bowel

Concentrated human serum has thus undoubtedly been of value in reducing the raised intracranial pressure and in improving the clinical condition. especially in relieving headache in this small group of acute head injuries The protein content of the injected serum is high—30–35 g per 100 c cm according to our estimations—and from the hæmatocrit studies of the blood after injection of the serum it is evident that dilution of the circulating blood occurs, presumably as a result of the osmotic properties of the serum This hydration of the blood occurs by removal of fluid from all parts of the body and the fall in lumbar-puncture pressure shows that either the tissue fluids of the nervous system or the C S F have had fluid removed from them: from which of them is still undetermined

The value of hypertonic sucrose solution has not yet been compared in this hospital with that of concentrated serum, but Hughes and his colleagues in their studies had no doubts of the greater efficacy of concentrated serum

SUMMARY

Concentrated serum was used in 6 cases of recent closed head injury as a means of reducing intracranial pressure.

Dilution of the blood occurred and in 5 patients there was a fall of pressure in the cerebrospinal fluid

The clinical results especially relief of severe headache were good and the intravenous injection of concentrated

CASE 7—A man, aged 66, with 1 year's history of typical paroxysmal neuralgia of the second division of the trigeminal nerve For the last 2 months of this period paroxysms had been occurring daily Blood-pressure 130/85 mm Hg

Treatment with nicotinic acid, 50 mg q d began on Sept 24, 1941, and resulted in complete relief after 10 days Since then there has been no recurrence of pain, this period of relief being considerably longer than any previous period of complete remission The treatment, which is continuing, has been particularly effective in this case and has considerably impressed the patient himself

SUMMARY

On the hypothesis that the paroxysms of trigeminal neuralgia are ischæmic in origin we have attempted the treatment of this condition by vasodilator drugs

We treated 7 patients—2 men and 5 women—whose ages ranged from 39 to 62 and in whom attacks had occurred over periods of 1–5 years

Nicotinic acid was used in doses ranging from 50 mg twice daily to 75 mg four times daily In every case there was improvement, sometimes amounting to complete relief This improvement has been generally maintained In 2 cases a paroxysm at its height was relieved in a few minutes by an inhalation of amyl nitrite

Vasoconstrictor drugs (adrenaline, benzedrine) were given in 3 cases, in one, adrenaline provoked an attack before treatment with nicotinic acid had begun but failed to do so afterwards, in the other 2, benzedrine increased the number and severity of the paroxysms

We wish to thank Prof J le F Burrow and Prof T Talmage Read of the University of Leeds for allowing us to see cases of trigeminal neuralgia

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INFLUENCE OF MENSTRUATION ON SUSPENSION STABILITY OF RED CELLS

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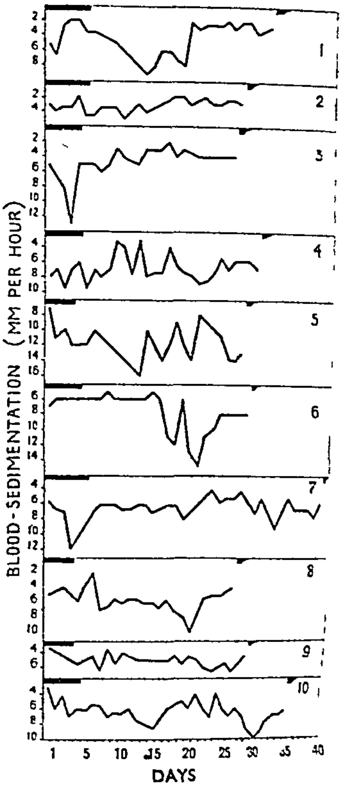
THE measurement of the suspension stability of erythrocytes by their sedimentation-rate has become so important in checking the course of so many diseases that any factor, other than the disorder under observation, which may influence the rate might cause errors in prognosis and treatment Such extraneous influences are intercurrent infections and anæmia Infections are usually easy to exclude by clinical observation, while compensation for anæmia is easy

It was observed by Hippocrates that the sedimentation-rate of the erythrocytes of pregnant women was abnormally high, an observation which led to the bleeding of these unfortunates even into the nineteenth century This and other considerations have given rise to a suspicion that one or more of the endocrine glands may affect the rate, either by changing the fibrinogen-globulin content of the plasma proteins or by altering in some other way the electrical conditions at the erythrocyte-plasma interface Should the offending endocrine factors be either œstrone or progesterone one would expect to see a constant change in B S R during the menstrual cycle That such a change does occur has often been guessed or assumed, but only three references to the subject have been published Whitby and Britton[1] said that the sedimentation-rate is increased slightly at the menses Day[2] asked "Why do a few women show an exalted blood-sedimentation rate during their menses, whereas most women are entirely unaffected?" Lockett,[3] on the other hand, stated that the velocity reached a maximum a day or two before the beginning of menstruation I cannot find that anyone has tried to settle the question by direct experiment



INVESTIGATION

Fifteen volunteers were carefully questioned and examined Of these, 10 were finally chosen as above suspicion of harbouring any abnormality known to influence the suspension stability of their red cells With one exception they were nurses whose medical history was already known and who had previously undergone periodical medical examination Their ages ranged from 20 to 35, the average being 23 All claimed to have normal and regular periods, but in fact there was considerable variation in the length of their menstrual cycles

The B S R of each was measured every day of a complete cycle by Westergren's standard technique Correction for anæmia was unnecessary in these cases The results are shown in the figure, which make it clear that no *constant* alteration in erythrocyte stability is associated with any phase of the cycle—a fact evident without statistical analysis It is possible, however, that so short a series may fail to bring out an average change In order to test this possibility the cycle of each subject was divided into four phases phase 1, which included menstruation, was from the first day of the cycle to the midpoint between this and the presumed date of ovulation, phase 2 was thence until ovulation, phase 3 covered the first half of the luteal phase, and phase 4, the second half of the luteal phase, ending at menstruation The average B S R for each period was calculated for each subject (see table)

Case	Phase				Av	Case	Phase				Av
	1	2	3	4			1	2	3	4	
1	3 5	6 5	4	2 5	4 125	7	7 5	6	6	6 5	6 5
2	3 5	4	3	2 5	3 25	8	5	5 5	6 5	6	5 75
3	7	4 5	3 5	4	4 75	9	4	4 5	4 5	5 5	4 625
4	8	6	7 5	6 5	7	10	5 5	6 5	6	8	6 5
5	10 5	13	12	11 5	11 75	Av	6 05	6 25	6 25	6 15	6 175
6	6	6	9 5	8 5	7 5						

These figures make it clear that there is no significant variation at any period of the menstrual cycle

SUMMARY

The red-cell sedimentation-rate was measured on every day of the menstrual cycles of 10 healthy women The figures obtained show that, contrary to general belief, there is no change in the suspension stability of erythrocytes characteristic of any phase of the cycle

I wish to thank the Westminster and Middlesex Hospital nurses who allowed themselves to be subjected to inconvenience by this investigation, and Prof S Zuckerman and Mr P C Williams, D Sc, for their advice on the presentation of the figures

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A CASE OF PTERYGO-NUCHAL INFANTILISM

(TURNER'S SYNDROME), WITH POST-MORTEM FINDINGS

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AN unusual syndrome, not previously described, was reported by Turner in 1938. His 7 cases were all females and showed the triad of infantilism, webbing of the skin of the neck and cubitus valgus. Apart from the curious appearance due to the webbed neck, the main interest of this condition lies in the associated infantilism. Turner was of the opinion that the anterior pituitary was to blame and thought his cases corresponded to the Lorain-Levi type of dwarfism. The present paper describes a case who has been studied for some years and whose death from tuberculosis has afforded the first opportunity for pathological examination.

CASE-HISTORY

A woman, aged 21, was first seen on Oct. 5, 1937. Her birth had been normal and she had walked, talked and teethed at the normal age. A deformity of her neck had been noticed since birth. Secondary sex characteristics had not developed and she had never menstruated. Flushes, 3–4 a day, had been present for 3 years. She was quite intelligent but preferred childish pursuits. The mother, father and two younger siblings were normal. On examination her height was 53¼ in. and weight 112 lb. She appeared a short heavily built girl and was not disproportionate, though the arms seemed longer than normal. The photograph reproduced in fig. 1 was taken later when she had lost much weight from tuberculosis. The most striking feature was a deformity of the neck: from the mastoid process to the acromion was a well marked wing which appeared to consist of skin and subcutaneous tissue only. The trapezius muscle was normal and the movements of the neck were full in flexion and extension, while lateral movement was slightly limited. The hair line was low and the skin was freely movable over the lower part of the occipital bone. The concha of the left ear projected laterally and anteriorly, and the upper parts of both auricles were bound to the margin of the scalp. Kyphoscoliosis with prominence of the sternum was present, and there was an increase of the carrying angle of the elbow. The skin was smooth and normally moist, and there were a number of pigmented moles on the face and body. There was no axillary hair, but a scanty growth was present in the pubic region. The breasts were quite undeveloped, no glandular tissue being palpable. The labia were infantile, the vagina short and small, and the cervix was small but dilated easily when full gynæcological investigation was done. It was found that the uterus was 1 in. long and the walls very thin. Uterine scrapings were too scanty for histological section. The ovaries could not be felt. Biopsy of the vaginal mucosa showed that the epidermis was flat, and there was little cellular activity in the malpighian rete. There was considerable lymphocytic infiltration underlying the epidermis, and mucous glands were inconspicuous. Blood count and blood chemistry were normal. X rays showed a normal cervical spine, sella turcica and pelvis; the distal epiphyses of the radius and ulna were ununited, and the epiphyses of the second and third lumbar vertebræ were not fully united.

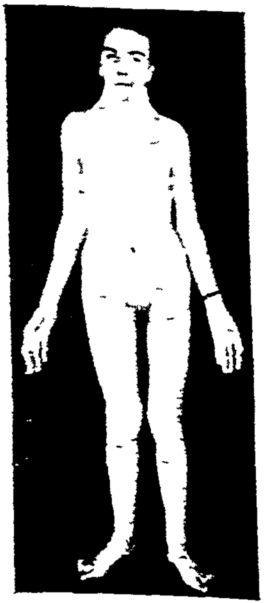

FIG 1—Turner's syndrome.

Thyroid function.—Basal metabolic rate was −7%, blood-cholesterol 160 mg. per 100 c.cm., and the electrocardiogram was normal. Injection of a pituitary thyrotrophic extract (Sharpey-Schafer and Schrire 1939a) caused a rise of temperature and pulse on the sixth day, the thyroid became enlarged and tender and the B.M.R. rose to +45%.

Carbohydrate metabolism.—A sugar-tolerance test showed a fasting blood-sugar of 71 mg. per 100 c.cm. and 130, 106, 96, 93 mg. % at 30-min. intervals after the ingestion of glucose. After 10 days on a diet containing 35 g. of carbohydrate a day, the figures were 65, 184, 230, 172, 125, suggesting a normal response of the anterior pituitary to a low carbohydrate diet (Himsworth 1939).

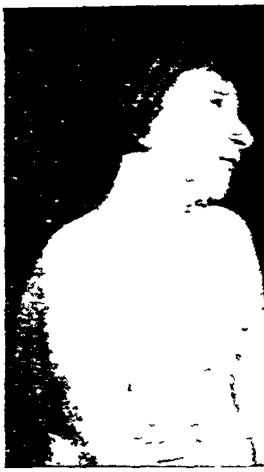

FIG 2—Klippel-Feil syndrome.

Gonadal function.—Urinary creatinine excretion was normal (Sharpey-Schafer and Schrire 1939b). A gonadotrophic pituitary extract was injected for 10 days, followed by a follicle-stimulating extract for 14 days. Biopsy of the vaginal mucosa showed slight diminution of the subepithelial infiltration with small round cells. There were no other changes. Œstradiol benzoate 100 000 I.B.U., was injected twice weekly, and 15 000 I.U. of œstriol daily by mouth were given for 9 months. At the end of 5 months the uterus had enlarged and there was intermittent uterine hæmorrhage. There was no development of the breasts or further development of body hair. After an interval of 3 months the effects of large doses of testosterone propionate on her spontaneous flushes was studied. These data have been published elsewhere (Sharpey-Schafer 1940).

In August, 1940, she was readmitted to hospital complaining of loss of weight and fatigue for 2 months. She was found to be running an irregular fever and the spleen was palpable. The diagnosis remained obscure for some time but eventually revealed itself as extensive tuberculosis of the abdominal cavity. Terminally there was a miliary spread.

Autopsy (Dr. T. H. Belt and Dr. Popjak) was performed 5 hours after death. The body was that of an extremely emaciated woman. There were many pigmented moles all over the body and two verrucæ pilosæ on the upper lip. There was a web on each side of the neck, running from the mastoid process to the acromion. The breasts were infantile. The heart and aorta were hypoplastic, the weight of the former being only 166 g. There was generalised (miliary) tuberculosis involving the lungs, intestines and peritoneum, liver, urinary bladder, left ureter and kidney, and long-standing tuberculous salpingitis with involvement of ovaries and uterus. The uterus, though filled by caseous material, was very small, 1¾ in. in length. Apart from a calcified nodule in the apex of the left lung the oldest tuberculous lesion seemed to be that of the internal genitalia. The endocrine glands, apart from the ovaries, did not show any gross pathological changes. The left ovary could not be found in the masses of tuberculous granulation tissue.

Histology.—No functioning ovarian tissue could be distinguished in the right ovary. The endometrium was destroyed by tuberculosis. The histological appearances of the pituitary gland, thyroid and adrenals were not abnormal. The mammary glands consisted of simple and branching lactiferous ducts embedded in a dense collagenous tissue. The web of the neck consisted simply of a fold of the skin without muscle.

DISCUSSION

Webbing of the skin of the neck was first described by Kobylinski in 1883. Funke (1902) and Bussiere (1902) reported single cases. Frawley (1925) described the condition in 2 sisters and 2 other females, and Chandler (1937) has reviewed the literature. Simple webbing of the neck must be distinguished from the similar webbing that may occur in the Klippel-Feil syndrome. Since the original description of this last condition in 1912, 133 cases have been reported (Rechtman and Horwitz 1940). In the Klippel-Feil syndrome synostosis of some or all of the cervical vertebræ with serum seems to be indicated in cases of recent closed head injury where the C S F pressure is high

I wish to thank Mr Harvey Jackson, director of this E M S head-injury centre, for permission to treat patients under his care, and Dr E A Carmichael for his assistance in the preparation of the paper

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HÆMOTHORAX FROM LEAKAGE OF A DISSECTING AORTIC ANEURYSM

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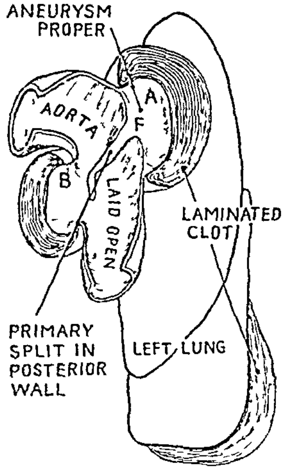
SPONTANEOUS hæmothorax has been fully described by Jones and Gilbert (1936), Hopkins (1937), Perry (1938), and Davidson and Simpson (1940), who showed that the tearing of a vascular pleural adhesion was the commonest cause Dissecting aneurysms of the aorta often rupture into the pericardium, but another common terminal event is the production of a hæmothorax, which is more often on the left side than the right Cases of dissecting aneurysm are reviewed and discussed by Weiss (1935), Glendy, Castleman and White (1937) among others and East (1939) has described the clinical features as they emerge from a survey of the literature Survival for more than a few days after the production of a hæmothorax due to the leaking of a dissecting aneurysm, as in the following case, does not seem to have been described

An unemployed man, aged 51 was admitted to Whipps Cross Hospital on March 17, 1941, his doctor having made a diagnosis of left pleural effusion In 1924 he had been diagnosed at the London Hospital as having disseminated sclerosis of two years standing, his blood Wassermann reaction was negative Subsequently his symptoms had become more severe, and for many years he had been confined to his room owing to difficulty in walking

On admission, he gave a 4 days' history of shivering, slight cough and a little sputum, which he swallowed On the day before admission while groping about in his room, he had stumbled and hit his chest in the region of his left armpit against a bedpost There was only a little pain, which had become less since the accident He had not experienced any shortness of breath He was pale and anxious, and showed signs of disseminated sclerosis—spastic paraplegia, stiffness of hands, pupil abnormalities, and rigidity of the trunk, which made examination of the back of the chest somewhat difficult Occasionally rapid pulsations were visible in the epigastrium, about 160 per minute, but these bursts did not alter the radial pulse rate of about 86 There was no fever and no abdominal rigidity In the chest there was impaired percussion note, distant bronchial breathing and bronchophony in the left lower zone of the back, suggesting consolidation of the left lower lobe, but a radiogram taken two days later showed opacity of the whole left side of the chest, which suggested fluid though there was no mediastinal displacement Clinically, some bulging of the left chest had developed, with a dull percussion note all over the back and lower part of the front, diminished breath sounds, absent vocal fremitus and whispering pectoriloquy On needling the chest, fluid indistinguishable from blood was obtained, this did not clot on standing and proved sterile on culture No fracture of ribs was seen in a further radiogram On March 25, 500 c cm of blood was aspirated from the left pleural cavity, when the patient became collapsed, pale and sweating, and the procedure had to be stopped The patient's cough ceased, he never produced any sputum Urinary incontinence and bedsores began to develop On April 8 a further 600 c cm of blood was aspirated, and at the same time 400 c cm of air was introduced into the left pleura A subsequent radiogram still showed opacity in the left lower zone with mediastinal displacement to the left No abnormal signs in the upper lung zone or about the aortic knuckle were revealed by the partial artificial pneumothorax The patient's general condition was so poor that further investigation into the cause of his hæmothorax was neither feasible nor justifiable In spite of intensive treatment with iron he became increasingly pale the bedsores became more and more offensive, and after developing a swinging temperature he died on May 23, nine weeks after admission

Autopsy carried out by Dr Keith Simpson 12 hours after death showed that the cause of death was toxæmia from extensive pressure sores secondary to disseminated sclerosis, evidence of which was found in the brain There was no fluid in the left pleural cavity, but the lobes of the left lung which showed no disease otherwise, were compressed by aseptic blood-clots One of these was lying in the costophrenic sulcus, while the other one was found in the left paravertebral gutter, partly adherent to the third part of the aortic arch This clot was laminated, and about 3 in in diameter The arch of the aorta, when opened, presented the appearances of hyaline necrosis of the media, without atheroma or syphilitic scarring There was a healed split of the intima near the end of the third part of the arch, and a short dissection, 2½ in long, had occurred, producing a local subadventitial aneurysm which was adherent to the clot previously described

In the figure points A and B of the aneurysmal bulge at the end of the third part of the aorta are complementary The wall, consisting of adventitia, leaked, causing the hæmothorax and the residual clots over lung apex and base The scar in the base of the primary split consists of media plus adventitia, the intima alone being split at all points except F



There is little doubt that, if it had not been for his disseminated sclerosis the patient would have survived this accident There is a history of slight injury to the chest, but as this occurred on the third day of respiratory symptoms, trauma was not accepted as a cause of the dissecting aneurysm or of its rupture Moreover there was no history suggestive of acute blood loss, though in all 1100 c.cm of blood was evacuated from the chest, and signs of effusion became gradually more conspicuous after admission It seems justifiable to assume that slow leakage from the dissecting aneurysm took place, and that this allowed the patient to survive the catastrophe, without producing either the dramatic clinical developments seen in most cases of spontaneous hæmothorax, or the severe pain usually, but not always (Hamburger and Ferris 1938), associated with dissecting aneurysm

I wish to thank Dr Kenneth Perry for his help and advice, Dr Keith Simpson for allowing me to make use of his post mortem findings and the diagram drawn by him, and Mr O R M Kelly, medical superintendent of Whipps Cross Hospital, for permission to publish the case

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On Oct 17 Lord Rosebery opened the Paderewski Polish Hospital which stands in the grounds of a big general hospital in Midlothian and has 80 medical beds which are open to Polish civilian and military patients Surgical wards and operating theatres in the main building complete the hospital, which will also offer teaching facilities to the Polish medical faculty

" Every age is I suppose, an age of doubt from some point of view The Mid Victorian age believed in Moses and doubted Darwin The present age believes in Freud and doubts Moses "—Y Y, *New Statesman*, Oct 25, p 375 in the Waterhouse-Friderichsen syndrome, but McLean and Caffey[1] have detected meningococci in smears of the petechiæ in 15 out of 18 cases of meningococcal bacteræmia with purpura, in 3 of which hæmorrhages were present in the suprarenals at autopsy Examination of petechial smears was not done in the present case, the only evidence of the meningococcal origin of the disease being the positive complement-fixation test, but it appears to be the most reliable method of finding the organism That the disease was meningococcal cannot be doubted, however, in view of the clinical picture, the late changes in the cerebrospinal fluid and the satisfactory response to sulphapyridine

I wish to express my thanks to Dr Allen Daley, chief medical officer, L C C, for permission to publish this case, and to Dr E H R Harries, medical superintendent of the North Eastern Hospital, for advice and assistance

POSTVACCINAL AND MEASLES ENCEPHALOMYELITIS

REPORT ON TWO CASES WHICH RECOVERED

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THE Ministry of Health reports for 1932–38 inclusive reveal only 6 cases (5 fatal) of postvaccinal encephalitis in infants under one year during this period in which Government lymph for 1,370,490 primary vaccinations was issued, 2 additional cases were notified during 1939 Encephalomyelitis is also a rare complication of measles and Boenheim,[2] reviewing 5940 cases of measles, found nervous complications in only 0 4% of which less than a third were cases of encephalitis

In the 125 reported cases of measles encephalomyelitis reviewed by Ford[3] the fatality was about 10%, and 65% of the survivors manifested residual symptoms, 8 of the cases occurred in one outbreak of measles in which some 55,000 people were affected In the 1936 measles epidemic 8 cases of encephalomyelitis were under observation in the London infectious diseases hospitals, and 3 proved fatal In view of the rarity of these conditions the following case-records may prove of interest

CASE 1

Boy, only child, aged 6 months Breast fed for two months and subsequently bottle fed on a well known proprietary brand of dried milk with the addition of halibut liver oil and orange juice No previous severe illness, accident or operation No recent or existing illness in household, brief association with contact of a case of influenza on Feb 22 Convulsions when one day old but none since Always pale and had of late been having iron tonic after feeds Primarily vaccinated by single insertion on left arm on Feb 14, 1940, full aseptic precautions being observed, 5 other children similarly primarily vaccinated about this time with same batch of lymph Of these vaccinations, 4 were successful and none developed any signs or symptoms of disease of central nervous system in month subsequent to vaccination, during which were kept under close surveillance Patient's parents had both been successfully vaccinated in infancy and mother successfully revaccinated in 1930

Five days after vaccination patient's arm became normally inflamed with slight constitutional upset and continuous crying On Feb 21 high temperature and profuse perspiration Next day squint noticed, disinclined to take bottle feeds though did not vomit On 23rd profuse salivation developed, with right sided spasmodic torticollis and elevation of right arm with flexion of forearm Other limbs extremely limp, occasional spasms of jactitation of lower extremities Later in day "clasp knife" rigidity with spastic contraction of all muscle groups appeared Child became very drowsy, apathetic and unresponsive, and uttered no sound All these signs and symptoms became more pronounced within succeeding 24 hours and on evening of 24th child was admitted to Ilford Borough Isolation Hospital

On admission temperature 99° F, pulse rate 104 Respirations 26, varying considerably in depth and accompanied by occasional intermissions and deep sighing General physique and nutrition good Weight 14 lb Lay on side with head retracted and slight opisthotonus Waxy pale and completely comatose, with no reaction to handling No abnormality detected in ears, throat, nose, lungs, heart, abdomen or urine no rash and no signs of rickets or teething Fontanelle tension slightly increased Vaccination lesion looked normal and unbroken, surrounded by inflammatory zone ¼ in wide, typical underlying deep induration Sucking reflex weakly present but swallowing reflex had disappeared Eyelids on both sides held tightly closed Both eyeballs rotated downwards and left deviated inwards Both pupils small, reacted to light, left slightly larger than right No response to conjunctival or corneal stimulation Owing to general spasticity tendon reflexes could not be obtained, abdominal reflexes absent, tâche cerebrale well marked, and plantar reflexes both extensor Kernig's sign positive Priapism present

Lumbar puncture gave clear fluid under low pressure with no excess of polymorphs or lymphocytes Cells present included epithelial, a few endothelial, and a few red blood corpuscles No organisms seen in direct smear, culture, sterile, no tubercle bacilli Protein content 100 mg per 100 c cm Sugar normal

Some days later when the eschar separated from vaccination site area was swabbed and revealed a few degenerated polymorphs, hæmolytic *Staphylococcus albus* isolated on culture

Treatment—On Feb 24 20 c cm of citrated blood from father given intramuscularly followed later by 20 c cm of citrated blood from a nurse vaccinated two months previously Sulphapyridine soluble 0 75 c cm given intramuscularly every four hours for 6 doses, after which sulphapyridine 0 25 g given four hourly by mouth On each of succeeding three days 20 c cm of citrated blood from the recently vaccinated nurse repeated and on evening of Feb 27 sulphapyridine discontinued

Progress—On day after admission slight improvement, able to take small bottle feeds On the 26th further improvement, temperature fell to normal, pulse rate remaining at 124 Now able to take feeds normally and salivation had ceased Colour paler and slightly cyanosed but coma now changing to stupor, when disturbed child made slight muscular efforts to resist and ineffectual efforts to cry Only once produced any sound Eyelids now held slightly open No recognition of light or surroundings Muscular contraction and rigidity and former signs remained unaltered, except for slight diminution in nuchal rigidity On the 27th colour better, temperature and pulse now normal and thereafter remained so Taking full feeds with avidity, crying frequently and evidently resenting being handled Appeared to respond to sounds and some appreciation of bright light held close to eyes Eyelids slightly more open and once eyes were fully opened voluntarily Transient weakness of right facial muscles Squint now intermittent Muscular spasticity unchanged Some blurring of outlines of right optic disc, left disc normal

During succeeding week generalised rigidity slowly diminished, passive limb movements were more easily accomplished, cervical rigidity, opisthotonus, torticollis and priapism disappeared and active limb movements were attempted to limited degree Ocular signs vanished and knee and ankle reflexes gradually returned, right being stronger than left By March 14 the child was trying to lift head off pillow and sit up Recovery subsequently continued uninterruptedly and by April 10, when discharged, no sign of spasticity and all reflexes normal Had gained 21 lb 5 oz since admission on Feb 24

Three weeks after discharge was examined at Royal National Orthopædic Hospital by Mr R Y Paton, who reported no signs of residual paralysis and all muscles gave normal electrical reactions

CASE 2

Girl, aged 6 years No previous severe illness, accident or operation On March 1, 1941, developed cough and 14 days later rash of measles appeared Disease pursued normal course until March 19 when aphonia developed and vacant facial expression was noticed Remained fully conscious and able to express herself and indicate needs by gesture Subsequently unable to speak despite strenuous efforts to do so On March 22 was allowed to get up but could not stand without support or perform coördinated movements with hands and arms, which had become limp and tremulous Saliva dribbled from mouth and stiffness and hyperæsthesia of legs were

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1 McLean S and Caffey, J *Amer J Dis Child* 1931 42 1053
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limitation of movement, is present, and although numerous other congenital abnormalities may be associated, infantilism has not been reported A photograph of a girl of eleven with the Klippel-Feil syndrome is shown in fig 2 for comparison Apart from a similar webbing of the neck, this girl had kyphoscoliosis and the second, third and fourth cervical vertebræ were fused, she has since shown normal sexual development

In simple webbing and in Turner's syndrome the cervical spine is always normal The ætiology of web formation is obscure, some have attributed it to amniotic adhesions or bands, and Nageotte-Wilbouchewitch (1934) thought that it might be a form of atavism, since it occurs normally in the chimpanzee MacCollum (1938) considers that the defect may arise about the third month of pregnancy, when the ventral and dorsal surfaces of the neck are long and the mastoid process is either lateral or in a direct vertical line with the region of the acromial process, and when the skin over the lateral surfaces of the neck is shortened As the shoulders develop, it is possible for the skin to remain shortened and for a web to develop between the mastoid and acromion He points out that the symmetrical nature of this deformity favours some such theory

The clinical and pathological evidence in my case suggests that the infantilism was primarily of gonadal origin Tests of anterior pituitary function and the histology of the gland were normal, the occurrence of flushing also suggests a primary gonadal defect (Albright, 1936) It is unfortunate that the ovaries were so extensively destroyed by tuberculosis, but this infection was clearly of comparatively recent origin and could not have been responsible for the infantilism There was no breast development with prolonged œstrogen therapy, though there was considerable growth of the uterus A congenital defect in the response of mammary tissue may have been present, or, as recent work (Gardner 1940) has shown, the combined action of several hormones might have been more successful than œstrogens alone One of Turner's cases showed some mammary development with œstrogens Multiple pigmented moles were also present in Turner's first case, though no mention is made of them in the other cases

Nomenclature is always difficult in describing new syndromes, but Turner clearly deserves the credit for recognising that the condition is not simply an isolated rarity "Pterygo-nuchal infantilism" might be preferred to the hybrid "pterygium colli" of Funke It would be interesting to know if the condition has ever been seen in males or, as appears to be the case at present, whether the infantilism is always linked with the female gonad

SUMMARY

A case showing webbed neck, infantilism, cubitus valgus and pigmented moles is described

Tests for deficiency of anterior pituitary function were negative

Histology of the pituitary, thyroid and adrenal glands was normal, the ovaries were destroyed by extensive tuberculosis

It is suggested that infantilism in such cases is due to a primary defect of the gonads

I thank the Chief Medical Officer, London County Council, for permission to publish this case

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CEREBROSPINAL FEVER WITH LOW BLOOD-PRESSURE

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A CASE of cerebrospinal fever presenting features resembling the Waterhouse-Friderichsen syndrome has recently been treated here

Multipara, aged 40, eight months pregnant History of headache, generalised aches and pains, sore throat, rigors and vomiting, of sudden onset fifteen hours before On admission temperature 100° F, pulse rate 134, regular but of poor volume Moderate neck rigidity and positive Kernig and Brudzinski signs Nervous system otherwise normal, heart and lungs normal Systolic B P 65 mm Hg Moderately profuse petechial rash on trunk and limbs Careful auscultation of abdomen failed to reveal fœtal heart sounds Lumbar puncture gave clear fluid under normal pressure containing 3 cells per c cm, no organisms were grown from it Blood-culture negative, but meningococcal complement fixation test positive Serum-potassium 21 3 mg, sodium 292 mg and chlorides (as NaCl) 549 mg per 100 c cm After several hours the patient's condition had much deteriorated, she was now pale, weak and mentally confused, tongue dry and glazed Rash much more extensive, purpuric on trunk, with large plaques up to one inch square on buttocks and thighs

Given sulphapyridine 9 g and glucose saline 4–6 pints daily by mouth, 10 c cm of Eucortone was given intramuscularly after admission, repeated twice daily on the two following days and once daily for two further days, a total of 70 c cm

Eight hours after admission patient went into labour and delivered a stillborn male infant, autopsy on which revealed hæmorrhages beneath the visceral pericardium and into the lungs Brain, cerebrospinal fluid and suprarenals normal

After twenty four hours patient had improved slightly, rational at times, pulse slower and B P 90/50 mm Hg Left ophthalmoplegia and 7th nerve palsy had developed and there was severe headache Further lumbar puncture done two days after admission, yielded turbid fluid under pressure, containing 21 000 cells per c cm During next four days prostration and mental confusion passed off slowly, tongue became moist and clean and though chemotherapy was stopped owing to vomiting after 36 g of sulphapyridine had been given, signs of meningitis cleared up with residual left facial paresis, and cerebrospinal fluid became clear Pulse-rate dropped gradually to normal and systolic B P rose successively to 105, 115, 130 and finally 145 mm Hg On stopping eucortone systolic B P fell again to 125, and has fallen still lower during convalescence

Puerperium uneventful, except for retention of urine necessitating catheterisation for a week after delivery Rash faded completely on trunk in seven days but many purpuric plaques on buttocks and thighs broke down to form circular and oval ulcers which healed slowly and left extensive scarring Otherwise recovery was complete and patient was discharged eight weeks after admission

COMMENTARY

The unusual feature of this case was a persistent low blood-pressure with no signs of increased intracranial pressure or changes in the cerebrospinal fluid The character of the rash and the satisfactory response to eucortone make it probable that some damage was present in the suprarenals Most of the cases of Waterhouse-Friderichsen syndrome hitherto recorded were in infants and children under two years, and the extreme collapse and cyanosis of lips and extremities noted in them was not seen here, but these signs occurred in cases where massive hæmorrhages were found in both suprarenals post mortem, and were presumably due to a severe degree of circulatory failure, which was at no period well-marked in the present case

Investigation of the sodium, chloride and potassium content of the serum, in which changes are found in the more chronic form of suprarenal deficiency, are not likely to be of decisive aid in diagnosis in a disease in which vomiting and dehydration are so common The same applies to a low level of blood-sugar which has been suggested as favouring the diagnosis

A clear cerebrospinal fluid with little or no rise in pressure or cell content and free of organisms is the rule portion of the membranes which was adherent shows considerable engorgement with a good deal of interstitial hæmorrhage but little else of note The chief pathological features are the considerable focal and streaky hæmorrhage in addition to the five areas of gross hæmorrhage, the stuffing of vessels with thrombus in which the polymorphonuclear leucocytes are present in great numbers, and the entire absence of any focal accumulations of inflammatory cells or any perivascular cuffing "

DISCUSSION

The main points to be considered in this case appear to be · (1) that clinically he behaved as an encephalitis, (2) that herpes zoster was present in the unit (3) that A T T and T A B were given more or less simultaneously just before the onset of the lesion, (4) the equivocal clinical observation of herpes on the lips accompanying the febrile onset of the illness, (5) that he had received sulphapyridine, and (6) the histopathological findings of a brain in which a toxic rather than an inflammatory reaction were the main features

Russell Brain[1] has carefully reviewed the literature on zoster encephalitis and although it is tempting to include this as such a case the autopsy findings are dissimilar and a physician who saw the patient at the time was satisfied that the herpes was herpes labialis Nevertheless when seen in this hospital the fading vesicles extended well on to the cheek and angle of the jaw and were judged to be zoster The administration of A T T and T.A B simultaneously is known to be provocative of intense reactions and the onset of this case twelve days later shows a suspicious analogy to known cases of postvaccinal encephalitis as regards the latent period

The actual type of response to virus infection seems to be of two varieties, according to Adler,[2] who has reviewed 100 consecutive cases diagnosed as acute encephalitis out of a total intake of 368 000 patients at the Boston City Hospital from 1929 to 1938 Only 70 of these satisfied her *criteria for inclusion as unequivocally* proven cases and in only 19 was an autopsy performed The pathological findings demonstrated two clear entities—a toxic and a focal variety The toxic variety was characterised by signs of diffuse cerebral involvement with a normal cerebrospinal fluid and perivascular hæmorrhages, but without focal leucocytic infiltration or demyelination In the focal variety there were clinical signs of localised neurological lesions, with an abnormal spinal fluid and focal cellular infiltration and occasionally demyelination The case here described seems to belong to the group of toxic encephalitis, and in an analysis of Adler's case material both types occur as postinfectious phenomena These are her figures

	Cases	Deaths
Postinfectious groups (following mumps, rubella, &c)	30	13
Following exogenic poisons (alcohol, lead, &c)	8	1
Infectious encephalitis (mastoiditis, typhus, &c)	11	7
Acute lethargic	4	1
Other cases	17	5

The possibility that sulphapyridine may itself produce cerebral symptoms has been raised by Johnstone and Forgacs,[3] who observed that in some cases of cerebrospinal fever signs of cerebral irritation persisted or increased after the cerebrospinal fluid had become normal Unfortunately no autopsy was done on their two fatal cases In the present case there could be no question of overdosage, but according to Johnstone and Forgacs cerebral irritation may arise from moderate dosage of sulphapyridine It seems, then, that this possibility cannot entirely be excluded here Similarly it is not possible to exclude a toxic encephalitis secondary to a mild pneumonia though the autopsy gave no support to the clinical findings of pneumonia.

SUMMARY

A fatal case of toxic encephalitis is described in a man of 19 The lesion may have been secondary to a mild pneumonia, to zoster, to the injection of antitetanic serum and T.A B vaccine, or to sulphapyridine therapy.

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Medical Societies

ROYAL ACADEMY OF MEDICINE IN IRELAND

AT a meeting of the Section of Medicine on Oct 10 with Dr A R PARSONS in the chair an address on

Water Deficiency

was read by Dr R H MICKS the president of the section He did not include the dehydration of surgical shock (without fluid loss) or the dehydration caused by extensive burns for so much knowledge of these two subjects is now being acquired that it is too early to lay down systematic teaching But it is important to try to arrive at a systematic teaching about dehydration due to diminished water intake or abnormal water-loss The phenomena of water deficiency may, he said be divided into three stages—first, those of the falling water-reserve symptomless except for the loss of about a twentieth of the body-weight, second, those of dehydration without circulatory collapse, the symptoms of which are a dry tongue loss of elasticity of the skin hæmoconcentration, and beginning impairment of renal function · third, dehydration plus circulatory collapse The aim must be to recognise the first stage because the proper treatment of dehydration is to anticipate its onset, as can easily be done by careful measurement of the water balance or, in the infant, frequent weighing When dehydration is due to excessive loss of body fluids sodium chloride is as much needed as water In dehydration plus circulatory collapse the intravenous route should be used, and at times hypertonic saline is required In general the solution administered should be normal saline but there is evidence that for rapid rectal absorption 0 12% saline is better Glucose solutions are not necessary except when parenteral feeding has to be maintained for a long time, and sometimes in diabetic coma There is little reason to think that either special alkalinising fluids or fluids containing calcium or potassium salts are useful, except possibly in certain rare cases The intravenous route is really one only required in emergencies In many cases fluid can be administered by mouth or nasal tube Rectal drip is satisfactory in many cases and enough fluid can be given by that route to maintain life and compensate for a considerable abnormal loss Intramuscular administration has been used successfully in some large clinics Subcutaneous administration of large volumes of fluid is now but little practised, and Dr Micks asked for the experiences of those who had used it Intraperitoneal administration is, he thought, usually unsatisfactory because little fluid can be given

Prof W. R FEARON wondered whether people drink enough water and whether doctors are giving enough of it to their patients Water deficiency is usually a question of salt deficiency and salt balance If the cell membrane is complete the ions do not tend to escape readily from the cell There is no mechanism equivalent to that of thirst to tell one when there is too much water in the body If one knows the osmotic pressure of the urine one can draw the osmotic curve from hour to hour This will show the state of water balance at any time The treatment of dehydration is physiologically the administration of saline Far more harm is likely to be done by giving too little water than too much

Prof W J E JESSOP referred to the relationship of water to treatment with the sulphonamides Water restriction in such cases is dangerous on account of the formation of drug crystals in the kidney.

Mr SETON PRINGLE president of the academy said that surgeons recognised earlier than physicians the possibility of severe and perhaps fatal dehydration In every major operation Arbuthnot Lane used to insert a needle under each breast and give two or three pints of saline. This was a great help in the first and second stage of dehydration, though it was quite useless in the third stage Mr. Pringle had found saline without glucose satisfactory Rectal drip has been the routine method for many years, but in many patients it proves uncomfortable and inconvenient If serious dehydration is feared this method is tedious. A reservoir of saline is now used instead of the drip This is connected with the noted During next few days hands and arms increasingly rigid Frequent attacks of crying on March 28 On 29th developed intense pain in legs and periodic screaming attacks between which lay stuporose

Admitted to hospital on night of March 31 in stupor Colour poor Lay on side with slight opisthotonus Temperature 99 4° F , pulse rate 84 When examination was attempted became extremely violent and resistant, screaming with a husky voice of metallic timbre Apart from slight congestion of fauces, physical signs limited to central nervous system Pupils reacted to light and accommodation Well marked tremor of limbs with some rigidity , stiffness of spinal and neck muscles with slight opisthotonus Kernig's sign weakly present on both sides , reflexes all somewhat exaggerated, with bilateral ankle clonus. Lumbar puncture gave bloodstained fluid under normal pressure and on this and two subsequent occasions, 3 and 7 days later, examination report normal except for blood cells accounted for by difficulty of controlling child during operation During night of admission, erythematous rash appeared on arms and legs, with petechial spots on knees By next morning temperature and pulse normal and remained so thereafter, but child excessively restless and violently resistant, with frequent attacks of screaming , required constant supervision and restraint to prevent her throwing herself out of bed Head retraction, opisthotonus and limb tremor more definite Later in day developed repetitive cycle after throwing herself about and screaming for three minutes, during which arm and hand tremors, head retraction and opisthotonus were accentuated, had an interval of two to three minutes when lay quietly supine with outspread legs and arms, eyes and mouth wide open

Treatment —On admission put on fluid diet and given sulphapyridine 0 5 g four hourly by mouth, later augmented by sulphapyridine soluble 3 c cm intramuscularly On April 2, 12 c cm citrated whole blood given intramuscularly and on 3rd, 4th and 5th 20, 20 and 10 c cm of measles convalescent serum given Restlessness controlled by large doses of syrup of chloral and bromide

Progress —Slight improvement on April 4, when limb rigidity and tremors were less, opisthotonus and nuchal rigidity diminished and irritability not so extreme Now appeared to be conscious and would follow moving object with eyes Periodic attacks of screaming still occurred and still resentful of handling Improvement was maintained and speech, at first limited to whispering with unnatural lisp, regained on April 6 Cerebration at first slow and irrational but improvement comparatively rapid and recovery uninterrupted and uneventful Discharged on April 20 When re examined on May 7 no signs of disease of central nervous system or evidence of mental impairment elicited According to parents only abnormality was slight tendency to fidget, but speech clearer and more distinct than before illness

DISCUSSION

While the use of blood or serum from recently vaccinated persons or measles convalescents is a well-recognised method of treatment in such cases, few examples of the successful administration of sulphanilamide or sulphapyridine are recorded Although the value of sulphapyridine in virus infections generally is doubtful, it was felt that since it has been of benefit in certain diseases of virus origin, it should be employed in an attempt to augment the effect of serotherapy It is interesting to note that Miller and Wray[4] have recently applied this principle to the treatment of poliomyelitis

Since the fatality-rates in these cases vary considerably in different age-groups and in different recorded series, and spontaneous recovery does occur, it cannot be claimed that the favourable therapeutic response was achieved by the agents employed acting either singly or in combination Nevertheless, in view of the extremely grave condition of the children, the first of whom was in an age-group for which the fatality is high, the extensive involvement of the central nervous system and the rapid progression of the disease process without any evidence of amelioration until treatment was instituted, some encouragement is given for the future employment of the method

SUMMARY

A boy aged 6 months, with postvaccinal encephalitis, was treated with sulphapyridine plus intramuscular injection of blood from his father and from a re vaccinated nurse

A girl aged 6 years, with encephalitis following me was treated with sulphapyridine plus intramuscular blood and convalescent measles serum

Both recovered completely

ENCEPHALITIS OF UNKNOWN ORIG

H A PALMER, M D MANC , M R C P , D P M
MAJOR, R A M C , LATE SENIOR ASSISTANT PHYSICIAN,
WOODSIDE HOSPITAL

A SOLDIER, aged 19, belonged to a unit in which three men developed typical zoster The first reported si Nov 30, 1940, the second on Dec 20, 1940, and the early in the New Year 1941 The patient enlisted on De 1940, received his first antitetanic injection on the 21s first T.A B injection on the 23rd and his second T injection on Jan 3 Twelve days later he felt ill, compl of nausea and headache, vomited once or twice and su from diarrhœa On Jan 17 he felt shivery and reported sick and was put to bed ; his temperature 103° F Next day he had slight head-retraction an headache was worse , a few herpetic lesions were note diagnosed as herpes labialis On Jan 19 he complain slight breathlessness and his general condition arouse suspicion that he might be developing pneumonia He therefore given 6 g of sulphapyridine in 48 hours, and arra ments were made for his admission to hospital There evidence of pneumonia could be found, but he had a sputum which was sometimes blood streaked (He had a slight cough with sputum for the previous month, a sister had died of phthisis) He was once more pu sulphapyridine as a precaution, receiving a further 7 g next three days On Jan 21 he had a sudden tran impulsive outburst recorded as a " hysterical attack " day he was confused and restless, and was transferred military hospital

On admission he was in a restless, delirious, very conf out of touch with his surroundings, and resistant t nursing and medical attention There was slight rigidity and a positive Kernig's sign , the optic discs sh a little haziness of the nasal margins , the cerebrospinal was under moderate pressure and contained 7 lymphoc per c mm Blood count showed 18,000 leucocytes per c There was a fading crop of herpetic vesicles on the left of his cheek A further 7 g of sulphapyridine was between Jan 25 and 28 He became more restless, requ sedatives, and two areas of purpuric staining appeared his right shoulder and sacrum On the 27th he had a J sonian seizure, after which his condition changed to a coma On the 28th he had two further convulsions, and plantar responses were extensor He died on the 29th

Autopsy —No abnormality in dural or accessory sin Membranes were rather pink and congested, and in temporo parietal region were adherent and manifestl flamed over an area 2 in square , apart from this appeared somewhat bulky and œdematous Cut surfac brain slightly pink , five areas of colliquative hæmorr necrosis, two in one hemisphere and three in the other T ranged from ½ to 2 in across and were filled with a purple liquid Lieut I B Gartside, R A M C , reporte the sections as follows, and Prof M J Stewart has k confirmed his findings

" Several blocks of the brain tissue have been exami Nowhere is there any suggestion of perivascular cuffing any other focal accumulation of inflammatory cells T is some generalised œdema of the brain tissue, but this is well marked In all the blocks examined there is much and streaky hæmorrhage scattered throughout the tissu addition to the gross hæmorrhage seen by the naked eye large block, which shows relatively little change in the b substance, shows a striking feature in the meningeal veins vesicles lying in the sulcus which runs through section, and in the capillary and venular channels in substance of the brain itself These are all distended thrombus in which polymorphonuclear leucocytes are pre in large numbers (It will be remembered that there w leucocytosis of 18,000) This block also shows the s abundance of focal and streaky hæmorrhages, with s necrotic changes in the brain tissue in relation to th hæmorrhages, which is seen in all the blocks examined

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[4] Miller, S and Wray, S *Lancet*, 1941, 1, 753

THE LANCET

LONDON. SATURDAY, NOVEMBER 8, 1941

THE WARD DRESSING

INFECTED war-wounds may be divided into two broad categories first, wounds infected outside the hospital ward, and these are for the most part infections with the anaerobic sporing bacilli, *Clostridium tetani* and the gas-gangrene group , secondly, wounds infected inside the hospital ward where the principal pathogens are the pyogenic bacteria—staphylococcus and streptococcus and the coliform bacilli including proteus and pyocyaneus These pyogenic organisms are found in only a small proportion of open wounds examined on admission to hospital—the figures have been 5–6% in the present war and 15–20% in the last —but after a week's stay in hospital the proportion of infected wounds may exceed 50% and increases with further residence to 70–90% *Streptococcus pyogenes* is the most dangerous of the pyogens because of its great invasiveness, but the coagulase-positive staphylococcus, which in the past year has been the most frequent pathogen found in war-wounds, may also produce much chronic invalidity if it gets access to bone It is true—and perhaps unfortunate—that infection produces little evidence of local or systemic upset in many wounds, particularly if they are shallow and draining well, and does not greatly retard healing, so that a complacent surgeon may regard such infection as innocuous But once in a while an unfortunate " accident " occurs—a new patient develops cellulitis or septicæmia, signs of osteomyelitis appear in a case of compound fracture, nurses go off duty with septic fingers and sore throats, and the surgeon realises too late that infection is rampant in the ward

It was to the problem of preventing these tragic consequences of wound-infection that certain teams of surgeons and bacteriologists in Hertfordshire addressed themselves during the past winter, and a direct result of their researches is an excellent memorandum,[1] published jointly by the War Wounds Committee of the M R C and the Committee of Sector Pathologists with Dr E T C SPOONER as editor In it the problem of hospital infection of wounds is clearly set forth and practical instructions are given for its prevention If it be granted (and the circumstantial evidence is very strong) that pyogenic infection of open wounds takes place mostly in the hospital ward, the possible sources must be defined and controlled and the channels of spread blocked The principal sources are wounds already infected, the air-passages of patients and ward personnel, and the dust of the ward which has become infected from the first two sources The channels of spread are direct transference by hands, instruments and dressings which become bacterial carriers from contact with already infected wounds or respiratory tracts, droplet infection from the nose or mouth of attendant or patient (5–10% of adults are throat carriers of *Strep pyogenes* , 30–40% are nasal carriers of *Staphylococcus aureus*), and air-currents carrying infected dust or droplet-nuclei Obviously if the proportion of infected wounds increases, dust and air become more heavily infected, sore throats appear and a vicious circle sets in In the infection of wounds, it seems probable, though the point has not been proven that direct transference by infected hands or instruments is more important than droplet or aerial infection The latter two channels can be largely blocked by efficient masking of all ward personnel plus the maintenance of silence among the patients and a still atmosphere during the period of the dressings Bed-making, sweeping and dusting must be completed at least an hour before dressings are begun, windows and doors should be kept closed to minimise air-currents, floors may be treated with spindle-oil to adsorb the dust, and any movement of bedclothes must be done gently and slowly

For the control of contact infection a technique which for many will mean a radical revision in ward wound-dressing is recommended and described in detail in the memo The key-points in this ritual are that the hands of the dresser are to be regarded as at all times infected, while the wound and the surrounding skin are to be likened to a plate of culture medium —that is, a surface very susceptible to infection and therefore to be uncovered for the shortest possible time, and, the memo might have added, as infrequently as possible Gone are the days when wounds are gaily laid bare for the round of inspection by the big white chief and his retinue of maskless followers Instead there is to be a dressing team, each member well versed in his or her own duties, and each wound must be inspected and re-dressed before the next is dealt with The team consists of the dresser (preferably the house-surgeon), the trolley-attendant, a trained nurse who is responsible for the care and sterility of instruments, dressings bowls and so on and a " dirty " assistant to lend a helping hand in removing bandages or holding a limb, and to lift the lids of the bins for discarded dressings , all dressings are discarded but the bandages and outer dressings are salvaged for re-use After the outer dressing has been removed by hand the inner dressing is changed by the dresser with long instrument forceps in hands that are washed and dried but not ' scrubbed up " Every step is designed to prevent the transference of infective material from one wound to another by hands, instruments or dressings For the sterilisation of instruments and the various receptacles—which should have lids—boiling in water in a ward-steriliser big enough to take the largest vessels is recommended , 2% soda should be added to prevent rusting, and scalpels may be so sterilised without detriment provided their blades are wrapped in lint or placed in a zinc rack Once sterile, instruments can be kept in a dry sterile dish with a cover, or if this method is not convenient they should be immersed in liquor formaldehydi chirurgicalis[3] rather than lysol or spirit Much practical instruction is given about the irrigation of wounds, chemical disinfectants, masks, sterilisation, and cleansing of baths, and particular attention is directed to the danger of cutting and changing plasters in the ward, for plasters usually teem with bacteria both inside and out One of the most sensible suggestions is that nurses should have a short *practical* course in bacteriology which will bring home to them better than many abstruse lectures what infection means a view which is borne out by Dr JANET WELCH's experience in Africa (see p 574) rectum through a very wide tube and the saline is only taken up from the bag as it is needed, so that the rectum never becomes distended or uncomfortable

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[1] Prevention of " Hospital Infection ' of Wounds M R C War Memo No 6 H M Stationery Office, *6d*

[2] Borax 1 5 solution of formaldehyde 2 5, phenol 0 4, water to 100

Dr Geoffrey Bewley referred to the giving of nasal fluid to unconscious patients and said that in these cases it is frequently a case of giving food as well as fluid The patients are given eggs and sugar by this route Life can be preserved for months by giving fluid through the nose

Prof T W T Dillon said that one of the most important things is to have some easy test by which to know when enough water has been given and the water depots are full If the specific gravity of the urine is taken in these cases it will be observed that water repletion coincides with a sharp fall in the specific gravity

Dr R E Steen said that there were certainly definite indications for the intravenous drip method in young children

Mr J C Flood said that until two years ago there was a tendency to give too much water Patients were given transfusions of water under every condition of surgical collapse It was then considered that this was being overdone Of the importance of water in the right class of case there can be no doubt It is necessary to distinguish between dehydration due to water going out of the body and that due to water coming out of the blood channels There is a considerable chance of the patient being overdosed with water if he is suffering from straightforward shock associated with a water shift out of the blood-vessels into the tissues There is no entirely satisfactory and reliable therapeutic test to show when enough water has been given When a patient is receiving postoperative transfusions and salines a record must be kept of the total fluid intake and excretion every day

Dr A W Spain thought the intravenous route unsuitable for a doctor faced with an emergency away from a hospital In such cases the subcutaneous route is very efficient It is astonishing how rapidly a patient will absorb fluid if a pint is put under each breast This can be done without causing the patient any inconvenience

Reviews of Books

Surgery of the Heart

E S J King, M S Melb, D Sc, F R C S, F R A C S, major A A M C, honorary surgeon to out patients, Royal Melbourne Hospital London Edward Arnold Pp 728 50*s*

Versatility and thoroughness do not always go hand in hand, but here is an exception During the past twenty years Major King's interests have ranged over surgery and pathology, from teeth in dermoid cysts to successful thoracic œsophagectomy for carcinoma, and now he succeeds in concentrating a vast and admirably documented quantity of information that bears on every phase and aspect of cardiac surgery The book begins as it should with a clear, brief account of the heart's development, abnormalities, anatomy, physiology and pathology Two welcome chapters explain orthodiagraphy, kymography, tomography, and finally, electrocardiograms, their shape and value All the eggs—those war-time symbols of what is commonplace but unfamiliar—are thus in one convenient basket Major King goes on to deal with experimental investigations, with the special surgical problems created by disease or injury of the heart or pericardium The broad impression left is one of swift advance—encouraging, brilliant, tentative Time must pass before we can choose, for example, with confidence the best surgical means of treating angina pectoris and the most suitable cases for treatment Methods include those which seek to interrupt the conduction of pain and those—more numerous—aimed at removing the cause, the second group are designed to increase the vascularity of the myocardium, either by means of grafts of muscle and omentum, or else by opening up the rather grudging inosculation of cardiac vessels This last method links up with the well-known work by Makins on simultaneous ligature of vein and artery, Blum and Gross have found that when the coronary sinus has been occluded, they can then, with the heart congested, tie a coronary artery at a point where ligation would otherwise cause death

In discussing quasi-separate blood-supplies to the half-dozen layers of ventricular muscle the author argues that the fibrosis caused by infarction of one or other of these layers is likely to offer a barrier through which new vessels brought by a graft might be unable to grow The fibrosed layer itself is often past salvation, and even if new vessels do penetrate compromised heart muscle, can we be sure that in *the living subject* there will be a flow through them towards the heart and not away from it ? On these and many other points he brings his own investigations to bear He suggests that too little attention is paid to the effect of merely opening the pericardium, for pain in some of his cases has been relieved before new vessels could possibly grow into the heart Such relief is linked perhaps with the achievement of O'Shaughnessy and McCunn who managed to improve exercise tolerance in racing greyhounds by liberating their large hearts from pericardial restraint

Satisfying indications for treating pulmonary emboli by operation are not yet even in sight, the surgeon must still wait till the red warning gives way to the green signal of death And while it is certain that recuperable cases are being lost through an almost pandemic blight of unprepared defeatism, it is likely, too, that operation is often a superfluous coup-de-grâce We shall be in much better position to judge of this and other cardiovascular procedures when we possess many more accounts of failures, Nystrom wants careful records of them all In the meantime we can study how to simplify, or even extend, the scope of intervention by removing clot with aspiration instead of forceps Major King gives too little detail of operation for these emboli, he does not mention the screen of thick fat often found in front of the pericardium, a screen which may well confuse tyros, who are told to expect " a white and shining membrane " as soon as " the pleura is swept laterally " And " sweep," too, must be carefully qualified, the act needs no dash and plenty of method

Cardiac-valve surgery is for the moment at a standstill in clinical practice, operation has only achieved success in 3 cases with mitral stenosis—Tuffier's in 1914, Cutler's in 1923, and Souttar's in 1925 In the first and last dilatation was made with a finger, while a tenotome was used in the other, and who knows how much of the improvement was due to the mere opening of pericardium ? It would be improper to criticise a comprehensive, disciplined work on the score that the fascination of the subject is kept in abeyance, but we cannot help wishing the author had followed the practice of old writers and given us more loving detail (should one say the lowdown ?), for example, on the toothpick found in the heart Meanwhile he has produced for those concerned a quite indispensable book

What Price Alcohol ?

Robert S Carroll, M D, medical director, Highland Hospital, Asheville, North Carolina London *Macmillan* and Co Pp 362 12*s* 6*d*

Dr Carroll certainly knows his alcoholists from infancy upwards and illuminates their progress through life by many a tell-tale case history He appears however to indict alcohol for all degenerative trends in modern American civilisation, rather than to regard alcoholism as but one symptom of the neurotic's failure to face up to life's demands

An interesting thesis, developed at length throughout the book, is that faulty diet is the fundamental defect in the average alcoholist In the author's opinion the frequent restless gobbling down of everything from hot-dog to chocolate induces a " vitality-deficiency " and a " food-crave " which develop into a demand for the quicker satisfaction afforded by alcohol He advances a " blood-brain-barrier theory," according to which the function of the choroid plexus is to filter off from the blood deleterious substances which would injure neurones and synapses if allowed to reach them Products of hyperalimentation alter the permeability of the barrier and thus are indirectly responsible for dysfunction of the higher cerebral centres Brain tracts of poor quality will be disorganised more easily than those of robuster heritage by barrier-passing toxins Hence the distinction between those who can and those who cannot carry their liquor On treatment Dr Carroll's general advice is eminently sound he keeps insistently before the patient the maxim " You have come here to be taught to live without alcohol in any form at any time " He shows clearly that the attainment of this freedom involves nothing less than re-education of the addict personality uncongenial job without being told the reason, so they went sick, as soon as they learned why they were needed they complied without hesitation We are trying to get the best work out of a race of people who resent dictation, and we set about it by tiring them out and telling them nothing We have the method, not the men and women, to blame for absenteeism

MALARIA BROUGHT HOME

THE War Office pamphlet[1] on the treatment of malaria in people returning home from malarious areas is a timely reminder that we are likely to see many such cases during the next few years Many people who contracted, or thought they contracted, malaria during the 1914–18 war are convinced that they still suffer from the disease This is unlikely, for it seems that malignant tertian malaria rarely persists for more than a year or two after return from the endemic zone, although simple tertian and quartan malaria may on occasions last longer There are exceptional cases, particularly of quartan infections, where the disease goes on giving trouble for long periods, but it is unwise to assume that any febrile disturbance in a person who has once had malaria is necessarily due to a relapse The only way of establishing the diagnosis is by the recovery and recognition of malaria parasites, clinical examination alone is open to grave fallacy Again, patients presenting a remarkable variety of symptoms and signs, quite unlike those of the classical malarial paroxysms, may be found to have pyrexia with parasites in the peripheral blood, and a few doses of an antimalarial drug will produce an astonishingly rapid alleviation of their trouble. When facilities do not exist for the microscopical diagnosis of the disease before treatment is begun, blood films should at least be made for later study The so called therapeutic diagnostic test may be gravely misleading, and should never be relied on There is here one difficulty which constantly obtrudes itself in the study of this condition—the almost universal practice adopted by people who have lived in endemic areas of taking antimalarial drugs whenever they feel off-colour A few doses of such drugs may well render the microscopist's task hopeless for the time being In such cases there is little risk in stopping the drug and awaiting the reappearance of parasites in the peripheral blood before proceeding with systematic treatment The diagnosis will then be established and treatment can at least be begun on a sound foundation

Having established the diagnosis, the next step is to deal with the attack The War Office pamphlet advocates the consecutive employment of three drugs. a salt of quinine by mouth in ten-grain doses thrice daily for two days, mepacrine hydrochloride (the British equivalent of Atebrin) by mouth in doses of 0 1 g (1 tablet) thrice daily for five days, and finally, after a two-day interval, pamaquin (the British equivalent of Plasmoquine) in doses of 0 01 g (1 tablet) thrice daily for a further five days In this course the quinine salt is given first, since it is generally agreed that the action of quinine on the parasites, and thus on the clinical condition, is more rapid than that of any other available drug The mepacrine sustains the therapeutic action and arrests the attack. Pamaquin, however, has little or no effect on the paroxysm but is given after this has been arrested, for when so given it is believed further to reduce the liability to subsequent relapse This tendency to relapse is believed to be considerably greater after an attack has been treated by a single drug (either quinine or mepacrine) alone In civil practice in this country there may be occasions when it is impracticable to follow this suggested course of treatment One drawback is the necessity for keeping the patient in bed virtually throughout its duration—he should be confined there during and for some days after the pyrexia, and he should remain there during the exhibition of the pamaquin Another may well be the expense and the lack of ready availability of mepacrine and pamaquin A third is the possibility of toxic manifestations, especially liable to be caused by pamaquin On such occasions there seems no reason why resort should not be had to the safe, cheap and universally procurable quinine preparations used in the treatment of innumerable cases in the past, and today still widely employed both here and elsewhere It must be remembered that, particularly in the case of simple tertian and in quartan malaria, relapses do occur in many cases after a course of quinine alone, and possibly the relapse-rate is higher than that following a sequence of drugs, completed by a course of pamaquin, but this does not necessarily mean that quinine alone is not a most valuable drug A method of treatment with quinine is suggested in the pamphlet, but another much employed consists of the oral administration of ten-grain doses of quinine sulphate in acid solution (Ac sulph dil ♏xv in a tablespoon of water) thrice daily for three or four consecutive days This will arrest almost any attack of malaria and clear the parasites from the peripheral blood of nearly every case If this course is followed by the administration of the drug in similar doses on two consecutive days each week for a couple of months most early cases of malignant tertian malaria will not relapse Such, unfortunately, cannot be said of simple tertian and quartan cases Where relapses do occur in these the course can be repeated Advantages of quinine are that it is effective in producing rapid clinical cure of the acute attacks, and that when this has been achieved the patient can continue with his ordinary vocation throughout the remainder of the course At present many seamen on merchant and other vessels are being treated on these lines, and the period of their disability ashore is thus reduced to a few days They can then return to sea, provided they continue to take the drug as directed Many claim to be unable to take quinine, but in fact nearly everyone can do so, in the doses recommended, without any symptoms except temporary deafness and tinnitus

The observations in the pamphlet on the intravenous and intramuscular injection of quinine deserve particular attention Their routine and repeated use is rightly condemned, and due care must be exercised when using the intramuscular route to avoid periosteum and bone, large nerves and vessels, if disastrous results are not to follow Intravenous quinine is potentially dangerous and should be given only in carefully selected cases and with extreme caution The type of case requiring parenteral administration is the one in which the drug either cannot be taken or retained by mouth, or in which

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[1] Notes on the Treatment of Malaria occurring in Individuals returning from Service in Malarious Areas H M Stationery Office 1941 Pp 6 1d

Their intelligent cooperation, essential for success in countering cross-infection in wards, can only be obtained if the rationale of new procedures is explained to them, and a simple summarised version of this memorandum might well be made available to nurses

If the recommendations in this pamphlet seem to some surgeons rather elaborate, with a smack of the laboratory about them, let them not on that account dismiss them as impracticable or unnecessary Infection of open wounds is a menace to be constantly guarded against, and it is illogical to use a less strict technique in dressing these susceptible wounds in the ward than is used for less vulnerable tissues in the operating-theatre That the new technique is both practicable and effective has lately been shown by McKissock, Wright and Miles,[3] who with it reduced the incidence of hospital infection in air-raid casualties from 31 3 to 2 2% in improvised E M S wards Local sulphonamide prophylaxis and other new methods may help to minimise hospital infection of wounds but there can be no gainsaying the soundness of the principles enounced in this memo, particularly for the dressing of open wounds It should be read and digested by every surgeon, house-surgeon, hospital bacteriologist and surgical ward sister

ABSENT FROM WORK

A decent craftsman, seen by his doctor on a Sunday afternoon, complained that he was dead to the world , he had been working for six days a week from 8 A M to 9 P M and on Sundays from 8 A M to 4 P M , he has had two days off in the past year Another tired out labourer hopes he will not be sent to the docks for there they work 12-hour shifts seven days a week An A T S girl, coming home on 48 hours' leave, spends the first 36 hours of it sleeping These are three relatively trifling examples of the fatigue which must be holding up production The Ministry of Supply might take as their slogan "Too Long Hours mean Short Output," and every works manager should have it hung over his desk

Unfortunately when hours are reduced the output does not rise immediately , there is a relatively long period of adaptation before the workers recover from fatigue and begin to improve their standards Naturally the lag also operates in the reverse direction, so that an increase in hours will produce a greater output for the first few weeks—until fatigue sets in This must be so , the human body cannot be switched straight into a different gear like a machine These two equal and opposite lags make it difficult to convince the denser and more old-fashioned works managers that shortened hours will increase production , and so the damage goes on Many of the workers themselves recognise the fallacy in long hours and take a day off when their fatigue becomes too great Thus there are constant complaints of absenteeism in industry at a time when absenteeism can harm us all

But fatigue, though the most important, is not the only thing which keeps people away from work There is always more absenteeism among women than among men, and in war-time the increase in absenteeism among women is proportionately much greater Some of the reasons for this appeared clearly in discussion at the second session of the Women's Parliament, reported in our issue of Nov 1 (p 537) The greatest increase is among married women who would not normally be working in factories These still have their ordinary work to attend to they must still keep the home clean, buy food for their families, cook it and clear it away It might be supposed that when both partners were out at work both would share in domestic duties in the evening ; but this does not seem to be so Etiquette among manual workers enacts that a man cannot help in the home without being looked down on by his mates This false pride has been found to be particularly prevalent in the north country where a man may help his wife by lighting a fire, but must not lend a hand in cleaning the house or washing up—the bulk of the housework Even if the man is out of work and the woman is supporting the family his status must be preserved, and he cannot even do the household shopping without loss of prestige Shopping nowadays is not a task which can be performed in a few odd minutes, so women take time off from the factory to do it—they have to Absenteeism has been considerably reduced in factories which have added household goods to their canteens so that women can do their shopping during the lunch break Even so, time must be borrowed to clean the house, give children their meals, or look after a husband home on leave This piling up of tiring duties renders women more liable to breakdown than men, and illness is the second most important single cause of absenteeism among women Travel difficulties increase fatigue for both sexes, as do nights made sleepless by raids or by civil defence duties Sometimes raid damage adds heavy and dismal salvage work to the day's toil

Unpunctuality and slowness in starting work cause nearly as much loss of output as absenteeism and it is noteworthy that many women prefer to stay away altogether than to clock in late, feeling that they might as well hang for a sheep as a lamb This prejudice, foolish as it is, has to be taken into account Many women and young people are without ambition and remain untempted by the thought of promotion or more pay Moreover in many factories the workers —men and women alike—have little sense of sharing in the war effort , the idea that the Forces are depending on their work seems remote and unreal This attitude is often coupled with the independent Englishman's belief that his boss "knows nowt" and is making a hopeless mess of things This view, often mistaken, springs from ignorance of the problems to be overcome and therein lies the kernel of this matter In industry and local government there is too little give and take of information, too few committees on which workers and officers meet to exchange views and discuss policy The discontent often found among those serving public bodies springs largely from the fact that they are treated as pawns and never consulted as reasoning people The same applies in industry Workers who are told the plans of their employers—who have the background of special demands explained to them and who understand not only what their factory is out to do but also what difficulties stand in the way of success—are anxious to help Those who are treated like children and kept in the dark behave like children This was well illustrated in the letter from a works manager which appeared lately in our pages (*Lancet*, Oct 18, p 471) three men were asked to do an rescuer of Alexander Selkirk. Then there was Robert Younge, who left a record of the battle of Camperdown in 1797, when his ship H.M.S. *Ardent* lost 41 killed and 107 wounded out of a company of 485, and he was operating for fifteen hours non-stop. Perhaps the most famous of the old naval surgeons was Sir William Beatty, who became friend and surgeon to Nelson, to him we owe an account of those closing scenes on the *Victory*, of Nelson's wounds and end. And he tells how the body was brought home to England steeped in brandy, and of the post-mortem findings. Commander Allison ended his tales of the sea with another quotation from Thomas Trotter:

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[3] McKissock, W , Wright, J and Miles, A A *Brit med J* Sept 13, 1941, p 375

> “As study and diligence lead to preferment in every department of life, so in our line they have their rewards. We fulfil a most important station in the service of our country, nay of much more importance than we can expect credit for, because many of our best actions must sleep with ourselves, as medical abilities are not to be appreciated by common observers. Yet, this very circumstance is a stimulus to exertion: for it keeps alive the spirit of perseverance, from the hope that merit will at last be discerned and meet with success.”

LOCAL ANÆSTHESIA IN DELIVERY

THE British mind has never accepted local infiltration anæsthesia as the method of choice in pelvic delivery. This reluctance has been explained by several arguments—that most obstetricians prefer a generally anæsthetised patient, since thereby their time is saved and any major procedure required is immediately feasible; that few institutions or chemists can be relied on properly to prepare a reliable local anæsthetic that is safe and certain in its results; that the locally anæsthetised patient requires more supervision than her unconscious sister. But the most likely explanation is that the average practitioner does not understand the local nerve supply of this area of operation since he has never fully studied it from the point of view of infiltrating the nerve paths involved. These arguments, even if valid, are readily overcome. First, as Sheldon[1] insists, it is essential to appreciate the anatomy of the female perineum and genitalia. The nerve supply that must be blocked is a threefold one. The pudic nerve leaves the pelvis through the greater sacrosciatic foramen and joins the pudic vessels in Alcock's canal; it then divides into the perinæal nerve and the dorsal nerve of the clitoris. The inferior hæmorrhoidal nerve branches off the pudic trunk before its terminal division. These nerves traverse the ischiorectal fossa and supply the skin of the perineum, labia minora, a large part of the vagina and part of the labia majora and anus. The second important nerve is the small sciatic; this emerges from the pelvis through the great sacrosciatic foramen and supplies the skin of the perineum and back of the thigh and leg. It gives off the inferior pudendal nerve, which curves forward from below the tuberosity of the ischium to supply the skin of the labia, communicating with the superficial perinæal and inferior hæmorrhoidal branches of the pudic nerve. The third nerve that must be blocked is the ilioinguinal, which emerges from the external abdominal ring to supply the skin of the upper and inner part of the thigh and the skin of the labia. To infiltrate these nerves three points are chosen: the first over the external abdominal ring, the second just medial to the tuberosity of the ischium, and the third in the middle of the perinæal body. From these points a fan-shaped area is infiltrated spreading towards the vagina. About 10 c.cm. of 1% procaine is used for each point, amounting to 50–70 c.cm. in all. Ideally the procaine solution should be freshly prepared and sterilised by autoclaving at 5 lb. pressure for five minutes; it should be made with sterile normal saline. The addition of 10 minims of 1 in 1000 adrenaline to every 100 c.cm. of solution prolongs the anæsthetic effect and has a small but valuable local hæmostatic action. An ordinary Record syringe and a long fine needle are the only other essentials. To get the best results the timing of the injection is important. The first stage is conducted along the usual lines using Omnopon and scopolamine or gas-and-air analgesia. In a primipara the time for infiltration is when the baby's head is on the pelvic floor, but in a multipara as soon as the os is fully dilated. The period of anæsthesia to be expected varies from 1 to 2 hours, and this should suffice in all normal cases. The extent of the anæsthesia is sufficient for the performance of an episiotomy or for the application of the low forceps and the suturing of perinæal tears. There are certain practical considerations that recommend the method. The patient being conscious can be enlisted to coöperate in bearing down efforts as required. She avoids the risk of an inhalation anæsthesia, while the operator has all the muscular relaxation of the outlet such as only a deep general anæsthetic could otherwise provide, thus minimising the likelihood of forceps delivery, episiotomy and laceration. Shock and blood loss are minimal since the uterine tone is not in any way prejudiced by the atonic effects of a general anæsthetic and the chances of an atonic postpartum hæmorrhage are avoided. The benefits to the baby are self-evident; the baby is no more affected than if the delivery had been conducted without any anæsthetic at all and no respiratory depression from inhalation anæsthesia is seen, with a resulting minimum of cases of asphyxia. Sheldon has used this method in 64 cases and finds it eminently satisfactory. It fulfils the ideals of any anæsthetic to be used in obstetrics and its safety for both mother and baby recommend its wider trial.

STUDENT AND SCREEN

THE sound film “Malaria” was shown on Oct. 30 by the Ross Institute of the London School of Hygiene and Tropical Medicine. This film, made by the Shell Film Unit in collaboration with the institute, and produced by Arthur Elton and Graham Tharp, is a beautiful piece of work. The immense problem of malaria is stated, the life history of the parasite is exposed, and finally the watcher is shown how this knowledge can be used as a rational basis for a campaign of preventive medicine on a wide scale. The photography is arresting. Different places where mosquitoes breed are shown as in a travel film; diagrams by Francis Rodker are particularly clear, and the complicated life-cycle of the parasite is demonstrated by excellent microphotographs, the work of Percy Smith and Sidney Beadle.

Such a brilliant presentment of technical material demonstrates the use which could and should be made of the cinema in medical education. Although there are now quite a number of scientific films, most have a limited audience and few are shown to students. In the days before printing, education depended on lectures and readings from rare manuscript books. Printing gave every student access to textbooks and saved him the labour of copying. Lectures continued, nevertheless, to be the basis of education, and attendance at them is still compulsory in some universities, though it would be equally logical to compel the student to read Professor X's book before being allowed to sit for an exam. As the technique of illustrating was perfected, photographs began to invade the pages of the textbooks and the student's eye could feast on static delineations of cells, tissues and organs which in life are never at rest. The cinema film, the ultra rapid camera and the microscope can be used to convey clearly to every member of an audience the details of almost any biological process; yet academic circles in England have hardly noticed this new weapon. The sound film can combine the best, and most carefully prepared, lecture with the exact demonstration of phenomena. Colour, magnification, speeding up or slowing down, can be used to reveal inaccessible processes larger than life and twice as natural it is unlikely to be absorbed readily on account of the grave condition of the patient. Such cases are usually due to a malignant tertian infection, where speed in diagnosis and treatment is essential to lessen the risk of an early fatal issue.

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[1] New Engl. J. Med. March 6, 1941, p. 404.

WHEN TO TIE THE CORD

UP to a few years ago there was no difference of opinion about when the umbilical cord should be obliterated and the vascular connexion between mother and infant severed. The standard textbooks usually said "when the cord has ceased pulsating," and this was an easy rule to follow. The first element of doubt crept in as BARCROFT began to publish the results of his fascinating studies on the respiration of the fœtus and newborn baby. It seemed to be a legitimate practical deduction that once the infant's head was clear of the vulva and the respiratory tract was wiped clean of mucus in its upper reaches the sooner the cord was clamped the better, since this ensured the cutting off of oxygen which BARCROFT had shown was the most important stimulus for the first inspiration. So some obstetricians and their pædiatric associates began to urge that the cord should be clamped earlier than hitherto, the pædiatricians adding that since the infant spent the early days of life getting rid of his fœtal polycythæmia there was no harm in preventing the placental apparatus passing over the last few teaspoonfuls of blood. One pædiatrician, asserting that too much blood in the veins (hyperphlebæmia) was the cause of many troubles in infancy and childhood, urged that after the cord was cut some bleeding from the infant's end should be encouraged.

Now certain workers in Chicago are claiming that deprivation of placental blood may be a cause of iron deficiency in infants. According to E. E. WILSON, W. F. WINDLE and H. L. ALT,[1] when the umbilical cord is clamped immediately after birth, over 100 c.cm. of blood can usually be obtained from its placental end. They argue that this is equivalent to about a third of the blood-volume of the newborn infant, and that the iron liberated from the blood normally destroyed in the early days of life is stored and used for hæmoglobin formation in later infancy. If this is so the deprivation of a third of the blood-volume at birth may be a serious threat to the composition of the blood in the second half of the first year of life. Arithmetic is then brought in to suggest that deprivation of placental blood means that at 6 months of age the infant's quantum of hæmoglobin will be 9·1 g. instead of 12 g. per 100 c.cm. and at 9 months of age 9·7 g. instead of 12 g. per 100 c.cm. In order to test the validity of this theory studies were made in a series of infants aged 8–10 months. In 15 of these infants the cord had been clamped immediately after birth and in 13 clamping had been delayed "until the placenta had begun to descend into the vagina." For the former group the average blood values were: red corpuscles 5,060,000 per c.mm., hæmoglobin 10·8 g. per 100 c.cm. and mean corpuscular hæmoglobin 21·8 $\mu\mu g$. For the second group the corresponding figures were 4,450,000 per c.mm., 11·9 g. per 100 c.cm. and 27 $\mu\mu g$. It is claimed that, although the differences in the average erythrocyte counts and hæmoglobin values for the two groups are not highly significant in themselves, the difference between the mean corpuscular hæmoglobin in the two groups is statistically significant and it is considered that the infants in the "immediate clamping" group showed evidence of a mild iron deficiency anæmia.

All the infants investigated, however, came from families of a low income group and although nearly all were receiving some carrots, spinach and other green vegetables it would not be unreasonable to suppose that additional iron, as advocated by some experts for all infants, would readily abolish the slight difference between the two groups. As regards a possible anæmia in later infancy the idea of leaving the cord until the placenta has begun to descend into the vagina cannot then be said to be strongly supported. What may be called the Barcroft point of view seems to have better claims. Further work is still needed to decide whether any change is necessary in the standard midwifery teaching of tying the cord as soon as pulsation ceases.

Annotations

SALT WATER SURGEONS

How old is the profession of ship's doctor? Perhaps as old as the ark, if Shem, Ham and Japheth founded that precedent by which three sons distribute themselves between the church, the law and medicine. But striding down a century or two we find the calling well established in the days of Augustus Cæsar; and Surgeon Commander R. S. Allison, at the opening of the winter session of the Royal Victoria Hospital, Belfast, suggested that St. Luke himself may have been a ship's doctor. In English ships the surgeon had a precarious status, but by the reign of Henry VIII—a monarch justly celebrated for uniting surgeons and barbers—they were doing rather well, the "chief sirurgyon" getting a salary of *13s. 4d.* a month. Queen Elizabeth chose William Gilbert, one of her own physicians and president of the College, to help to stem the increase of disease in her navy; and John Woodall, first surgeon general to East India Company, followed "Generall" Lancaster in recommending lemon juice as a cure for scurvy 180 years before its use became general. Woodall also wrote a textbook for ship's surgeons which became a classic, noteworthy no less for its therapy than its piety. In the seventeenth and eighteenth centuries the status of ship's surgeons was still in the balance. They were not commissioned officers and their pay and quarters were equally poor. *Many of* them were keen and devoted, striving against disease in their ships' companies. Commander Allison recalled Smollett's grim account (in "Roderick Random") of his experiences, and quoted the vivid picture drawn by William Cockburn in 1697 of the ravages of typhus. He also mentioned Richard Walter, who described how severe scurvy could dissolve the callus of a well healed fracture and leave it disunited; and Lind and Anson, who found that "the number of seamen in time of war, who die of shipwreck, capture, famine, fire and sword are inconsiderable in respect of such as are destroyed by the sea diseases." Another eighteenth century sea surgeon, Thomas Trotter, fought well for his sailors, demanding from the Lords of the Admiralty not only the fresh fruits and vegetables which would clear their fleets of scurvy but other amenities. "Give your tars," said he, "Oh my countrymen, their amusements; and while you enjoy yours on shore remember who they are that gave you security." And how strange that Dover's powder—that symbol of drowsiness and gentle perspiration—should be the nostrum of a pirate who was presumably his own ship's doctor. Thomas Dover, physician and privateer, the scuer of Alexander Selkirk Then there was Robert ounge, who left a record of the battle of Camperdown 1797, when his ship H M S *Ardent* lost 41 killed and 7 wounded out of a company of 485, and he was erating for fifteen hours non-stop Perhaps the most mous of the old naval surgeons was Sir William Beatty, ho became friend and surgeon to Nelson , to him we ve an account of those closing scenes on the *Victory*, Nelson's wounds and end And he tells how the body as brought home to England steeped in brandy, and of he post-mortem findings Commander Allison ended is tales of the sea with another quotation from Thomas rotter

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[1] *Amer. J. Dis. Child.* 1941, 62, 320.

> "As study and diligence lead to preferment in every epartment of life, so in our line they have their rewards Ve fulfil a *most important station in the service* of our ountry , nay of much more importance than we can expect redit for, because many of our best actions must sleep with urselves, as medical abilities are not to be appreciated by ommon observers Yet, this very circumstance is a stimulus o exertion for it keeps alive the spirit of perseverance, rom the hope that merit will at last be discerned and meet vith success"

LOCAL ANÆSTHESIA IN DELIVERY

THE British mind has never accepted local infiltration anæsthesia as the method of choice in pelvic delivery This reluctance has been explained by several arguments —that most obstetricians prefer a generally anæsthetised patient, since thereby their time is saved and any major procedure required is immediately feasible , that few institutions or chemists can be relied on properly to prepare a reliable local anæsthetic that is safe and certain in its results , that the locally anæsthetised patient requires more supervision than her unconscious sister But the most likely explanation is that the average practitioner does not understand the local nerve-supply of this area of operation since he has never fully studied it from the point of view of infiltrating the nerve paths involved These arguments, even if valid, are readily overcome First, as Sheldon[1] insists, it is essential to appreciate the anatomy of the female perinæum and genitalia The nerve-supply that must be blocked is a threefold one The pudic nerve leaves the pelvis through the greater sacrosciatic foramen and joins the pudic vessels in Alcock's canal , it then divides into the perinæal nerve and the dorsal nerve of the clitoris The inferior hæmorrhoidal nerve branches off the pudic trunk before its terminal division These nerves traverse the ischiorectal fossa and supply the skin of the perinæum, labia minora, a large part of the vagina and part of the labia majora and anus The second important nerve is the small sciatic , this emerges from the pelvis through the great sacrosciatic foramen and supplies the skin of the perinæum and back of the thigh and leg It gives off the inferior pudendal nerve, which curves forward from below the tuberosity of the ischium to supply the skin of the labia, communicating with the superficial perinæal and inferior hæmorrhoidal branches of the pudic nerve The third nerve that must be blocked is the ilioinguinal, which emerges from the external abdominal ring to supply the skin of the upper and inner part of the thigh and the skin of the labia To infiltrate these nerves three points are chosen the first over the external abdominal ring, the second just medial to the tuberosity of the ischium, and the third in the middle of the perinæal body From these points a fan-shaped area is infiltrated spreading towards the vagina About 10 c cm of 1% procaine is used for each point, amounting to 50–70 c cm in all Ideally the procaine solution should be freshly prepared and sterilised by autoclaving at 5 lb pressure for five minutes , it should be made with sterile normal saline The addition of 10 minims of 1 in 1000 adrenaline to every 100 c cm of solution prolongs the anæsthetic effect and has a small but valuable local hæmostatic action An ordinary Record syringe and a long fine needle are the only other essentials To get the best results the timing of the injection is important The first stage is conducted along the usual lines using Omnopon and scopolamine or gas-and-air analgesia In a primipara the time for infiltration is when the baby's head is on the pelvic floor, but in a multipara as soon as the os is fully dilated. The period of anæsthesia to be expected varies from 1 to 2 hours, and this should suffice in all normal cases The extent of the anæsthesia is sufficient for the performance of an episiotomy or for the application of the low forceps and the suturing of perinæal tears There are certain practical considerations that recommend the method The patient being conscious can be enlisted to coöperate in bearing down efforts as required She avoids the risk of an inhalation anæsthesia, while the operator has all the muscular relaxation of the outlet such as only a deep general anæsthetic could otherwise provide, thus minimising the likelihood of forceps delivery, episiotomy and laceration Shock and blood loss are minimal since the uterine tone is not in any way prejudiced by the atonic effects of a general anæsthetic and the chances of an atonic *postpartum* hæmorrhage are avoided The benefits to the baby are self-evident , the baby is no more affected than if the delivery had been conducted without any anæsthetic at all and no respiratory depression from inhalation anæsthesia is seen, with a resulting minimum of cases of asphyxia Sheldon has used this method in 64 cases and finds it eminently satisfactory It fulfils the ideals of any anæsthetic to be used in obstetrics and its safety for both mother and baby recommend its wider trial

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[1] *New Engl J Med* March 6 1941 p 404,

STUDENT AND SCREEN

THE sound film "Malaria" was shown on Oct 30 by the Ross Institute of the London School of Hygiene and Tropical Medicine This film made by the Shell Film Unit in collaboration with the institute, and produced by Arthur Elton and Graham Tharp, is a beautiful piece of work The immense problem of malaria is stated, the life history of the parasite is exposed, and finally the watcher is shown how this knowledge can be used as a rational basis for a campaign of preventive medicine on a wide scale The photography is arresting Different places where mosquitoes breed are shown as in a travel film , diagrams by Francis Rodker are particularly clear, and the complicated life-cycle of the parasite is demonstrated by excellent microphotographs, the work of Percy Smith and Sidney Beadle

Such a brilliant presentment of technical material demonstrates the use which could and should be made of the cinema in medical education Although there are now quite a number of scientific films, most have a limited audience and few are shown to students In the days before printing, education depended on lectures and readings from rare manuscript books Printing gave every student access to textbooks and saved him the labour of copying Lectures continued, nevertheless, to be the basis of education, and attendance at them is still compulsory in some universities, though it would be equally logical to compel the student to read Professor X's book before being allowed to sit for an exam As the technique of illustrating was perfected, photographs began to invade the pages of the textbooks and the student's eye could feast on static delineations of cells, tissues and organs which in life are never at rest The cinema film, the ultra-rapid camera and the microscope can be used to convey clearly to every member of an audience the details of almost any biological process , yet academic circles in England have hardly noticed this new weapon The sound film can combine the best, and most carefully prepared, lecture with the exact demonstration of phenomena Colour, magnification, speeding up or slowing down, can be used to reveal inaccessible processes larger than life and twice as natural

Even the work-shy student, with ears like the deaf adder's for the lecturer's drone and eyes revolted by the sight of type, might be stimulated by cinematic tuition Young men and maidens have been known to cut lectures, they seldom miss the flicks

The movie has one priceless perquisite Time is no object a thousand years is as a day, and a day as a thousand years, just a function of the speed of the clockwork Fifty years ago Muybridge's slow-motion pictures taught us how we run and jump, the name of Canti stands for the quick-motion solution of the solemn process of tissue culture The film is not just an adjuvant to the news story, it is the only way of bringing home the rhythm of life

THE BOOKS GO ROUND

THE International Guild of Hospital Librarians is not to be put off by a mere blitz Some hospitals have lost the better part of their libraries along with much else, others have been more fortunate *Book Trolley* for October tells of volumes repaired, librarians appointed, patients giving a capable hand, and service steadily maintained There are stories of resource, too—of the librarian who met the needs of two Polish airmen with seven Polish books and a dictionary, and trained a one-author man (the author was Nat Gould) to nibble at Zane Grey and then by gradual degrees to swallow most of John Buchan and a stiff dose of Cronin This reading habit grows on us with war

Nor are the troops forgotten The Red Cross and St John Hospital Library has been developing into a vigorous and widespread service since the war began Bales of books are being sent out regularly to the depots and hospitals in the Middle East, Kenya, Iraq, Iceland, West Africa and Gibraltar, as well as the sick quarters of the Navy and R A F During the summer books and magazines have been sent out at home and abroad at the rate of more than twenty thousand a month The books which come in from donors have to be sifted, for many people anxious to be of service have sent along all manner of books, regardless of aptness for the purpose Thus "A Treatise on Elephants" has been known to arrive cheek by jowl with "Better Bed Manners" At home war has made for useful decentralisation, book depots have been established in every county of England and Wales and in many provincial cities They collect and distribute, sort and mend books Voluntary librarians sometimes helped by professionals have been appointed who have been able to meet the needs of patients methodically, thanks to the experience gained in the library service during the past twenty years

TUBERCULOSIS IN DUBLIN CHILDREN

THE tuberculosis mortality of the child population of Dublin City for the years 1930–36 was 8 per 10,000 children in the age-groups 0–15, and for 1937–39, 7 per 10,000 These figures led the Irish Pædiatric Association to make a tuberculin survey in the hospitals of the city and a report compiled by Dr Dorothy Price has now been issued[1] Six hospitals participated in the survey, and the tuberculin test employed throughout the investigation was the Hamburger percutaneous ointment The association are well satisfied with this as an initial test, finding it reliable, simple and painless A group of 1121 children were tested in the age-groups 0–14, of whom 230 reacted The reactors at all ages were thus 20 5% of the total tested, the percentage increasing from 4 6 in the 0–1 year group to 46 1 in the 10–14 year group Sex-incidence showed a slight preponderance of female positive reactors (4%) No less than 22 unsuspected cases of active tuberculosis were diagnosed by means of the test The radiological findings in 116 of the children with positive reactions showed that 67 were suffering from active lesions which required treatment, 6 died Physical examination of the lungs gave very misleading results, primary pulmonary infection could not be diagnosed by stethoscopy, and tuberculous could not be distinguished from non-tuberculous pneumonia As a general rule a high erythrocyte sedimentation rate was found to indicate an exudative lesion, whereas a low one pointed either to a healing lesion or to a caseous or advanced tuberculous focus with bad prognosis An analysis of the source of infection in 38 cases, most of them under 5, showed that the father was the source of infection in 12 and the mother in 9 In attempting to correlate the housing conditions with the incidence of tuberculosis it was noted that the tuberculinisation of the childhood community appeared to be evenly distributed among all classes of dwelling, but that the slum child had much greater difficulty in healing his tuberculous lesion The word "slum" is used in the report to indicate "one room in a tenement house, basement, or dilapidated cottage" The report tabulates a number of possible measures for meeting the situation Excluding as impracticable the removal of a child exposed to infection under some sort of Grancher system, or the removal of the infecting adult by compulsory segregation, Dr Price considers that the best method of prevention is early diagnosis, combined with prophylactic vaccination, increased institutional accommodation, and educational propaganda

PNEUMOCOCCAL MENINGITIS

ALTHOUGH pneumococcal meningitis is comparatively rare—only 7% of Neal's[1] 3131 collected cases of acute and chronic meningitis were pneumococcal—it was until the introduction of the sulphonamides almost invariably fatal Perhaps more often secondary than primary, with otitis media and pneumonia the commonest primary infections, pneumococcal meningitis affects young children and elderly people more than it does other age-groups, having in this respect some resemblance to bronchopneumonia While any one of the 30 odd pneumococcus types may be the infecting agent, type III pneumococcus is the most common single type in this infection and is particularly associated with meningitis in older patients as a sequel to an insidious otitis media or mastoiditis Since sulphanilamide is effective against this type, determination of the pneumococcus type in meningitis is probably always worth while, for some patients do not easily tolerate sulphapyridine Indeed the good results obtained with sulphanilamide in the treatment of pneumococcal meningitis (including types other than type III) have prompted Steele and Gottlieb[2] in a recent review to rank it alongside sulphapyridine, which besides being more toxic is less uniformly absorbed Howard[3] in his report of the recovery of a child aged 1 year—a very rare occurrence at this age even in these sulphonamide days—suggests that sulphathiazole is the drug of choice If so it must be given at regular four-hourly intervals for its rapid excretion makes a constant concentration in the tissues difficult to maintain No one will now deny that all three of these sulphonamides can miraculously save patients with pneumococcal meningitis, but it is not easy to say what proportion of treated cases do actually recover, for it is inevitable that successes will be published more often than failures, and an analysis of the published cases is not a fair criterion of the case fatality under sulphonamide therapy This point is exemplified in the series of 14 cases with only one recovery recorded by Cooke[4] It will be noted that of his fourteen cases nine were over 45 years of age and two under 2 years which from the prognostic viewpoint are the unfavourable age groups with sulphonamide therapy the recovered patient was aged 22 Apart from age, probably the most important

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[1] *Irish J med Sci* July, 1941, p 241

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[1] Neal J B *J Amer med Ass* 1935 105 568
[2] Steele, C A and Gottlieb J *Arch intern Med* 1941, 68 211
[3] Howard S J *Lancet*, Nov 1 1941, p 512
[4] Cooke, W T *Ibid* p 510

factor in recovery is early institution of chemotherapy The drug should be given at the first suggestion of meningeal symptoms even though this means treating cases of meningismus, and the initial doses should be large enough to ensure an adequate concentration as early as possible , Steele and Gottlieb suggest a cerebrospinal fluid level of 10 mg per 100 c cm for sulphanilamide and 5 mg per 100 c cm for sulphapyridine Improvement should be evident within 2–3 days, but the drug should not be discontinued too soon, lest there be a relapse of the infection As always with sulphapyridine or sulphathiazole, as much fluid as possible should be given in order to avoid deposition of the drug in the urinary tract Surgical treatment is needed where there is middle ear or mastoid disease, and these cases usually do well Opinion is divided on the need for or value of adjuvant serum-treatment, but there is no conclusive evidence that it contributes to recovery

ESTIMATION OF SULPHONAMIDES IN THE BLOOD

IT is neither necessary nor practicable to estimate the amount of sulphanilamide or its derivatives in the blood of every patient receiving one of these drugs Apart from research there are occasions when the determination is helpful—for example, in the treatment of pneumococcal meningitis or to make sure that the drug is being adequately absorbed when an infection fails to respond to treatment Various methods have been elaborated for the determination , they usually depend on preliminary diazotisation of the sulphonamide followed by conjugation with an aromatic amine Sheftel[1] has described a bedside micro modification of Marshall's method Conjugation is effected with N(1-naphthyl) ethylenediamine dihydrochloride, all the reagents being added in the form of tablets to the blood diluted with water the final colour being compared with a lucite wedge in a special colorimeter Sheftel uses the same wedge for estimating sulphanilamide, sulphapyridine and sulphathiazole and does not mention the difficulties of comparison due to differences in the colours given by the three compounds As a bedside method the results should be adequate and the principal objection to the method seems to be the necessity for a special colorimeter Scott[2] discusses a simplification of the macroscopic laboratory methods which employ dimethyl-α-naphthylamine His method as applied to blood-plasma should avoid the errors arising from adsorption of sulphonamide on the protein, an error which various observers have shown to amount to 5 or 10% Scott describes the application of the method to whole blood, and while this is less satisfactory there are occasions when, because of hæmolysis or because only a small amount of blood can be obtained, plasma cannot be used

CUCUMBER SEEDS AND CLINICAL MEDICINE

A MATERIAL advance in knowledge often follows an improvement in the technique of assay But some of the newer methods involve the use of biological reagents which seem, to those not hardened to it by experience, to be bizarre and much too fantastic to be of use to ordinary men Some of the more exotic methods for the biological assay of the sex hormones may be recalled in this connexion It may even seem rather a far cry to many clinicians from cucumber seeds to scurvy, but, nevertheless, there is a connexion, and it is really a simple and logical one Cucumber seeds contain a very active enzyme which oxidises ascorbic acid Meiklejohn and Stewart[3] have taken advantage of this fact to elaborate what promises to be an elegant method for the determination of the antiscorbutic vitamin The principle may be compared with the one, more familiar to medical men, of using an enzyme from the Jack, or Soya bean, to determine the amount of urea in blood or urine The great advantage of Meiklejohn and Stewart's method over the older ones for estimating the amount of ascorbic acid in, let us say, urine, is the specificity which it introduces into the assay Nothing but ascorbic acid will react, which is far from being the case with the older methods As described, the method is naturally a little more complicated than the older ones, but it involves no elaborate apparatus and its manipulation ought to be relatively simple Incidentally, in the course of their research, Meiklejohn and Stewart have made a pretty little contribution to pure science, by showing that the enzyme which oxidises ascorbic acid is a copper protein compound It must give them considerable intellectual satisfaction, in these days of death, to think that they have been instrumental in discovering one of the biological functions of copper, and demonstrating one of the reasons why minute quantities of it seem to be essential to life

TUBERCULOUS RHEUMATISM

THE forty years that have elapsed since Poncet[1] introduced the concept of " tuberculous toxic polyarthritis " have seen much argument as to whether the syndrome exists, but relatively little fact that was either relevant to the issue or incontrovertible The extensive review covering 240 references by Brav and Hench[2] in 1934 concluded that evidence on which to base the concept was lacking Copeman[3] in this country was able to find only 12 case-records in the literature , typical tubercles were found in one out of four biopsies Proof that the syndrome is distinct both from rheumatoid arthritis in a patient with tuberculosis and from tuberculosis affecting several joints (which [illegible] occasionally does) must depend on the demonstration of a histological appearance differing from either Kling and Levine[4] have now published a full and carefully documented account of one such supposed case, with a previous history of " open " tuberculosis, an arthritis thought to be of rheumatoid type in the left knee, and fleeting pains in various other joints European observers diagnosed Poncet-type rheumatism A synovectomy revealed, histologically, fibrotic tubercles and caseation with a few acid-fast bacilli, a positive culture and positive animal inoculation The conclusion reached is that a mild type of tuberculous polyarthritis does occur, due to hæmatogenous infection from a visceral focus associated with high tissue resistance The use of Poncet's term " rhumatisme tuberculeux " should be avoided, for it leads only to confusion , the diagnosis made should be either " rheumatoid arthritis " or " non-destructive tuberculous arthritis " In this country we seldom diagnose " tuberculous rheumatism," but it seems possible that some cases of this nature are masquerading as " atypical, or monarticular, rheumatoid arthritis " to the detriment of the patient and the public The failure of aspiration to give confirmation in proved cases of tuberculous arthritis points to biopsy as the only certain and incontrovertible proof This should, in selected cases, be more often practised

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Surgeon Rear-Admiral G GORDON-TAYLOR F R C S , has arrived in Boston to attend the clinical congress of the American College of Surgeons as a representative of the Royal Navy and the Royal College of Surgeons of England

The Minister of Health has asked that tuberculosis notifications from county councils, county borough councils, urban and rural district councils and joint tuberculosis boards shall reach his department not later than six days after the end of the four-weekly periods to which the returns relate

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[1] Sheftel A G *J Amer med Ass* 1941, 117, 439
[2] Scott L D *Brit J exp Path* August 1941, p 220
[3] Meiklejohn, G T and Stewart C P *Biocem J* 1941, 35, 755, 761

[1] Poncet A *Lyon Med* 1902 99, 65
[2] Brav E A and Hench P S *J Bone Jt Surg* 1934, 16 839
[3] Copeman W S C *Rep chron rheum Dis* 1936, 2 24
[4] Kling D H and Levine, M A *Arch Surg* 1941, 42 956

Special Articles

JUVENILE DELINQUENCY IN WAR-TIME

REPORT FROM THE BRISTOL CHILD-GUIDANCE CLINIC

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AN analysis has been made of the cases referred by magistrates and probation officers to the Bristol child-guidance clinic during the past two years These cases constitute approximately a third of all the children actually charged, and these delinquents in their turn represent only a small proportion of the socially unsatisfactory and incompetent group in the population It is however a significant proportion, since it is obviously constituted by those whose degree of incompetence is sufficiently serious to prevent their making a satisfactory social adjustment without some special provision for training

The period April, 1939–40, can be taken as an example of a peace-time era, because the war, as far as this country was concerned, was then in a latent state The period April, 1940–41, can be considered representative of a war year Restrictions had been increased, bombing had begun in June and the war had involved in some way practically every family in Bristol

CASES REFERRED TO THE CLINIC

The number of juvenile offenders who were charged and referred by magistrates and probation officers to the clinic was 68 in 1939–40, and 100 in 1910–41 These children have been classified into groups according to their intelligence (see table)

Group	IQ	1939–40	1940–41
		Per cent	
Normal	86 and over	69	46
Very dull	70–85	7 4	31
High grade feeble minded	55–70	22 1	21
Certifiable mental defective	under 55	1 5	2
Total subnormal	under 85	31	54

An analysis of the war-year cases shows not only a heavy incidence of recidivism (39%) but also an additional and almost equally large group of children (30%) who had committed previous offences—in some cases as many as 11—for which no charge had been preferred Though technically first offenders, they were in actual fact far from so being Thus, in all, 69% had committed previous offences

A further analysis of the recidivist figures brought out the serious problem presented by the very dull section (intelligence quotient 70–85) Intelligence distribution among 39 children previously charged was as follows

I Q under 70	8 (21%)	86–100	9 (23%)
70–85	19 (49%)	Over 100	3 (7%)

The importance in social adjustment of a normal home background with adequate and consistent domestic discipline, and the unsatisfactory state of affairs which results when these factors are missing is indicated by the following figures

	Per cent
Parents divorced, separated or deserted	15
One parent dead, away from home for long periods, or both parents working	15
Other domestic factors	22
Total	52

Out of this 52% it will be seen that in at least 30% a “ broken home ” was a contributory factor

Parallel with these analyses, an assessment was made of the children who were seriously backward in their school work, even when full allowance had been made for their limited mental capacity, 63% fell in this group in 1939–40, and 47% in 1940–41 In both years, twice as many offences were committed in the half year October to April as in the April to October half Among the mentally subnormal groups, however, the numbers in the winter were twice those of the summer months in the peace year, and had risen in the war year to three times those of the summer months

DISTRIBUTION OF THE INCREASE

There has been a 47% general increase in the numbers referred from the juvenile courts in the war period 1940–41 compared with 1939–40 Among the mentally subnormal groups, the increase has been a disproportionately greater one of 74%

Normal children —It is encouraging to notice that among children of normal mentality there have been considerably fewer charges during the war period Whether the decrease of 23% indicates actually fewer offences in this group, or whether the apparent decline is merely the result of more opportunities of committing offences with less chance of discovery, is impossible to discuss from these figures There are, however, justifiable grounds for believing that the more intelligent children are more readily able to find substitute occupations and recreations when their normal outlets are closed or reduced by war-time conditions When fathers are in the Forces or mothers are at work, many of these children now assume greater responsibilities and tend to take a larger share in the organisation of the home and in consequence have less time on their hands for possible mischief

Very dull children —The main rise in numbers has been in the group of children classified as very dull In this group (I Q 70–85) the numbers have risen sixfold and they now account for nearly a third of the total cases These children at 14 have mental ages ranging from 9½ to 11½ years They have little foresight and are unable to work out in advance the consequence of their actions Their memories are poor so that they learn very slowly from experience Being less critical, they are more suggestible and easily led astray With these handicaps they require more supervision than children of normal intelligence and though not actually defective they are often mentally inefficient Under war conditions they are receiving not more but less supervision In many cases the father has left home for the Forces, or is less often at home, either working on *night shift* or overtime in armaments factories, or is in one of the civil defence services In some cases, the mother also has less time in the home than formerly, she is either working on munitions or in the defence services, or is in some other way attempting to supplement the family income to meet rising costs

Added to the decrease in parental supervision, there is also the effect of the disorganisation necessarily brought about in the schools by damage, evacuation of personnel, altered hours of work and disturbed nights School attendance officers are heavily overworked Yet they often have to waste valuable time in abortive efforts to make contact with the parents of children who for no other reason than lack of supervision are failing to attend school These seriously dull children have more drive than those in the more defective groups, but their drive is often uncontrolled and misdirected It is not surprising that the main increase in juvenile delinquency comes from this group

High-grade feeble-minded children —These children at 14 have mental capacities equivalent to children of 7½–9½ years They are certifiable under the Education Act 1921, but not under the Mental Deficiency Act 1927 In this group (I Q 55–70) the actual numbers during the war year rose by 40%, though the proportional incidence remained constant at about 21%, or a fifth of all cases This percentage is alarming, since the proportion of people normally found to fall in this group from a cross-section of the whole population is only 1 5–2% These children are not suitable candidates for institutions or colonies for the lower grades of defect With suitable training they should become economically independent adults , from their ranks are drawn a large proportion of the casual labourers and unskilled artisans essentia to industry and the maintenance of the public services On the other hand, they are unlikely to benefit from residence in a Home Office approved school They find difficulty in grasping the relation between cause and effect, and with the handicap of a poor memory they lack common foresight and cannot readily learn from previous experience They do not give satisfaction on probation, for though they are often suggestible and readily give promises they are incapable of keeping these promises of better behaviour without consistent supervision, and seldom see any connexion between their actions and the consequences There is thus no satisfactory provision for them and they remain a dangerously weak link in the social structure

Certifiable defectives—The last and smallest group to which attention is drawn is that of defectives certifiable under the Mental Deficiency Act 1927

These children (I Q under 55) at 14 have a mental age below that of an average child of 7½ years The actual percentage of these sent by the juvenile court to the clinic remained the same in the war year as in the previous year (about 2% of all cases) although twice as many of these children were actually referred Very few of these defectives have sufficient initiative to get into serious trouble, and such cases as pass through the courts have as a rule been exploited by people with relatively higher intelligence It should be noted that of 40 children belonging to the last two groups of defectives referred from the juvenile court, only one had attended a special school, the other 39 had attended an ordinary elementary school Incidentally, in a period earlier than the two years under discussion, out of 70 juvenile-court cases who were defectives only one had been to a special school It does not require much imagination to envisage the wastage which this state of affairs involves in the efforts of the school staffs, in the slowing down of the education of the more normal children, and in the apathy induced in these defective children by failure to keep up with the normal curriculum

The extent of recidivism, particularly among the more seriously dull groups, points clearly to the present lack of appropriate provision for dealing with those who are mentally incapable of profiting from warnings and who do not understand the meaning of probation as a period in which to prove their ability and their intention to keep out of future trouble Their attitude in fact is rather that probation offers a "soft option" and they feel that they have justifiable cause for resentment and complaint if probation is not renewed on the occasion of further charges In the borderline groups (I Q under 85) it is hardly surprising that they should take this view since, when approved schools are unwilling to accept them, there is no other course open to the magistrates That birching has not the deterrent effect in these dull children commonly attributed to it has been proved over and over again by the number of cases in which such punishment has been carried out as often as four or five times in as many weeks, without any improvement in the attitude of those who have received it

HOME AND EDUCATION

Present abnormal conditions are revealing more clearly than ever the importance of consistent home discipline and normal family life as major factors in social adjustment Juvenile court cases for the past year provide evidence for study of the factors which are hampering preventive measures Economic deprivation in itself is not so great an aggravating factor in the increase in juvenile delinquency as the lack of consistent parental control Occasional sporadic attempts at severe punishment for misdemeanours which are as frequently condoned or allowed to pass unchecked results in an equally unreliable attitude on the part of the child, especially when the parents' attitude swings unaccountably from injudicious harshness to foolish leniency Many parents in court, fearing that they will be censured, attempt to give a misleading impression of having exerted a satisfactory degree of control, but directly they feel that the immediate crisis has passed relapse into their favourite attitude of laissez-faire Such parents cannot be relied on to coöperate satisfactorily in probation It is significant that in more than half the cases charged during the past year there was evidence of lack of normal home discipline Present social conditions are undoubtedly contributing to an increased number of homes where parents are absent for long periods, or where owing to the demands of night work they must sleep during the daytime and so cannot give normal supervision Lack of control cannot be attributed to war conditions alone In 15% of cases there was a history of unsatisfactory matrimonial situations, while in a further 22% none of these factors was present and lack of control was mainly due to poor intelligence or ineffectual handling on the part of both parents

Backwardness in school work was further investigated among the juvenile delinquents and a very high proportion of educationally retarded children was found These children had failed to reach their possible level, even when full allowance was made for their intellectual defects Among juvenile delinquents of school age, there has been a rise of 6% in those children who are failing to make the progress of which they are mentally capable This figure does not include those dull and defective children who are working up to their limited capacities These educationally backward children are acquiring or have already acquired a habit of failure, they are beginning to drift and will continue to do so when they leave school Of children of employable age, we found 60% seriously educationally retarded in the fundamental subjects This figure for Bristol delinquents closely corresponds to the percentage of children found to be seriously educationally retarded among 4000 juvenile delinquents examined in the London metropolitan area a few years ago

The long blackout hours in winter involve restrictions of many possible outlets which are available in the long summer evenings These restrictions are felt to some extent by everyone, but whereas people of normal abilities are able to find recreation in reading or in constructive occupations and hobbies those children who lack both interest and skill in such pastimes spend their leisure time in aimless wandering and street gang play and do not easily discover substitute occupations Such children are only too ready to take advantage of the opportunities to enter damaged buildings, and to tamper with the easily accessible A R P equipment in public shelters, without either realising or considering the possibility that their actions may involve other people's safety or property Many of them come from housing estates of the slum-clearance type Geographically healthy these estates are too large to have any sort of social cohesion, while opportunities for corporate life and recreation are fewer than were available in the neighbourhoods from which the families originally were moved

RECOMMENDATIONS

War conditions, including evacuation, necessitate a short-term policy during the war and a long-term policy for peace-time conditions Ascertainment of dull children in the schools should of course be continued and if possible extended At present, there is little or no provision for half the class of children coming before the juvenile court in increasingly large numbers

Very dull children (I Q 70–85) are not certifiable under either act, and neither can nor should be segregated with lower grade defectives (I Q under 55) in colonies On the other hand, they are not welcomed by the headmasters of approved schools, and rightly so, since they cannot benefit from the curriculum of the ordinary approved school At present these cases can only be put on probation, and in spite of the devoted labours of the probation officers it must be acknowledged that results in this group are unsatisfactory Very dull children over school age are found by employers to be poor workmen, and in consequence they are always changing their occupation Parental discipline is often absent, owing to war conditions, and opportunities for adventure are multiplied, particularly in bombed areas Much more supervision than a weekly interview by the probation officer is required in these cases As things are the child comes again and again before the court, and the numbers of such children are far out of proportion to their percentage incidence in the population

A special approved school is needed for these children, with an appropriately adjusted curriculum in which class-work should occupy only part of the time and should be linked with occupational training suitable for their limited capacities and likely to be an important factor in fitting them to live in the general community Eighteen months or two years in such a school would condition these children and provide them with the necessary day to day supervision and discipline which is so badly needed If an effort were made to train them to make full use of their capacities, even if limited, they should be able to take up a suitable occupation on discharge with some hope of permanence

The same remarks apply to high-grade feeble-minded children (I Q 55–70) These are certifiable under the Education Act, and if of school age can be sent to a special school, but they are not certifiable under the Mental Deficiency Act, and are not suitable for segregation in existing colonies, which are intended for those whose social incompetence is of such a degree that they are incapable of attaining economic independence It is even more difficult to find suitable employment for them than for the very dull, and they are extremely difficult to supervise on probation, moreover, their parents are often borderline or actual defectives, and are unable to exercise proper discipline Were there suitable provision in residential special schools for many of this type it is unlikely that anything like the disproportionately large numbers of them now being charged would ever have to appear in court The heavy incidence of delinquency among them is not merely a war effect in more normal times anything from 10 to 15 times as many cases appear to be drawn from this group as should reasonably be expected if they appeared roughly in proportion to their incidence in the general population

Many certifiable defectives (I Q under 55) who come before the courts would never have been charged had they been given the chance of training at a day occupation centre, which if properly organised should fit some for partial self-support and would at least keep others out of mischief Those who in spite of such training, or from lack of suitable home circumstances, were found still to be incapable of social adjustment should, of course, be certified and sent to a colony

Evacuation —Neither the high-grade feeble-minded (I Q 55–70) nor the defectives (I Q under 55) are suitable for evacuation to ordinary billets in reception areas Quite a number, however, have been sent and have given a good deal of trouble to the foster parents and to the authorities in the reception areas Children with I Q under 55 cannot be expected to receive from the ordinary billeting arrangements that training and supervision which colony placement provides They should therefore be certified and sent to such institutes as are provided in comparatively safe districts outside the city Children with I Q 55–70 should normally be certified under the Education Act and sent to a special school, though nothing like full advantage has been taken of the available powers, partly because of the limited accommodation available in Bristol These children, if evacuated, should go en bloc, as a residential school or schools They require special supervision and teaching which cannot be provided in the ordinary billets or in the ordinary rural schools—which, with the advent of evacuees, are usually understaffed

Some of the very dull group (I Q 70–85) would also do better in a residential school or farm institute than in ordinary billets This applies particularly to those who have been in frequent trouble School work would not take up all the syllabus, and a good deal of time could usefully be spent in outdoor work or in an occupational centre which could be easily provided in a farm school

Children remaining at home —In all cases where parental supervision is inadequate and a child is defective within the meaning of the act, he should be sent to a colony outside the target area The high-grade feeble-minded (I Q 55–70) should be drafted into a special school, where there should soon be more places available owing to evacuation It is to be hoped that magistrates and teachers will encourage parents to take advantage of special day-school provision For the group of very dull children (I Q 70–85) who form the “ C ” and “ D ” streams in many schools, it would probably be useful if less class-work and more occupational work could be arranged

For all groups, during the winter, further organisation of leisure is needed to provide outlets for misdirected energies and the desire for adventure normal in the growing boy and girl Much good work has been done on a small scale during the past winter in the social centres which have sprung up all over the city in crypt and basement shelters These provided the atmosphere of a club where neighbours could meet their friends in the evening in safety, and replaced to some extent the usual recreations made impossible by the blackout and A R P More centres might be developed on these lines in places of safety, where parents could send their children, not to sleep but to spend the evening Recreational facilities such as film shows and concerts in these centres might be expanded

Long-term policy should be preventive The present provision for both very dull and defective children is inadequate It is essential that sufficient special school accommodation should be provided after the war for the group of high-grade feeble-minded, and one such school should be residential Early ascertainment and the transfer of children with I Q 55–70 to a special school where the curriculum will be suited to their special requirements, including occupational training, will be desirable if these children are to be brought up as good citizens playing their parts according to their talents If they are to be prevented from drifting into an apathetic state in which they are only conscious of all-round failure, or into a situation where they can evade all training and education because of lack of provision for their needs, it will be necessary to develop what skill they have so that they may take that pride in their work which is necessary to every citizen’s self-respect

We wish to thank Councillor F C Williams, chairman of Bristol education committee, for permission to publish this paper, and Lady Inskip and Dr J F Lyons for their interest

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PARALLELS IN NURSING PROBLEMS

AFRICA is in the act of developing a nursing service to meet the special needs of a scattered and superstitious rural community It might seem on the face of it that nursing problems encountered there must differ fundamentally from those which trouble us here, but Dr Janet Welch’s study [1] of nursing education in relation to the cultural background in East and South-East African colonies shows that we can learn from their difficulties, as they can learn from our mistakes Speaking at a meeting of the Overseas Association of the Medical Women’s Federation on Oct 20, Dr Welch said that it would be difficult to set up any systematic form of nursing education in the African colonies until it was clear whether the policy of the medical authorities was going to put emphasis on curative or preventive work She believed that the hospitals must be centres of social teaching and the nurses must be trained as community nurses from the start, with a sound education in the preventive aspects of hygiene, midwifery, maternity and child-welfare work, and nutrition

A BACKGROUND OF WITCHCRAFT

In Africa as here, the standard of education in the nursing candidate is often lower than could be wished But whereas here secondary education is available for all who attain a given standard, in many African districts primary education alone is available Thus at the time of Dr Welch’s survey, Makerere College in Uganda was giving a full secondary education course, and several other schools were giving incomplete courses, in Kenya there were no schools giving a full secondary course but two grant-aided missionary schools offered junior secondary standard, in Tanganyika five schools were giving some secondary education and in Nyasaland and Northern Rhodesia no secondary education was available It is difficult, even in England with a background of Western culture, to imbue some of the girls now enrolling with any precise idea of the principles underlying aseptic technique and barrier nursing With an African girl coming from a home where sickness is automatically attributed to witchcraft, and to whom the idea of bacteria as a cause of disease is completely foreign, the difficulty is formidable If she has reached standard six she may be able to follow simple explanations in English, if not she must be taught in the vernacular Yet these obstacles can be overcome and Dr Welch records how

She introduced a group of African mothers in a village clinic to the conception of bacteria by easy stages, first showing them how spectacles—with which they were familiar—enlarged the size of letters; then letting them magnify common objects with a hand lens, so that they came to realise that invisible things might be enlarged until they became visible. After this the women were introduced to the microscope and quickly learned to see new detail in familiar objects—dust on a hair, dirt on a fly's leg, pollen in a flower. Then followed a discussion of the idea that invisible things might have life—things smaller than a mite—and the women were sent to draw water from the stream which they used for bathing, drinking and washing. "The demonstration of amœbæ and other microscopic water life in what appeared to them as clear water astounds them, but convinces them of the world of micro-organisms in a way that weeks of verbal description would not." It is easy to make the final step and persuade them that some living organisms are the cause of disease if they enter the body.

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[1] Made possible by a grant from the Carnegie Corporation, New York, and printed by the King s Crown Press, a division of the Columbia University Press It can be obtained from the Carnegie Corporation New York City, or from Miss Wrong, International Committee on Christian Literature, 2 Eaton Gate, London, S W 1

This "laboratory approach" would make it possible to teach the nurse the principles underlying her training, and also to introduce the preventive aspects of her work from the start.

GIVE ME THE FIRST YEAR AND ——

Many of the African girls marry and leave the nursing school within a year of entering. During their first year they are used largely as unskilled labour to run the hospitals, and there is little attempt to equip them as future educators of their people. Dr Welch believes that the first year of training can be so planned that it is a unit in itself, providing the nurse with standards and principles for the prevention of disease. Thus, however short her training, she would return to her home fit to teach her friends something better and to establish new ideas of hygiene, nutrition and the care of the child. This is especially important in Africa because the women control the acceptance of new ideas. Many of the tribes were originally matrilinear in structure, and the women maintain their authority because of their importance in the social economy of the tribe as planters, reapers and marketers of the crops. Thus any advance in public health must first win the approval of the women, many of whom are jealous guardians of tribal medical practices. They are largely inaccessible to teaching from medical men, especially in obstetrics, for most of them will not tolerate the presence of a man at a confinement. The one person likely to gain their ear is a fellow African woman trained as a community nurse. Dr Welch has proposed a first-year course for the student nurse in which this principle is accepted.

In her first term the student is introduced to microbiology in the manner described, to anatomy, physiology and very simple biochemistry (as a background to the understanding of nutrition), to the ways in which health can be maintained in the community and the family, to the history of medicine and nursing told like a story, and to simple nursing arts. Thus at the outset her attention is oriented not to sickness but to health and its maintenance. She is also encouraged to discuss the magical practices of her people and to see how some have aspects in common with her new knowledge, while some are dangerous, and she must be taught how to teach all this to others.

In her second term she begins the study of nutrition and of diets for infants and children, and is helped to adjust herself to the social and ethical duties of the professional nurse.

In her third term, in addition to her other studies, she learns the properties and dosage of drugs—important for a people who use active herbs in dangerous quantities in their magic—and is introduced to sick nursing and to the study of the common diseases of the country, including communicable diseases.

EX AFRICA ALIQUID NOVI

This course with its emphasis on health and prevention, on principles and practical work, might well be modified to suit English conditions and be taken by our own first-year nurses. But clearly it could never be demanded of a girl who is expected at the same time to give routine service in the hospital wards. It is a course for a student, not an apprentice. Dr Welch hopes to see African nursing freed at the outset from one of the gravest handicaps of our own system. The British student is expected to give long hours of service which prevent her from making the best use of what systematic instruction she receives; lectures attended after a day in the ward must be outstanding if they are to excite more than languid attention. The defect could be largely overcome if the nursing school existed purely to train and turn out the best possible nurses, and if it was financially independent of the hospital, which would have to be run by its own fully qualified staff. This has been tried successfully in America and Canada, and in various European hospitals established by the Rockefeller Foundation after the last war. In such a hospital in Warsaw an entire ward at a time is given over to the students under the charge of the staff of the school of nursing. All the nursing in the ward is carried out by the students, supervised by their teachers, and the cases allotted to them demand a gradually increasing degree of knowledge and skill. At the end of a chosen period the ward is exchanged for another one in which students can gain a different type of experience. Dr Welch commends this system and suggests that the hours spent by student nurses in the wards should be graded; thus they would begin by spending only one or two hours a day in the ward, the rest of the day being used for instruction in the other items of the course. The working week in the first year would occupy 29–38 hours, with Saturday and Sunday off in the first term, and Saturday afternoon and Sunday in the second and third terms; there would be a month's holiday in the year. This seems to us a reasonable study-week, in line with the hours worked by university students. We can see no excuse for the custom by which a student nurse is expected to work harder than any other class of student, nor is an eighteen-year-old girl physically fitted to spend long arduous hours in contact with the chances of infection which a hospital offers. A reform in our system of nursing to this or a comparable pattern would do much to make the profession attractive to our more intelligent girls.

THE KIDNEYS AND HYPERTENSION

EXPERIMENTAL PROGRESS

WE have known for several years that renal ischæmia experimentally produced causes hypertension in animals. Goldblatt summarised[1] the available experimental data in 1938, when it was already recognised that if such experimental ischæmia was severe enough to impair renal excretion arteriosclerotic lesions would begin to develop similar to those found in essential hypertension in man. It was clear, too, that the rise of tension was produced by some biochemical agent, not by a nervous mechanism. Since then we have learned a good deal more, thanks largely to independent groups of workers in the Argentine and in Indianapolis, and it is possible to set out briefly the points on which they agree. The normal kidney secretes a substance called renin, first described by Tigerstedt and Bergmann in 1893: renin is a pressor substance and was believed until recently to be a vasoconstrictor. Actually, the story is much more complicated than that: renin acts as a proteolytic enzyme on a globulin ("hypertensin precursor") present in normal serum, and converts it into a substance called hypertensin. The Argentine workers consider that renin only has a pressor action because it produces hypertensin, which they regard as the immediate cause of the rise in blood-pressure. The Indianapolis workers, however, have embroidered the theme by showing that hypertensin is not a vasoconstrictor itself but can only cause vasoconstriction when activated by another substance present in the blood. As if this did not make matters complicated enough, both groups of workers agree that the blood contains a substance which destroys or inhibits the action of hypertensin, and the Indianapolis group go further and say there is a substance which inhibits activated hypertensin as well. With all these substances being manufactured at varying rates it is easy to see that hypertension in man may have multiple causes.

The first step leading to the opinions just set out was the demonstration that venous blood flowing from an ischæmic dog kidney had a vasoconstrictor action on the Lawen-Trendelenburg toad preparation.[2] Moreover, if an ischæmic kidney from a dog was transplanted into the neck of another dog the second dog's blood-pressure rose[3] Again, if the renal vessels of a dog are clamped, the blood-pressure rises when the clamp is released Although these results had been confirmed many times, observers still doubted whether there was enough pressor substance present in the systemic blood to account for the hypertension Workers in Toronto,[4] however, showed in cross-circulation experiments that if blood from hypertensive dogs was transfused into nephrectomised dogs there was a transient rise of blood-pressure in the recipients They thought that other workers had failed to get this pressor effect either because too little blood had been transfused or because the receiving animals had intact kidneys (there is plenty of evidence that normal kidney tissue will inactivate the pressor substance formed in the ischæmic kidney) In their own experiments they used a special pump which ensured that the same quantity of blood passed in each direction, and transferred about 3 litres per hour Thus the substance or substances produced by the ischæmic kidney were present in the blood in sufficient quantity to cause a rise in blood-pressure The next step was to investigate these substances The Indianapolis workers showed that renin in Ringer's solution did not constrict the blood-vessels in an isolated dog's tail[5], when blood was added to the solution, however, vasoconstriction occurred Thus it was clear that renin alone had no pressor effect it acted on some constituent of the blood to produce a vasoconstrictor substance This is the substance which the Argentine workers had called hypertensin, the Indianapolis workers unfortunately named it angiotonin,[6] thus adding verbal confusion to a subject already reasonably tricky From accounts of the properties of the two substances there is little doubt that they are identical, and the earlier term "hypertensin" will be used here Both groups of workers demonstrated[6,7] that renin acted on a globulin—found in the blood but not in other tissues—to produce hypertensin, and that hypertensin had a smaller molecule than its precursor They also showed that the concentration of hypertensin produced depended on the amount of the globulin present and was largely independent of the amount of renin, and this, together with the facts that renin is heat labile and acts best at a given pH, suggested that it was a proteolytic enzyme Some of the Indianapolis workers isolated a crystalline picrate and oxalate of hypertensin, but give no melting points or elementary compositions in their paper The Argentine workers[8] find that hypertensin is inactivated by pepsin, and regard it as polypeptide, though it is reported from Indianapolis to give a negative biuret reaction The Argentine workers find that when renin is incubated with blood the hypertensin content first increases rapidly, then diminishes and finally disappears, this is held to be due to the action of an inhibiting substance called hypertensinase Since hypertensinase is also heat labile and has an optimal pH for its action, it too may be regarded as an enzyme Other observations are that hypertensin-precursor is diminished by injection of renin and increased by nephrectomy, and that nephrectomy also decreases the hypertensinase present in the blood These observations explain why nephrectomised animals are more sensitive than intact ones to both renin and hypertensin, and also why animals soon develop a tolerance (tachyphylaxis) to repeated renin injections but not to repeated injections of hypertensin These findings agree in general with those of the Indianapolis group, who have further shown[9] that hypertensin in Ringer's solution produced vasoconstriction in the isolated rabbit ear only on the first trial or two, after these trials, the vasoconstrictor action was lost, and was only recovered when fresh blood was added to the perfusing fluid Hence arose the conception of a hypertensin-activator If blood from nephrectomised dogs is used in such perfusion experiments, the vasoconstrictor activity of the hypertensin is greater than it is with normal blood, yet the effect with normal blood is maximal in the sense that no increase in vasoconstriction can be produced by increasing the amount of blood used in the experiment Thus it can be supposed that there is an inhibitor substance present in normal blood which is diminished by nephrectomy There is evidence that this substance is not hypertensinase

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[1] Goldblatt H *Bull N Y Acad Med* 1938 14 523

[2] Fasciolo J C Houssay, B A and Taquini A C *J Physiol* 1938, 94 281

Hypertension, then, may be produced by increased production of renin, hypertensin-precursor or hypertensin-activator, or by decreased production of hypertensinase or hypertensin inhibitor, or by combinations of any of these factors The existence of hypertensinase and hypertensin-inhibitor offers a hope of a method of treating human hypertension, and already at least three reports have appeared recording lowering of blood-pressure in animals and in patients with hypertension The extracts of kidney used have been essentially similar and the amounts high The extract from 100–150 g of pig kidney has been given daily by Jensen and his colleagues[10] to lower the blood-pressure in rats with experimental hypertension, this figure is slightly lower than that given by Page and his collaborators,[11] who show that the extract from 1000 g of fresh kidney may have to be injected daily for some weeks to improve patients with malignant hypertension The claim of Grollman and others[12] that oral administration is effective in rats has not been confirmed by other workers The rat does however provide a convenient animal for experimental assay so that chemical advances may be speeded, and it is on these advances that clinical application must at present wait

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Infectious Disease in England and Wales

WEEK ENDED OCT 25

Notifications —The following cases of infectious disease were notified during the week smallpox 0, scarlet fever 1224, whooping-cough, 1985, diphtheria, 1017, paratyphoid, 53, typhoid, 23, measles (excluding rubella), 745, pneumonia (primary or influenzal), 631, puerperal pyrexia, 143, cerebrospinal fever, 88, poliomyelitis, 50, polio-encephalitis, 4, encephalitis lethargica, 2, dysentery, 139, ophthalmia neonatorum, 77 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Oct 22 was 1287, including scarlet fever, 167 diphtheria, 280, measles, 20, whooping cough, 511, enteritis 22, chicken pox, 23, erysipelas, 28, mumps, 3, poliomyelitis, 6, dysentery, 18, cerebrospinal fever, 16, puerperal sepsis, 12, enteric fevers, 42, other diseases (non infectious) 47, not yet diagnosed, 92

Deaths —In 126 great towns there were no deaths from measles or enteric fevers (1 from enteric in Greater London), 2 (0) from scarlet fever, 16 (2) from whooping cough, 31 (3) from diphtheria, 56 (3) from diarrhœa and enteritis under 2 years, and 15 (0) from influenza The figures in parentheses are those for London itself

Fatal cases of diphtheria were scattered over 19 great towns Liverpool reporting 4 There were 8 deaths from diarrhœa in Manchester and 7 in Birmingham

The number of stillbirths notified during the week was 176 (corresponding to a rate of 32 per thousand total births), including 20 in London

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NUTRITION IN IRELAND —The *Irish Press* of Oct 17 announces that a dietetic council has been set up "to experiment on ways and means of aiding the people's nutrition under war time conditions, paying special attention to children's diet" The following have been appointed Dr P T O'Farrell (chairman), Prof W J E Jessop (secretary), Prof W R Fearon, Dr Catherine O'Brien, Dr John Mowbray and Dr Oliver FitzGerald

Public Health

Future of the School Medical Service

Dr E H Wilkins[1] has lately suggested some reforms to improve the school medical service and make it coherent with any general plan for a complete medical service for the nation He divides the existing defects of the school service into those remediable by changes within the sphere of the service itself or of public hygiene, and those which are bound up with the progress of general social welfare The school medical officer, unlike his colleagues in other branches of the profession with the exception of the obstetricians, deals mainly with people who are, or are presumed to be, healthy, so most of his work is more closely allied to social amenities than to the treatment of the sick Yet he came into existence with the object of doing work which is strictly medical—to detect and obtain treatment for children who were unhealthy and who, in the state of medical practice as it was 35 years ago, missed the attention of the family doctor which they should have received He has always been difficult to place in the medical hierarchy and in consequence occupies a somewhat low position though in fact his work is now the highest objective of the medical profession Wilkins takes the view most generally held that the school service should be incorporated with the other health services, the medical officer of health being the chief school medical officer and the assistant school medical officer also assistant medical officer of health The advantages of this system are fairly obvious, but it has several drawbacks James Kerr pleaded consistently for the separation of school medicine from general public health, though his immediate successors who were independent of the public-health office were in general not in favour of the separation The objection to the fusion is that school medicine has become highly specialised, to be successful the practitioner must give his life to it, and it is not in the interest of the work or of those who undertake it that school medicine should be a side issue and a stepping-stone to general public health The advantages of liaison of school work with other public-health functions, especially with infant welfare, outweigh *all* possible disadvantages so far as the service is concerned, but the subsidiary position of those who do the school work is against its development A matter which gave rise to much contention in the past is the relationship of school medical officers with general practitioners School medicine was one of the first and certainly the greatest of the encroachments of public medicine on private practice This controversy has died down for a time, but it will come up again should the planning of the future of medicine develop on the lines of national health insurance Specific medical treatment is *no real* part of school medicine, but supervision and management of children certainly is, and there is no fixed division between what is treatment and what is management

The reforms needed in the technical part of school medicine must be left to the school medical officers themselves to settle The discussion over the value of periodic medical inspections, in which Wilkins is emphatically in favour of their retention with several modifications, can be understood only by those who are familiar with the work and with its aims, but the pursuit of its aims calls for great reforms in the social welfare of the people, for poverty in all its aspects and implications is the great stumbling block to the maintenance and development of health Most of the work of school medical officers is among normals, by which is meant average samples, and its failure has come from confusing normality with full health, a mistake made constantly in all medicine, for we have so little experience of full health that we can hardly be said to know what it is like We see this mistake outstandingly in the assessment of nutrition, about which Wilkins has much to say However we may define nutrition, it is certain that the vast majority of children are round about the normal, but it is equally certain that few if any of the normals are in the state of maximum nutrition which alone is the state of health The achievement of this maximum does not lie within the province of medical attention, but in obtaining the best environmental conditions, especially during the period of development Wilkins says truly "The implication that the classifying of 90% of children in the first two of the Board's categories ("excellent" and "normal") indicates that these children are well fed is sheer nonsense, conflicting as it does with a mass of evidence based on ascertained fact" The object of school medicine is to raise the standard of normality in all particulars so that it approaches nearer to full health This of course calls for some treatment which the medical profession can furnish, but far more for social treatment to raise the level of general environment

From the Annual Reports

CHELSEA

From Dr Leslie McCarthy's brief report for Chelsea we learn why the population shrank from the 1939 figure and the death-rate rose "Other violence," mainly war casualties, caused some of the total of 851 deaths Of the other deaths, 204 were due to heart disease, 106 to cancer and 68 to vascular lesions This suggests that the population of Chelsea which stayed was elderly As Chelsea was an evacuation area throughout the year the average population will have been less than the mid-year population, so the true death-rate, whether crude or corrected, will be higher than the 22 recorded What was the standardised rate, which alone reflects the health of the population, will never be known

EASTBOURNE

This county borough was a reception area in the first half of the year and an evacuation area after the fall of France since when it has been a restricted area In contrast to Ramsgate it suffered little from air-raids, and because it has always been more of a residential town for retired people than a holiday resort it has suffered less from the loss of its visiting population than other coastal towns Dr J Fenton's report for 1940, though typewritten and curtailed, does not therefore differ greatly from peace-time reports, and from it one could not tell that there had been any serious disturbance in the town's history except for a decline in the population The increases in the infectious diseases noticed at the end of 1939 did not continue, with the exception of scabies Whooping-cough gave 159 notifications, 126 of which occurred in the first quarter, and none in the last four months of the year, and measles 105 notifications, 57 of which occurred in June–August These seasonal incidences were unusual, for in the country as a whole whooping-cough increased and measles diminished as the year progressed There was no death from either disease

RAMSGATE

Dr J V Walker's report is of exceptional interest for in the latter half of 1940 Ramsgate was in a state of siege and subject to repeated air attacks on a heavy scale In peace-time its population was made up of an unusual proportion of elderly people, and in view of the danger of invasion an evacuation scheme for them was instituted It was expected that this would be made compulsory, but it was not, so the process of getting the old away to safe areas was both lengthy and incompletely successful Evacuation of mothers and children offered no special problems, but as the risk of invasion came suddenly it had to be hurried The normal population of Ramsgate is 34,000, but the statistics are of course based on the estimated population in the middle of 1940 The growth of a troglodyte population in the famous tunnel shelters might have been expected to influence the town's health, but it is doubtless thanks to them that the casualty lists were so small Of the 490 deaths registered in the town in 1940 the heading "other violence" includes civilian deaths from enemy action Elsewhere shelters were used as dormitories but at Ramsgate a small proportion of the population shifted their homes underground and seldom came out of the tunnels at all There was little excuse for this since owing to the evacuation there was ample accommodation In view of all this we should expect a very unfavourable health record for the town, but excluding the casualties there is no evidence that the town's health has suffered Indeed, the year's record is that of a healthy year with low prevalence of communicable diseases There were no deaths from the typhoid or dysentery groups of diseases and only one death from diarrhœa in an infant of six months The respiratory deaths numbered 65, but 49 of these were ascribed to bronchitis, suggesting that the comparatively high rate arose from the age of the population and not a high prevalence of respiratory infections

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[1] *Med Offr* Oct 4, 1941, p 109

In England Now

A Running Commentary by Peripatetic Correspondents

I OFTEN try to read a newspaper and listen to the wireless at the same time and generally end up by missing the point of both Of course there are fellows who can play a dozen games of chess at once and could probably read and listen to a story or two as well, but I'm not one of them I can't listen to even two tales at once The other evening I went in to have my pint in the bar parlour of the Locums' Arms This is where the locums rest between engagements, and there were several there, grousing and drinking On my right an old locum was holding forth to a friend and over in the corner was a young locum doing the same thing "Some people," said the Old Locum, "take to war-time rationing con amore" He wiped the froth meditatively off his walrus moustache "Yes, for other people My last engagement was a seaside job of three weeks The man had gone away for a holiday, but his wife who was a part-time invalid stayed to look after me, leastways that's how they put it Well for the first breakfast I had a sardine on toast, one Same thing the next day and the next I fed alone, but used to see savoury trays—eggs and bacon from the smell—being hurried furtively upstairs The lady didn't come down till midday 'Oslo breakfast,' she said one day, 'so healthy!' 'How I wish I were up to them!' said I 'I had no idea they were having quite such a terrible time in Oslo Do you mean to tell me they have only one ?'" Then I heard the Young Locum's voice away in the corner "It was only a week's locum, the whole family were going away for a holiday Before he went the doctor said to me, 'We're having the house done up a bit, hope you won't be disturbed' Next morning the cook asked if I would mind having lunch in the drawing-room as the whitewashers were in the dining-room, and sleeping in another bedroom Next day it was would I mind having meals in the study and sleeping in the nursery On the fourth day I was having meals in the surgery and sleeping in a dressing-room, but next morning they were both seized by a whole army of painters, paper-hangers, carpenters and whatnot, in fact they had the whole house now except at the very top where there were two rooms, the cook's and another Of course I had to sleep in the other and heard her snoring Well, I thought they were going to leave the top storey alone, but I had scarcely finished dressing when the vanguard of this renovating army " "It wasn't as though there was any shortage of food in the house"—it was the O L that I was listening-in to now—"the cupboards in my bedroom were simply crammed with tinned meats, jams, pickles, masses of it Well, it must have been about the sixteenth day and I was getting well into the third row of that tin of sardines " "Apparently" (Y L speaking) "they weren't going to touch the cook's room, so I was wondering " "My stomach was definitely in revolt, that damned fish repeats itself like a parrot, so that morning on my rounds I stopped at a shop and bought a tin-opener " "Well, the cook came along as usual and said would I mind " "By Jove, that night I fairly let myself go" Who said that? I'm not sure It may have been both together "Time, genelmen, please"

* * *

We have noticed four classes of faint among our donors Those who throw the first or fourth class should never have been enrolled because they are temperamentally unsuitable the second variety (a "forme fruste" of the first) is preventable with careful handling, while the third must be attributed to mismanagement of the donor after the withdrawal of the blood

The first class is seen in the extremely apprehensive donor who may have volunteered from self-disciplinary or purely altruistic reasons, or may have been pressed into service in the presence of his colleagues or f Such a person may faint in the waiting-room or on couch while his arm is being cleaned up At one f some youths flopped down like ninepins while their turn to be grouped The sight of bottles of drawn blood or blood-stained gowns, too much thea ritual or the smell of ether (acetone is not associated by the patient to the same extent with hospitals) may preci-tate the faint This type of person should never hav volunteered and if he is recognised at the time of enrol-ment he should be rejected

The second class turns up in the person who does no mind the beginning (indeed he may be quite interested and will try and sit up and have a peep at the blood running out) but after a few minutes a feeling of nervousness comes over him, an occasional sigh, a rapid turn away of the head, and a nervous cough are the first sign He begins to think "will they be able to stop it?" If the doctor leaves the needle in situ and goes away to prepare the next patient, the feeling of insecurity will continue to thrive During a brief period of hyperacusi he will hear his blood trickling into the diluent in the bottle and he may hear the nurse say "Its running ever so fast I wish they all bled as quickly as this" The actual faint will follow rapidly and the flow of blood will diminish reflexly This type of donor has probably fought a strong inclination not to show up for his appointment and he sometimes tries to pass off his nervousness with forced merriment and interest, hence his desire to "have a look" and the occasional pleasantry whereby the shed blood is compared to a favourite brand of stout With care, this type of donor, who can often be recognised when he comes in by his jocularity and the excessive pulsation of the great vessels of his neck, can be successfully bled, for he will readily take the initiative in conversation which interests him The doctor should not leave him unattended and mentally unoccupied, while assistants should be discouraged from making comments and quips on the rate of flow A word of encouragement will help him through his ordeal, and the doctor will be rewarded by "Is that all it is?" and a pressing and genuinely meant request to call him again

The third kind of faint is a vasomotor attack probably beyond the control of the donor It is as a rule due to sitting up suddenly and too soon to drink coffee presented by an overzealous helper This type of faint will also occur, without the donor sitting up, if the blood is withdrawn too quickly Fasting will also tend to induce it likewise if the donor is overtired, or has hurried to be in time, or if the atmosphere of the room is oppressive Some people seem to take longer than the average to adjust their circulations and we have seen this tendency in a mother and daughter who were each unaware of the reaction of the other

The last class is troublesome, it is the hysterical faint induced whenever an impressive audience is available The subject is almost invariably a young girl and she should be allowed to faint into the arms of a member of her own sex A favourite place is in the street outside the bleeding post and unless the offender is skilfully and promptly handled the post and the team may be held in considerable disfavour and distrust by the cross section of the public who congregate so rapidly for this windfall entertainment We have seen a husband and wife (only the wife had volunteered) go from one "fit" into another, falling into any kindly arms willing to receive them and causing confusion and consternation among the volunteers in the waiting-room By the way, it does not seem to be generally known that faints, if complete, may take on an epileptiform character They can, however, readily be differentiated from hysterical attacks The act of fainting is commonly followed by a feeling of tiredness and this may be attributed by the donor—and what is more important, by his friends—to the loss of blood A donor who has fainted should always be warned against this feeling of tiredness, and for the same reason it is unwise to continue withdrawing blood after a faint has begun Donors should be warned of the possibility of bruising, and of bleeding starting again, and should be told how to deal with bleeding by pressure They should be warned not to touch the dressing unless the wound is painful and then to show it to a nurse or a doctor Over the tea-table, when the donor has returned home, she will probably be invited to relate her experiences and the kid brother and his friend will certainly want to have a peep at " the hole in the arm ' This understandable curiosity is probably the comonest cause of local sepsis

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It has taken a second world war to convince me that pectoralis major is intimately concerned in the act of defæcation But I must begin at the beginning My gardener was called up last year and I was obliged to tackle a third of an acre singlehanded. I mow the lawns every three weeks This represents the optimum interval on a time-growth curve which I have worked out for this part of the country the fourteen-inch mowing machine of the 1920 age-group has been carefully integrated to other variables About a fortnight ago I was rushing downhill behind the machine my eyes fixed on a luxuriant tuft of grass which I intended to cut as clean as a whistle I allowed the blades to engage when I was about two yards from my objective and with savage determination threw myself into the attack on the waving green spikes A sudden crack, and I found myself staggering across the lawn gasping painfully for breath and rubbing my chest in the region of the second left costal cartilage where I had collided with one handle of the mower I had forgotten that behind that innocent tuft of grass there lay hidden a small grid covering a drain ventilator "Pooh!" I exclaimed but the explosive was cut short by a stab of pain which made me hold my breath I sat down gingerly on the lawn lowering myself on extended arms, but the manœuvre ended in a groan I would have sat longer but there were unmistakable sensations indicating that the grass was not as dry as I had imagined To immobilise the injured muscle I decided to raise myself using only my right arm But seemingly the pectoral girdle never does things by halves and I was conscious that it had gone into action even while I was at the stage of visualising the extent of the wet patch on the seat of my trousers The next day was full of discoveries, including the one mentioned in my opening sentence Fortunately there was little cause for the turbulent movements of the thoracic cage which are associated with laughter, and a suppressed cough was usually achieved by fixing the left side of the chest against the edge of a door The sigh over the blackout was stillborn and the bedtime yawn hovered in midair. As for the night, it was made hideous with moans which synchronised with attempts to change my position in bed Great though my discomfort was, I little realised that worse was in store I was in the bus on my way to hospital Suddenly I was aware that the awful thing was about to happen It was too late to avert the impending catastrophe I whipped out my handkerchief, being a faithful disciple of Bourdillon, and there followed a gigantic sneeze The pains of hell got hold upon me and the explosion merged into an involuntary roar of anguish The bus stopped The driver s terrified face appeared at the hatch anxiously seeking an explanation from the conductor I have since thought that he must have been driving in a dream state and on hearing the cry had leapt to the conclusion that he had run over a pedestrian He was reassured by the young woman who was our conductor. amid a muttered chorus of disapproval from my startled fellow passengers she erked her thumb in my direction " It s 'im " she said imply On arrival at the hospital my first call was at he radiological department Sister, full of sympathy offered to send the report to my ward as soon as the adiologist had reported on the film An hour later it was handed to me in a sealed envelope I opened it agerly, impatient to learn how many ribs had been broken My colleague had confined himself to a single word NIL "Pshaw!" I exclaimed wincing with pain

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I was a very puzzling case On Sunday I lost my ppetite and felt off colour Next afternoon I had a dull headache behind the eyes which slowly got worse On Tuesday evening I felt shivery and had a tempera-ure of 100° F Taking a couple of Veganin tablets nd a stiff hot whisky I went to bed early only to be wakened at 4 A.M. by persistent shivering in spite of piling all the garments I could find on my bed, and by A M I felt so ill I decided to stay in bed That evening felt colder than ever in spite of numerous hot-water bottles and had an awful headache My temperature had risen to 103°. my pulse to 130 and I had developed a sighing type of respiration at 36 a minute I felt increasingly sick and was the vomitus being dark brown and dirty and very acid to the mouth I thought I was in for a bout of pneumonia and so did my physician for he examined my chest five times Even morphia that night failed to ease the intense headache and I barely slept at all, perspiring periodically Thursday was even worse, although the headache was easier all morning I was sick several times and kept up an irregular fever I was now convinced that I had meningitis, but on pointing out to the physician that my eyes were tender if touched he rushed off to get his ophthalmoscope when being a mere surgeon I now thought I had a retrobulbar neuritis That night was just as bad By Friday morning I was past caring My mouth was thick and dry and my lips were coated with sticky mucus Having no neck rigidity I now diagnosed myself as influenza with encephalitis My physician was still in the dark, but he arrived with great glee to say that a blood-count showed a leucopenia , therefore I must have influenza, unless of course it was typhoid or one of that lot He re-examined me and with a shout of triumph announced I had " rose spots " but still had no palpable spleen Not having had my bowels opened throughout he ordered me an enema I strained all day and by the evening felt a little better if somewhat exhausted My headache was easier but my rash which did not itch at all, had become diffuse all over my trunk and looked like scarlet fever I had a very white tongue but no sore throat and the rash did not involve my head and neck or limbs A blood-culture was taken that afternoon On Saturday morning I felt better still and only had a temperature of 99°, though the rash and headache persisted The pathologist announced he had grown a gram-negative bacillus, which was supposed to clinch the diagnosis of a septicæmia of the coli-typhoid group—but it struck me that a mere 14 hours' incubation in ox-bile medium with blood that had been immunised months previously with TABT made it sound unlikely Otherwise I must have a considerable infection or ,very potent bacilli My father also a doctor was certain I was a typical atypical (he is Irish) case of scarlet fever By Saturday evening I had a dusky irregular macular rash on all my limbs—not at all like " rose spots " but rather like measles However tired I was in the evening I became peculiarly alert by night and found it almost impossible to sleep Saturday night was no exception and I did not sleep at all though I managed about 1½ hours after breakfast on Sunday morning During that day my headache left me entirely as did the rash on my trunk, though on my limbs it remained until nightfall and itched The margins of my eyelids felt sore and I felt a strange kind of stiffness almost a cramp, in my calves and thighs if I moved my legs at all That night, helped by 10 grains of Medinal and an extremely comfortable Sorbo mattress supplied by the American Red Cross I had a full night s sleep for the first time On the Monday I awoke refreshed and enjoyed the pathologist's report that all subcultures had died out The final proof had failed Some " friends " suggested it must be *Bact suipestifer* or swine fever! Next day I was normal in every way and felt darned peckish, so that on the Wednesday I was allowed up for an hour On the Thursday Friday and following Monday the pathologist cultured my stools and urine and found no pathogenic organisms I was discharged on the 13th day after taking to my bed and on the 15th day from my first symptom Later my Widal reaction taken on the 22nd day from my first symptom gave a weak double positive result:

	O	H
Bact typhosum	1/25	1/50
Bact paratyphosum A	—	1/10
Bact paratyphosum B	1/25	1/50

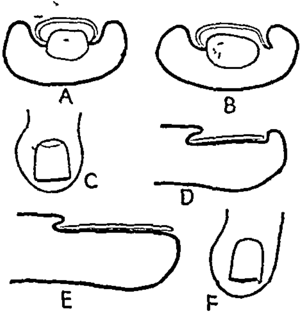
No prizes are offered for the correct solution

MISS T MONTAGNON who died on Oct 27 at the Westminster Hospital, had been an inspector for the Ministry of Health since 1920 She was one of the first trained nurses to be appointed to the staff of the ministry and had done much to help public assistance authorities to maintain a high standard of care for the old people and children in their institutions

Letters to the Editor

INGROWING TOENAIL

SIR,—Before any further suggestions are made as to the cause of ingrowing toenail it might be well to ascertain the true shape of the big toenail It is a laborious job to collect facts of such apparently trivial importance, but anyone who cares to investigate will discover that in some cases—I have no idea whether the proportion is small or great—the normal shape of the nail is as in (*a*), while the ingrowing nail is really a nail which grows *out into* the nail wall (*b*) Apart from any question of abnormality of the nail shape we have to remember that many people habitually cut the nail too short (*c*), so that the soft tissues grow to a higher level than the free edge of the nail and form a distal pseudo-wall (*d*) A well-cut nail extends to the end of the toe (*e*) and prevents the formation of this pseudo-wall Finally, mistakes are often made in the cutting of the nail The correct shape is a straight line and not curved as in the case of the fingers When a toenail is cut with a curve it is easy to miss the corner—probably owing to the lateral curvature This results in a spike (*f*) which, as the nail continues to grow, perforates the distal pseudo-wall The sequence—wound, infection, inflammation, septic ingrowing toenail —is obvious.



Manchester W SAYLE CREER

LIGATION OF THE PATENT DUCTUS ARTERIOSUS

SIR,—In their paper of Oct 18 Dr Bourne and his colleagues mention that two dangers of a patent ductus arteriosus lie in the mechanical effect on the circulation and the local supervention of infection, and they consider that ligation of the duct should be adopted as a therapeutic measure for the latter complication There seem to be grounds for doubting the importance of these asseverations Persistence of the ductus arteriosus may exist as the sole abnormality in about a quarter of the cases, and it may then cause no inconvenience, for the right ventricle merely hypertrophies in order to deal with the increased volume inflowing through the patent channel as a result of the higher aortic pressure The sum total of change therefore in this type of case is that right ventricular development equals or exceeds that of the left and may be accounted as a physiological response to increased work and unlikely to give rise to mechanical strain on the circulation In the majority of cases however the condition is associated with other congenital abnormalities, usually of an obstructive type, in the pulmonary or aortic circuits, and its presence is then of the utmost importance in permitting the establishment of a functional readjustment of the abnormal blood-flow In such instances it is obvious that ligation of the ductus arteriosus would constitute a grave threat to the compensatory collateral circulation, a danger which is not lessened by the fact that the detection of additional congenital abnormalities may be very difficult Thus it may be seen, in connexion with the first case, that the continuous murmur of ductal origin was replaced later by a rough systolic one in the pulmonary area, thereby indicating the unsuspected co-existence of a stenotic lesion No doubt the lesion was of a minor character, yet the operation was followed by a severe though fortunately temporary uræmia and the incident serves well enough to illustrate what may happen in a more complicated type of case

The connexion between endocarditis and patent ductus arteriosus is undoubted Nevertheless, it may be questioned whether ligation can have any good effect either preventively or curatively, as the underlying predisposition to infection must be based on the anomaly of anatomical structure rather than irregular circulatory flow and the operation will not alter that factor As a curative measure the value of the operation is still problematical, since the vegetations in general are limited to the ductus and the underlying structural defect in the wall of the pulmonary artery is not remedied Indeed, the only practical accomplishment achieved would be a reduction in the number of systemic emboli, if these were present, to the ill vantage of the pulmonary circuit which would thereby receive the full complement Recovery from infective endocarditis is not unknown even before the days of sulphonamide treatment, and there is no means of ascertaining in the two cases described whether the operation in any way influenced the course of the disease as both patients were afebrile and on the road to recovery before it was carried out It may be that there is a case for ligation of the patent ductus arteriosus, if there is, it would not appear to lie in that class of patients, comprising the majority, associated with other congenital cardiac defects or in any after the onset of infection In the remainder, a logical indication for ligation might be as a prophylactic measure, but, in view of the natural repugnance of the healthy person to undergo "ideal" operations, particularly major ones, it is possible that opportunities to assess its real value will be few

London, S W 3 J H MULVANY

CALCIUM STUDIES IN NORMAL PEOPLE

SIR,—I have been reading Dr Robertson's articles with great interest He quotes figures from balance experiments conducted on normal subjects which showed that below a certain level of Ca intake the Ca output was restricted—i e, the Ca was used more economically In the cases he quotes, the subjects had been on the low Ca intake for only short periods We found the same in indigent subjects who had been on a low Ca intake for long periods (Owen, E C, Irving, J D and Lyall, A *Acta med scand* 1940, **103**, 235) So efficient had the utilisation of Ca by these subjects become, that some of them were in equilibrium on intakes as low as 0 25 g Ca per day It would appear from this and other work (i e, Rottensten, K. V *Biochem J* 1938, **32**, 1285) that one cannot define a *normal level of Ca intake* in this way since the requirements for equilibrium will depend solely on the Ca reserves of the individual under test, and these in their turn depend on *the previous* dietary Ca history This has recently been stressed by Steggerda and Mitchell (*J Nutrit* 1941, **21**, 577) Thus it has been found that Chinese (Kung, L C and Yeh, H L *Chin J Physiol* 1937, **12**, 139) and negroes (Kelly, F C and Henderson, J M *J Hyg Camb* 1930, **29**, 418) appear to have a lower requirement for Ca than do white people This lower requirement is certainly not racial in origin but is due to the fact that these peoples habitually subsist at lower levels of Ca intake (Kung and Yeh) It therefore seems to me that one cannot quote figures for normal Ca requirements on the basis of balance experiments since the requirement for *equilibrium depends entirely on the previous dietary history of the individual* The only assessment of adequate Ca intake must be an empirical one—one which keeps the individual in optimal health

J T IRVING

Department of Physiology, University of Cape Town

"WAR-TIME HEALTH AND DEMOCRACY"

SIR,—May I take up two points in your generous review of my small book in THE LANCET of Nov 1? Lord Hewart's definition of democracy is "a system of government based on the Rule of Law and the Sovereignty of Parliament" your reviewer has telescoped the sentence in my book which gave this definition, and the result is hardly fair to the distinguished author of "The New Despotism" Your reviewer gives one or two selected quotations to support his argument that I have "a somewhat introverted view of the doctor as a democrat" Two more quotations, if you will allow me to give them, cast doubt on your reviewer's interpretation "My own opinion is that the doctor, *in relation to his professional work*, should steer clear of politics" (Italics mine) "And the individual doctor can always express his political views as a *private citizen* with the right to vote for his man in a free country" (Italics mine again)

London, W C 1 HUGH CLEGG

PLUMP TYPE OF GRAVES'S DISEASE

SIR—In commenting on our paper of Sept 20 Mr Keynes makes the rather surprising statement that "it is dangerous to make any attempt to separate off any particular category [of Graves's disease] as being fundamentally different from the rest" Mr Rundle in your issue of Oct 25 appears to support this view The cases we described had one distinctive character uncommon in Graves's disease—a tendency to increase in weight while still untreated and actively thyrotoxic In addition they were all young women of about the same age with an unusual degree of lymphatic hypertrophy even for Graves's disease, and five out of eight had amenorrhœa It seemed to us that these cases formed a distinctive group though we admitted the existence of transitional types, and we suggested that they were displaying an unusual resistance to the thyrotoxic process Since the results of thyroidectomy had not been so satisfactory as we had come to expect in the usual type of Graves's disease, we ventured to suggest that in such cases conservative treatment might be given a trial We presume that it is this mild suggestion which has so alarmed Mr Keynes

Mr Keynes has also made much of the two deaths in this group We did not of course draw any far-reaching conclusions from these deaths, they were never a major point in our discussion on this group and it will not surprise us if further experience shows the mortality to be not unduly high None of the surviving cases, however could be classed as good results, and three of them were early recurrences

Later Mr Keynes himself braves the dangers of subdivision sufficiently to admit the existence of "atypical" categories of Graves's disease among which he classes the plump type This surely is an odd method of classification, for he presumably groups together all cases which happen to lack one or more of the chief characters of the disease We can see little in common, for instance, between the plump type (which are severe and outspoken examples of Graves's disease in young women) and the type common in the elderly in which auricular fibrillation is the only prominent feature of the disease Yet Mr Keynes would apparently class these groups together as "atypical" categories Of this oddly assorted group, Mr Keynes says that "there is room for judgment in forming an opinion for or against operation" because the results of thyroidectomy are less dramatic than in the classical type Whether this is a correct statement of the prognosis of this remarkable hotch-potch it is impossible to say, but the statement is interesting as revealing that even Mr Keynes considers the results of thyroidectomy to be not always exactly predictable If this is so, is it so very dangerous to inquire whether there are not in fact different types of the disease, which may respond characteristically to treatment?

To avoid further confusion, the conclusions arrived at in our paper were the result of careful observation over a number of years of a series of cases of Graves's disease, operated on by the senior surgical staff at a general hospital Mr Rundle's reference to "a surgeon's early efforts at thyroidectomy" is therefore irrelevant

Leavesden.

W R TROTTER.
K C EDEN

GRADUATION AT AN EARLIER AGE

SIR,—Many will agree with Dr Spencer Paterson, who pleads for graduation at an earlier age in your issue of Oct 25, when he states that the years from sixteen to eighteen are not very usefully employed But surely the chief reasons are not, as he suggests, that students are either learning subjects which they must later re-learn at the university, or are learning classics because, at the age of seventeen, the great majority are already working for their first M B Rather these years are not usefully employed because the work must conform strictly to a university syllabus which demands an unnecessary amount of detail, and does nothing to encourage a general or scientific background Added to this, in many cases, are the unnatural restrictions to freedom and independence imposed at this stage by the public-school system

To justify his plea Dr Paterson also referred to the undesirability of late marriages and small families among the medical profession This is found in the professional classes as a whole and the reasons are largely economic For this the state is responsible and the state must find the cure, not the university or the medical authorities to whom the plea was directed And let us note that the one state that has tackled this problem provides medical men even in their student days, with an adequate salary. I cannot help feeling that the moral breakdowns in medical students which Dr Paterson is apparently called on to treat may be due not so much to frustration with the medical curriculum as to the realisation that at the age of twenty-one they are still and for the next few years will remain just as dependent on their parents for their every need as they always have been

I submit Sir, that our efforts would be better directed towards changes in the medical curriculum and in the status of the young doctor, than towards graduation at an earlier age Superficially this suggestion may appear as a panacea for the ills to which Dr Paterson so rightly pointed But perusal of your number (Aug 30) devoted to medical education will show that in this country graduation probably takes place already at an earlier age than in any country in the world with the exception of Nazi Germany

Watford

J A V BATES
Final year student

THE HEN AS MIDDLEMAN

SIR—I welcome the criticism that appeared in your issue of Oct 25 (p 487) on my article in *Nature*, although the suggestion that, being an authority on poultry, I naturally defended the animal of my choice from the obloquy cast on it by agriculturists and dietitians is not too happily phrased since the casual reader may assume that I wrote the article from reasons of self-interest rather than from the point of view of the welfare of the nation In my article I contended that, on dietetic grounds the egg is just as essential an article of diet as milk and that, from the point of view of economy of conversion of feeding-stuff protein to human food protein, the hen has a claim to priority second only to the dairy cow I assume that this dietetic part of my contention is accepted But you attempt to destroy my case for the hen on economic grounds Not being an economist I am at a disadvantage, but even to my amateur mind the arguments adduced appear a little unsound To base an argument on the relative price the Government is prepared to pay for the protein in eggs and milk in these days of price regulation, and to argue that such prices reflect the relative efficiencies of the dairy cow and the hen to produce such protein is surely illogical, apart from the fact that I have never suggested that egg production should be encouraged at the expense of milk production The present prices paid to the producer by the Government are admittedly fixed in relation to cost of production, but such costs cover many other factors than that of relative efficiency of food conversion The relatively high prices paid for eggs are essentially due to the fact that Government action has resulted in poultry producers having to cut their flocks below the normal economic level whereas no such action has been enforced in the case of the dairy farmer The price argument works both ways Following the same line of argument I could with equal justice maintain that the Government by asking the consumer to pay 2½d for an egg containing 6–7 g of first-class protein, as compared with a pint of milk at 4½d containing 18 g, is of the opinion that egg protein is much more valuable to the consumer, weight for weight than milk protein

The contention that the hen being a much smaller animal than the dairy cow, requires much more energy for maintenance than the dairy cow weight for weight, is an accepted fact, but even here there is a possible fallacy in the argument, since the relative cost of maintenance when charged against the finished product, will vary according to the relative amounts of the finished product produced It is of interest to note that a 5 lb hen laying 140 eggs a year produces 78% of her body-weight in the form of dry human food (not counting shell) whereas the 1250 lb cow giving 600 gallons of milk produces only 59% of her body-weight in the form of dry human food Finally, although the energy requirement for maintenance is correlated with body surface rather

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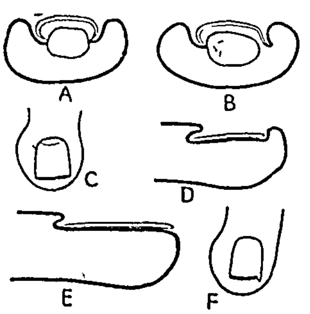

Manchester W SAYLE CREER

LIGATION OF THE PATENT DUCTUS ARTERIOSUS

SIR,—In their paper of Oct 18 Dr Bourne and his colleagues mention that two dangers of a patent ductus arteriosus lie in the mechanical effect on the circulation and the local supervention of infection, and they consider that ligation of the duct should be adopted as a therapeutic measure for the latter complication There seem to be grounds for doubting the importance of these asseverations Persistence of the ductus arteriosus may exist as the sole abnormality in about a quarter of the cases, and it may then cause no inconvenience, for the right ventricle merely hypertrophies in order to deal with the increased volume inflowing through the patent channel as a result of the higher aortic pressure The sum total of change therefore in this type of case is that right ventricular development equals or exceeds that of the left and may be accounted as a physiological response to increased work and unlikely to give rise to mechanical strain on the circulation In the majority of cases however the condition is associated with other congenital abnormalities, usually of an obstructive type, in the pulmonary or aortic circuits, and its presence is then of the utmost importance in permitting the establishment of a functional readjustment of the abnormal blood-flow In such instances it is obvious that ligation of the ductus arteriosus would constitute a grave threat to the compensatory collateral circulation, a danger which is not lessened by the fact that the detection of additional congenital abnormalities may be very difficult Thus it may be seen, in connexion with the first case that the continuous murmur of ductal origin was replaced later by a rough systolic one in the pulmonary area, thereby indicating the unsuspected co-existence of a stenotic lesion No doubt the lesion was of a minor character, yet the operation was followed by a severe though fortunately temporary uræmia and the incident serves well enough to illustrate what may happen in a more complicated type of case

The connexion between endocarditis and patent ductus arteriosus is undoubted Nevertheless, it may be questioned whether ligation can have any good effect either preventively or curatively, as the underlying predisposition to infection must be based on the anomaly of anatomical structure rather than irregular circulatory flow and the operation will not alter that factor As a curative measure the value of the operation is still problematical, since the vegetations in general are limited to the ductus and the underlying st defect in the wall of the pulmonary artery is not Indeed, the only practical accomplishment a would be a reduction in the number of systemic these were present, to the ill vantage of the circuit which would thereby receive the full co Recovery from infective endocarditis is not even before the days of sulphonamide treatment, there is no means of ascertaining in the two cases cribed whether the operation in any way influenced th course of the disease as both patients were afebrile and the road to recovery before it was carried out It be that there is a case for ligation of the patent duct arteriosus, if there is, it would not appear to lie in class of patients, comprising the majority, associated with other congenital cardiac defects or in any after th onset of infection In the remainder, a logical indication for ligation might be as a prophylactic measure, but, in view of the natural repugnance of the healthy person to undergo "ideal" operations, particularly major one, it is possible that opportunities to assess its real value will be few

London, S W 3 J H MULVANY

CALCIUM STUDIES IN NORMAL PEOPLE

SIR,—I have been reading Dr Robertson's articles with great interest He quotes figures from balance experiments conducted on normal subjects which showed that below a certain level of Ca intake the Ca output was restricted—i e, the Ca was used more economically In the cases he quotes, the subjects had been on the low Ca intake for only short periods We found the same in indigent subjects who had been on a low Ca intake for long periods (Owen, E C, Irving, J D and Lyall, A *Acta med scand* 1940, 103, 235) So efficient had the utilisation of Ca by these subjects become, that some of them were in equilibrium on intakes as low as 0 25 g Ca per day It would appear from this and other work (i e, Rottensten, K V *Biochem J* 1938, 32, 1285) that one cannot define a *normal* level of Ca intake in this way since the requirements for equilibrium will depend solely on the Ca reserves of the individual under test; and these in their turn depend on the previous dietary Ca history This has recently been stressed by Steggerda and Mitchell (*J Nutrit* 1941, 21, 577) Thus it has been found that Chinese (Kung, L C and Yeh, H L *Chin J Physiol* 1937, 12, 139) and negroes (Kelly, F C and Henderson, J M *J Hyg Camb* 1930, 29, 418) appear to have a lower requirement for Ca than do white people This lower requirement is certainly not racial in origin but is due to the fact that these peoples habitually subsist at lower levels of Ca intake (Kung and Yeh) It therefore seems to me that one cannot quote figures for normal Ca requirements on the basis of balance experiments since the requirement for equilibrium depends entirely on the previous dietary history of the individual The only assessment of adequate Ca intake must be an empirical one—one which keeps the individual in optimal health

J T IRVING

Department of Physiology, University of Cape Town

"WAR-TIME HEALTH AND DEMOCRACY"

SIR,—May I take up two points in your generous review of my small book in THE LANCET of Nov 1 Lord Hewart's definition of democracy is "a system of government based on the Rule of Law and the Sovereignty of Parliament" your reviewer has telescoped the sentence in my book which gave the definition and the result is hardly fair to the distinguished author of "The New Despotism" Your reviewer gives one or two selected quotations to support his argument that I have "a somewhat introverted view of the doctor in a democracy" Two more quotations, if you will allow me to give them cast doubt on your reviewer's interpretation "My own opinion is that . . . the doctor, *in relation to his professional work*, should steer clear of politics" (Italics mine) "And the individual doctor can always express his political views as a *private citizen* with the right to vote for his man in a free country" (Italics mine again)

London, W C 1 HUGH CLEGG

PLUMP TYPE OF GRAVES'S DISEASE

SIR —In commenting on our paper of Sept 20 Mr Keynes makes the rather surprising statement that " it is dangerous to make any attempt to separate off any particular category [of Graves s disease] as being fundamentally different from the rest ' Mr Rundle in your issue of Oct 25 appears to support this view The cases we described had one distinctive character uncommon in Graves's disease—a tendency to increase in weight while still untreated and actively thyrotoxic In addition they were all young women of about the same age with an unusual degree of lymphatic hypertrophy even for Graves s disease. and five out of eight had amenorrhœa. It seemed to us that these cases formed a distinctive group, though we admitted the existence of transitional types and we suggested that they were displaying an unusual resistance to the thyrotoxic process Since the results of thyroidectomy had not been so satisfactory as we had come to expect in the usual type of Graves s disease, we ventured to suggest that in such cases conservative treatment might be given a trial We presume that it is this mild suggestion which has so alarmed Mr Keynes

Mr Keynes has also made much of the two deaths in this group We did not of course draw any far-reaching conclusions from these deaths they were never a major point in our discussion on this group and it will not surprise us if further experience shows the mortality to be not unduly high None of the surviving cases, however could be classed as good results, and three of them were early recurrences

Later Mr Keynes himself braves the dangers of subdivision sufficiently to admit the existence of ' atypical " categories of Graves s disease, among which he classes the plump type This surely is an odd method of classification, for he presumably groups together all cases which happen to lack one or more of the chief characters of the disease We can see little in common, for instance, between the plump type (which are severe and outspoken examples of Graves s disease in young women) and the type common in the elderly in which auricular fibrillation is the only prominent feature of the disease Yet Mr Keynes would apparently class *these groups together* as " atypical ' categories Of this oddly assorted group Mr Keynes says that " there is room for judgment in forming an opinion for or against operation " *because the* results of thyroidectomy are less dramatic than in the classical type Whether this is a correct statement of the prognosis of this remarkable hotch-potch it is impossible to say , but the statement is interesting as revealing that even Mr Keynes considers the results of thyroidectomy to be not always exactly predictable If this is so, is it so very dangerous to inquire whether there are not in fact different types of the *disease, which may* respond characteristically to treatment ?

To avoid further confusion the conclusions arrived at in our paper were the result of careful observation over a number of years of a series of cases of Graves's disease operated on by the senior surgical staff at a general hospital Mr Rundle's reference to " a surgeon s early efforts at thyroidectomy " is therefore irrelevant

Leavesden.

W R TROTTER.
K C EDEN

GRADUATION AT AN EARLIER AGE

SIR,—Many will agree with Dr Spencer Paterson, who pleads for graduation at an earlier age in your issue of Oct. 25, when he states that the years from sixteen to eighteen are not very usefully employed But surely the chief reasons are not, as he suggests that students are either learning subjects which they must later re-learn at the university, or are learning classics , because, at the age of seventeen, the great majority are already working for their first M B Rather these years are not usefully employed because the work must conform strictly to a university syllabus which demands an unnecessary amount of detail, and does nothing to encourage a general or scientific background. Added to this, in many cases are the unnatural restrictions to freedom and independence imposed at this stage by the public-school system

To justify his plea Dr Paterson also referred to the undesirability of late marriages and small families among the medical profession This is found in the professional classes as a whole and the reasons are largely economic. For this the state is responsible. and the state must find the cure not the university or the medical authorities to whom the plea was directed And let us note that the one state that has tackled this problem provides medical men even in their student days, with an adequate salary I cannot help feeling that the moral breakdowns in medical students which Dr Paterson is apparently called on to treat may be due not so much to frustration with the medical curriculum as to the realisation that at the age of twenty-one they are still and for the next few years will remain just as dependent on their parents for their every need as they always have been

I submit Sir, that our efforts would be better directed towards changes in the medical curriculum and in the status of the young doctor than towards graduation at an earlier age Superficially this suggestion may appear as a panacea for the ills to which Dr Paterson so rightly pointed. But perusal of your number (Aug 30) devoted to medical education will show that in this country graduation probably takes place already at an earlier age than in any country in the world with the exception of Nazi Germany

Watford.

J. A V BATES
Final-year student

THE HEN AS MIDDLEMAN

SIR —I *welcome the criticism that appeared in your* issue of Oct 25 (p 487) on my article in *Nature* although the suggestion that being an authority on poultry. I naturally defended the animal of my choice from the obloquy cast on it by agriculturists and dietitians is not too happily phrased since the casual reader may assume that I wrote the article from reasons of self-interest rather than from the point of view of the welfare of the nation In my article I contended that on dietetic grounds, the egg is just as essential an article of diet as milk. and that from the point of view of economy of conversion of feeding-stuff protein to human food protein the hen has a claim to priority second only to the dairy cow I assume that this dietetic part of my contention is accepted But you attempt to destroy my case for the hen on economic grounds Not being an economist I am at a disadvantage but even to my amateur mind the arguments adduced appear a little unsound To base an argument on the relative price the Government is prepared to pay for the protein in eggs and milk in these days of price regulation and to argue that such prices reflect the relative efficiencies of the dairy cow and the hen to produce such protein is surely illogical, apart from the fact that I have never suggested that egg production should be encouraged at the expense of milk production The present prices paid to the producer by the Government are admittedly fixed in relation to cost of production but such costs cover many other factors than that of relative efficiency of food conversion The relatively high prices paid for eggs are essentially due to the fact that Government action has resulted in poultry producers having to cut their flocks below the normal economic level whereas no such action has been enforced in the case of the dairy farmer The price argument works both ways Following the same line of argument I could with equal justice maintain that the Government by asking the consumer to pay 2½*d* for an egg containing 6–7 g of first-class protein as compared with a pint of milk at 4½*d* containing 18 g is of the opinion that egg protein is much more valuable to the consumer, weight for weight than milk protein

The contention that the hen being a much smaller animal than the dairy cow requires much more energy for maintenance than the dairy cow weight for weight is an accepted fact but even here there is a possible fallacy in the argument since the relative cost of maintenance when charged against the finished product will vary according to the relative amounts of the finished product produced It is of interest to note that a 5 lb hen laying 140 eggs a year produces 78% of her body-weight in the form of dry human food (not counting shell) whereas the 1250 lb cow giving 600 gallons of milk produces only 59% of her body-weight in the form of dry human food Finally, although the energy requirement for maintenance is correlated with body surface rather than body-weight, such is not the case with protein There is, consequently, no reason to assume that a small animal is less efficient as a converter of protein than a large animal

I am not convinced that the reasoning in my *Nature* article is at fault If need for protein is of primary importance to the nation, then the hen deserves first consideration next to the dairy cow If, on the other hand, energy requirement is the primary need, then the pig should rank next to the dairy cow

Animal Nutrition Institute, Cambridge E T HALNAN

CANCER AND OILING OF FLOORS

SIR,—As the suggested method of oiling floors has, I think been in use at certain schools for very many years, without any detriment to the health of a few generations, it would appear that the method is harmless One is thankful for assurance on the new suggestion of oiling blankets

Market Drayton PETER W EDWARDS

PROPHYLAXIS AND TREATMENT OF COLDS

SIR,—In his article of Nov 1 (p 534) Dr Thrower mentions experments carried out for controlling colds by ultraviolet light and states that the results were disappointing This is by no means the experience of observers who have used ultraviolet irradiation for many years in this and other countries The common cold can be aborted in a large percentage of cases if proper technique is adopted and suitable apparatus is used The nostrils and pharynx can be sterilised by application of ultraviolet rays by means of quartz applicators attached to the Kromayer mercury-vapour lamp first used in Berlin in 1903 This treatment should be combined with infrared irradiation applied over the antra and general U V irradiation to increase the bactericidal power of the blood-stream Apparatus has unfortunately not been standardised in this country, the result being that innumerable pieces of apparatus now in use have but little therapeutic effect In addition the technique adopted to carry out experimental investigations is often faulty

Wimpole Street, W 1 W ANNANDALE TROUP

TOWARDS A NATIONAL SERVICE IN CLINICAL PATHOLOGY

SIR,—After reading Dr Dyke's article of Oct 25 doctors in general will be looking forward to the time when the scheme envisaged will have become an integral part of the practice of medicine in this country It may, however, be of interest to Dr Dyke and others to know that a comprehensive pathological service very much on the lines indicated has been functioning in at least one part of the country for many years, and that consequently one or two statements in this excellent article are not strictly correct

More than a quarter of a century ago the Kent county council established a laboratory for carrying out public-health pathology It soon became evident, however, that the line of demarcation between public-health pathology and clinical pathology was very indistinct, and it seemed desirable to extend the service to provide facilities for undertaking pathological work for all doctors practising in the county The development of the scheme was very rapid, and even before the war nearly 100,000 specimens were being examined annually , about 30,000 in the six branch laboratories at the county hospitals and institutions and the remainder at the central laboratory at Maidstone Briefly, the scheme as it operates at present is that medical officers of health, general practitioners and the medical staff of hospitals in the county which have no pathologist on the staff may send into the main laboratory an unlimited number of specimens for examination Field work for the purpose of investigating and controlling the spread of epidemic disease is undertaken by the pathologists in collaboration with the district medical officers of health In the case of patients residing within a reasonable distance of Maidstone, and who are able to travel, the doctors may wish to have specimens collected in the laboratory , in some cases, of course, this is necessary, and is greatly appreciated when such investigations as glucose-tolerance curves and urea-clearance tests are required Furthermore, the services of pathologists are available to assist in consultation with doctors in the investigation of clinical problems at the bedside of their patients These services are entirely free of charge to the doctor and the patient , outfits for the transmission of specimens are also supplied free, and the only expense incurred is that of sending the specimens to the laboratory The cost of the laboratory is a charge on the county rate and is relatively small for the services provided

It is not claimed that this pathological service is by any means ideal, and plans for future developments along present lines have been made , but that there is ample need for such a service is evidenced by the general appreciation expressed of the value of the provisions already made in this county

Maidstone CONSTANT PONDER

FIRST-AID IN WAR-TIME

SIR,—I was interested to read Dr Hodgson's letter in your issue of Oct 25 During the past year the Halifax casualty services have been instructed with special reference to shock , hæmorrhage , wounds , burns , certain fractures , war-time neuroses , the speedy evacuation of casualties , the diagnosis as between F A post and hospital casualties , and the movement, parking and spacing of casualty vehicles In addition, a thorough knowledge of local geography (helped by night exercises) is part of their curriculum We have cut out all elaborate bandaging and splinting at incidents Tourniquet dangers are stressed I am of the opinion that a simple textbook on war-time first-aid would be appreciated by the casualty services

G C F ROE
Medical Officer of Health, Halifax

Q CAMP

SIR,—In your review of W. D Wills's book "The Hawkspur Experiment" (Oct 18, p 474) the principles on which the Q Camp was run are summarised in a way which shows a deep understanding of our work, but there is one correction I should like to make The numbers never reached 70, nor could we have carried on the methods with so many at a time We considered about 30 to be a desirable maximum, although had the demand been pressing we might have been willing to exceed this, but certainly not to go beyond 50 This does not imply that Q Camp methods are unsuitable for such institutions as Borstals or prisons, where large groups are at present the rule Rather does it mean that large groups are unsuitable for the reformative work they aim to do The combination of individual study and individual help with experiments in community living, which seems to be the lines most hopeful for the re-education of offenders, requires that these larger groups be subdivided

MARJORIE E FRANKLIN,
Oxford Hon Secretary, Q Camps

HOME GUARD TERMINOLOGY

SIR,—We are discussing what title should be given to the minor aid-posts set up by the Home Guard and provided by the authorities with a minimal equipment I am told that in one area these posts, which do not differ in any essential, are to have no less than three sets of initials according to whether they are associated with battalion headquarters, companies or platoons The initials proposed are H G B A P , H G C A P and H G P A P The prefix H G is necessary because the army authorities already use C A P and P A P , as was pointed out by one of your correspondents

Surely it is time that we called a halt to this multiplicity of initials and gave first place to brevity and accurate description Our Home Guard posts would be called points by the civil authority and by this term they intend to signify that the amount of assistance which can there be given is very much less than that provided at any post The word point is not felicitous because the initial "P" may equally stand for post or party but it does at least indicate an important distinction which is missed by those who would use the expression aid-post for every sort of place at which medical attention is available I must admit considerable sympathy with those who use the expression C C P (casualty collecting post) as both descriptive and distinguishing for all Home Guard posts and would venture to hope that official authority may be given for the use of this term before a riot of uneasy nomenclature submerges us BATTALION M O

WAR-TIME NURSERIES DISCUSSED

A STRANGE situation has arisen: everyone agrees that if women are to go into industry in large numbers their children below school age must be cared for, preferably in nursery schools and day nurseries; the Government has endorsed this view so strongly that local authorities can claim the entire cost of starting nurseries; and yet, after two years of war, there are at present only 163 day nurseries in the whole country, receiving between them barely 6000 children—and there are more children than that between 2 and 5 in many a county borough. Reasons for this curious inertia were discussed at a conference on Oct. 29, arranged for London and the Home Counties by the Nursery School Association of Great Britain and the National Society of Day Nurseries, with Lord Horder presiding. Administrative control has been given to the Ministry of Health; and, though approval of every new scheme for a nursery must be obtained from the Board of Education as well as the Ministry, power to give such approval has been delegated to the senior regional officers and to inspectors of schools, and arrangements have been made so that both approvals can be obtained at the same time. Difficulties in finding premises, staff and equipment are the chief delaying factors, but there are also wide divergencies in the enthusiasm with which local authorities approach the idea of establishing nurseries.

Mr. J. C. WRIGLEY (Ministry of Health) reminded the conference that in the early days of the war the need for nursery schools or residential nurseries had been mainly in the reception areas; now the need was chiefly in centres of industry where women were being increasingly employed. He suggested that whenever a nursery was planned local authorities should draw up a time-table fixing the dates on which the nursery should be approved, equipped and opened, and should make someone responsible for seeing that this time-table was kept. This dovetailed with a suggestion from Lady ALLEN OF HURTWOOD, one of the chief movers of the conference, that the Ministry of Health should appoint some dynamic person to apply ministerial policy and coordinate the departments, authorities and groups concerned with the needs of the young child. She felt that nurseries for babies under 2 should be established only with the greatest reluctance. She was doubtless thinking of the dangers of infection, so great among children of this age when they are gathered together; it is well to hesitate, especially if they are to be housed in the same nurseries as the 2–5 group. On the other hand it is not feasible to establish separate nurseries for those under 2. The mother with a sizeable family cannot be expected to get the bigger ones ready for school and then go round disposing of the younger ones at two different nurseries before she goes to work at 8 o'clock. Miss FLORENCE HORSBRUGH, parliamentary secretary to the Ministry of Health, said that in the ordinary way it was questionable whether the mothers with babies under 2 should be going to work at all, but just now mothers could look after their children best by making munitions to defend them. But she was not wedded to the notion that the only way to get the children looked after was in nurseries. A nursery, she pointed out, would take about 40 children; if something like 400,000 women with children under 5 were going into industry during the next few months we should need 10,000 nurseries straight away. It was impracticable to establish them on that scale, and she felt we must call upon a home guard of women—grannies and aunts—to do some of the minding while the younger women went into the factories. This laid Miss Horsbrugh open to the charge of being "minder-minded." Many people feel that there are strong objections, in the usual way, to this haphazard method of child care, and that nurture is best ensured in the nursery school. Yet it is doubtful whether finality lies on either side of this fence; MARGUERITE DOBBING, in a letter in the *New Statesman* of Nov. 1, tells of her own complete conversion from one opinion to the opposite after working in an evacuated residential nursery school for 21 months. The children there in spite of expert care seem to be going backward instead of forward, reverting to thumbsucking and temper displays; and this is due, she thinks, to lack of personal love. The aunt and granny could possibly achieve more in this direction than the best nursery school, however far they fell short in other ways.

This was borne out to some extent by the remarks of Miss ANNA FREUD at the conference. Nursery schools, she said, had never been meant as a substitute for the home, any more than the welfare clinics did away with the need for the mother's care, or child-guidance clinics with the need for education by the parents. All these services were simply extensions of the home. At present, however, families are dissolved, homes hardly recognisable and children scattered in billets. The nursery schools are confronted with the task of filling all the gaps, and they have done their best. But the mother-child relationship is normally a 24-hour affair, and the child who goes back and forth between home and nursery may in the end feel a stranger in both. Miss Freud believed in making every possible effort to include the real mothers in the life of the nursery. Some people, she felt, looked on love from the parents as a luxury which a child could not expect to get in war-time. In the last war the same remark was applied to things like sugar, fresh fruit and butter, of which continental children were deprived; these were now recognised as necessities. Today psychologists knew that there were some types of maladjustment in later life which were rooted in the lack of an ordinary home life in the first five years.

THE RIGHT STAFF

Miss FREDA HAWTREY made constructive proposals for dealing with the time lag in the development of nurseries due to lack of staff. The two types of women called on to fill responsible posts, as she pointed out, are hospital nurses and nursery school teachers. They have had totally different types of training and are therefore good at different things. Thus the nurse is (regrettably) used to residence and long hours. She is accustomed to handling babies under 2, to routine, to preventive measures against infection, and to detecting signs of illness early; but she has usually dealt more with sick children than healthy ones. The nursery school teacher is used to handling large groups of young children, believes more in free activity than routine, and has her attention focused on health; but she takes no responsibility for children under 2. Thus a hospital nurse is more suited for charge of a nursery which admits children of all ages under 5 and a nursery school teacher for a nursery which takes children between 2 and 5. In all nurseries where there are more than 20 children between the ages of 2 and 5 a nursery school teacher can be added to the staff; but cooperation between the nurse in charge and the teacher is not always easy. To overcome this difficulty, induced by the differences in training, courses in child management are being arranged for nurses, Miss Hawtrey said, by the Royal College of Nursing and for nursery school teachers by the Board of Education. The audience did not rise as one woman—as might have been expected—and say "But why not courses for both together?" Surely no better opportunity could be wished for establishing an understanding between the two groups of workers; and clever teachers should be able to help each student to merge her professional bias in the aims of the job she is going to do.

Miss Hawtrey suggested that the few available trained women—whether nurses or teachers—should be put into the key posts, and that the minor posts should be filled by "nursery nurses" trained to look after children in private families, by auxiliary nursery assistants who might be recruited from among young mothers, nannies, friendly aliens and elderly women. These could register with the Women's Voluntary Service and take a short training course with the Child Care Reserve. She would like to see emergency training centres started in connexion with existing nurseries, and estimated that if 24 students each took a 6 weeks' course, one centre could provide nearly 200 nursery assistants in a year.

PAYMENT FOR CARE

The cost to the mother of leaving her child at a day nursery was not discussed at the meeting, but this may well have an important bearing on the extent to which the nurseries are used when they are set up. The standard charge suggested by the Ministry is 1*s.* a day for each child and though this is little enough in return for all the child enjoys it is a formidable sum for a woman who happens to be working 7 days a week in return for a wage ranging from £1 18*s.* to £2 10*s.* a week. Cases of hardship can be considered and if necessary the payment can be reduced, but women in industry might well be granted this relief free of charge It would pay well as a national investment in healthy child life

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Obituary

RALPH MORTON CALDER

M B GLASG , SURGEON LIEUTENANT, R N V R

THE death has been reported of Surgeon Lieutenant Ralph Calder, who was posted as "missing presumed killed" last August He was born in 1913, the only child of Mrs Janet Calder of Ayr, and educated at the Academy there He graduated M B with commendation from Glasgow University in 1935 He held house-appointments at Ayr County Hospital and the Glasgow Royal Hospital for Sick Children, and he was Prof T K Munro's last house-physician at the Glasgow Western Infirmary before his retirement It was during this time that Calder first showed his aptitude for experimental work, though his one great desire was to be a physician But he was persuaded for a time at least to study pathology, and after two voyages as ship's surgeon he was awarded in 1936 an M R C scholarship in experimental pathology He chose as his subject liver necrosis and cirrhosis and began work at the infirmary under Professor Blacklock, who has written of him

"Calder was a stimulating laboratory colleague He approached any difficult pathological problem with a critical mind, but his criticism was always constructive and he dearly loved planning experiments to solve it These experiments, as his work on the liver proves, were always logical and were planned to have a bearing on the elucidation of disease in the human subject He did not neglect the purely morbid anatomical side of pathology and in the little teaching which he did he could draw an admiring group of students around him while he explained the nature of the lesions present Then from his clinical knowledge he would correlate in a most lucid manner the postmortem and clinical findings His academic accomplishments were great for one of his years, yet he was always modest and helpful towards his less gifted brothers and respectful of his seniors, who foresaw a great career in store for him and by whom he will be greatly missed"

In 1938 Calder was awarded a Graham scholarship and he came to London to continue his work on the liver under Professor Cameron at University College He later submitted the results of these investigations as his M D thesis He had joined the R N V R at the beginning of 1938 and he was called up before the outbreak of war For a year he carried out the routine work of a medical officer attached to a general hospital, till he was detailed to specialised research work At his own request he was later posted to a ship and on this service met his death His published work included a report of a case of cold allergy and a study of autoplastic splenic grafts His opinions were clear and his criticisms penetrating, but if he had forthrightness he also had charm, and his friends will remember him as an interesting and stimulating companion with a wide knowledge of literature and a deep love for the music of Mozart and Handel

GEORGE ALEXANDER COHEN

M B EDIN

MANY who attended the court of the coroner for Eastern Middlesex during the last fifteen years will regret the death of Dr George Cohen on Oct 16 at the age of 71 Dr Cohen who was born in Hull qualified in 1893 at Edinburgh University, and after postgraduate study at St Bartholomew's and Dublin, he saw a good deal of service abroad as a ship's surgeon He set up in general practice at Harringay in 1906 but forensic medicine was his real bent He was called to the by the Middle Temple and in 1910 appointed for the then central Middlesex district In 1926 A M M Forbes, coroner for the eastern division of county, died, and the eastern division absorbed the under Dr Cohen After the Coroner's Act 1926 became law, his jurisdiction was widened by the accretion of the parishes of Edmo Southgate and Enfield In his younger days he was noted instructor in ambulance work and a captain in Volunteer Brigade of the Middlesex Regiment For ov six years he represented the Tottenham-Division on the Middlesex county council, but resigned on his appointment as coroner

ROBERT WALLACE NESBITT

M B DUBL , F R C P I , SURGEON COMMANDER, R N

Commander Robert Nesbitt, who lost his life throu enemy action in September, began his medical care in 1912, when he entered Trinity College, Dublin, wi distinction as a junior exhibitioner—a standard maintained throughout his student days In 1915 joined the R A M C as a private, but was sent back t same year to complete his medical studies He qualifie L Med as quickly as possible and in 1918 joined the Nav as a temporary surgeon After the war he elected t stay in the service, returning to Dublin to take his M degree in 1923 He had a distinguished service recor holding the appointment of medical specialist at Hasla Plymouth and Chatham Much of his leisure was spen on postgraduate work and a careful study of the literatur of his special interest—diseases of the chest But h found time to write several plays, one of which was acte by the Dublin Abbey Theatre He loved a good argu ment, and his friends enjoyed the charm, humour an eloquence with which he disposed of their points A wel turned phrase or subtly expressed thought gave him in tense pleasure, for he had the gentleness, sympathy an understanding of a poet

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Births, Marriages and Deaths

BIRTHS

BARBER—On Oct 30, at Dunmow, the wife of Dr Geoffrey Barber—a son

CALVERT—On Oct 31, at Barrington, Cambs, the wife of Dr Henry Calvert—a daughter

CAREY—On Oct 31, at Sherborne Dorset, the wife of Surgeo Lieutenant Fraser Carey, R N V R—a son

DAWSON—On Oct 22, at Oxford, the wife of Major J R Dawson R A M C—a daughter

GRANT—On Oct 30, at Farnham, the wife of Captain Russel Grant, R A M C—a son

HELLIER—On Oct 21, the wife of Dr F F Hellier, of Par Square, Leeds—a son

RICHARDS—On Oct 30, at Sutton, the wife of Captain A H Mordaunt Richards, R A M C—a son

SIDEY—On Oct 31 at Aberdeen, the wife of Surgeon Lieutenan J D Sidey, R N V R—a daughter

DEATHS

COLLIE—On Oct 27, at Bournemouth, Frank Lang Collie M D Aberd, aged 77

MARTLEY—On Nov 2, Francis Charles Martley, M D Camb F R C P I, D P H

PENFOLD—On Oct 27, at Melbourne, William James Penfold M B Edin, B Hy Durh, D P H, director of the Baker an Shaw Institute, Alfred Hospital, Melbourne

PICTON PHILLIPS—On Oct 29, William Edward Picton Phillips M R C S, of Egerton Gardens, S W 3

TIDEY—On Oct 29, at Winchester, Stuart Alexander Tidey M D Lond, M R C P, aged 84

WALKER—On Oct 30, at Guildford, John Morris Walker M B Glasg

WATSON—On Oct 25, Thomas Boswall Watson, M D Edin late o Woldingham Surrey

WATSON—On Nov 1, Henry Allan Watson, M B Glasg, o Worcester, aged 70

AMERICAN DOCTORS FOR BRITAIN—Up to Sept 4 th number of doctors in the United States who had applie to enrol in the R A M C was 230 (*J Amer med Ass* Sept 13, 1941, p 941) Of these 138 were unsuitable fo various reasons, 42 of the remainder had actuall received passports

Medical News

al College of Physicians of London

t a meeting of the college held on Oct 30, with Sir Charles son the president, in the chair, Sir Wilson Jameson, Dr Spence and Dr W A Daley were elected councillors following were re elected representatives of the college Adolphe Abrahams on the committee of management of conjoint board, Sir Comyns Berkeley on the council of Central Midwives Board, Dr John Hay on the court of ernors of Liverpool University, and Sir Stanley Wood- k on the Central Council for District Nursing Dr Cyril ood was elected a member of the library committee

he president announced the appointment of Sir Wilson neson as Harveian orator, and Surgeon Captain Macdonald tchley as Bradshaw Lecturer for 1942, and the award of Jenks scholarship to Terence Robert Lancelot Finnegan, of Epsom College

he following having satisfied the censors' board were ted members —

Margaret D Baber, M D Lond, W W Brigden, M B Camb, A Burt, M B Camb, D L Caldwell, M.B Camb, G W M idlay, M D Edin G M FitzGerald M B N U I, Geoffrey well, F R C S G S Graveson M B Camb, Ursula James M B nd., Joseph Marks, M B Lond Thomas Parkinson, M D Lond, T G Prunty, M B Camb, and I B Sneddon, M B Sheff, geon lieutenant, R.N V R

Licences to practise were conferred upon the following 159 ndidates (138 men and 21 women) who have passed the al examination of the conjoint board —

Hazley Anderson, R H Andrews, I J Anrep, C D Baker, azem Barrada Edward Barry Smith, A W Bauer, Peter Baxter, einrich Beck Marcel Bednar, C J A Bell, J A R Bickford, argaret A Billinghurst, D A Blacketer Simmonds, Joseph orrowdale, D S Boyle S V Brookes, Jean L Broughton, R J D rowne C J Bruhn J D Bruzaud Olive N Bywaters, D A Carnegie D W F Charlton, W H Chase, J F Childs N F larke B U Coffey, H I Coombs, R A Craig, A F Crick, M C ross, F X Darne R G Dewhurst L W D Drabble, F M P ckstein J R Ellis, Shifra Ernst A T G Evans A J Evans, J S Evans J W G Evans J H W Fagan T N Fison, J M itton A W H Foxell Beryl M Givan E C E Golden Gertrude oldscheider, J G Goodhart, A J R Gottfried J D C Gowans, G Green B P Griffin H J Hagger, C L Hall, Doris N Hall, onstance M Hallett, J H G Halliday, Penelope K Hammick, E F Hammond P A S Hargrove, Charles Harris, R J Harvey, Thomas Haw Ursula M Hickman, A W Hind, S J Hinds W K H L Hoffmann, A E Howarth, D R Hughes Isabella C F Hungerford Menahem Icht, E B Jarrett, Rees Jenkins, C H Jones, G Jones K C D Jones Samuel Jung, F L King-Lewis F M ancaster, Richard Leigh, K H Lim, W K. Lim, Jeffrey Lomas, D B Longley Helen C Longmore Morris Lustigman, Osias ustmann P M McAllen, Hugh McColl Gerald Machanik, L R McLaren T M M McLean H L McMullen George MacVicar, Mary B Maish Betty M Margetts, Giusto Mariani H E S Marshall, M Matuk C H Merry J E Moore, J E E Morgan, P J L Mumford, J W Nelson, R J Newman, G D R Patten, Jean W Paul Alfred Pearce, B O Pepper R K Phillips, W A Porter, Elvira Power, T M Pritchard J P Quilliam, J F P Quinton, R J W Rees Edith Rhodes, J W F Richardson, H A Ripman, T Robinson W G Roper Israel Rosen, C F Ross, R K Ross Hynek Rotenstein D T Rowlands D K Sambrook Walter Schiller, G C Schwizer, H P Scurlock C F Scurr A G Seaman, J P Sharp A L H Smith, B J Smith, A J M Stevenson Maximilian Szinay J H Tasker, H D Teare D I Thomas R D St G Tucker K O A Vickery, D G Vulliamy, Ellis Vure, G H Waddington Glenys J Wade Vera B Walker, G G Wallis, D P Walther C W Walton, G N Weber, Joan M Whiteman David Williams E J Williams M H C Williams D H Wright, and E J Young Thompson.

Diplomas in child health were granted, jointly with the Royal College of Surgeons, to the candidates named in our issue of Oct 18 (p 473), and diplomas in public health to L C Lodha, L G Norman and M A G Ward

Royal College of Obstetricians and Gynæcologists

At a meeting of the council of the college held on Oct 25, with Prof W Fletcher Shaw, the president, in the chair, the following were admitted to the membership —

Gavin Boyd Glasgow Edward Gledhill Batley R M Millen, London Constance E Peaker Leeds Kathleen M Robinson, London, Katharine C Rogers London R X Sands, London, Violet E A Sykes London, and George Wynn-Williams London

The following have satisfied the examiners for the diploma

Elizabeth G W Barker, Constance L Beynon L A Cruttenden, Dorothy Cunningham R G Denniss, A A Fyffe R P Gammie, Jean L Hallum L W Hefferman, Geoffrey Hollingsworth Hilda E McNamara P S Norris Jean F Thompson, H B Watson, Eva M M Willett, and H G Wolskel

Association of Anæsthetists of Great Britain and Ireland

The following have been elected officers of this society for the coming year president, Lieut Colonel Ashley Daly, R.A.M C, vice-president, Dr C F Hadfield, treasurer, Dr Z Mennell, and secretary, Dr A D Marston

National University of Ireland

The Dr Coffey travelling studentship in physiology has been awarded to Dr J W Harman and the bursary in medicine to Dr John McSorley

North Western Tuberculosis Society

A meeting of this society will be held on Thursday, Nov 13, at 3 P M., at 352, Oxford Road, Manchester Dr G H. Leigh, the president, will speak on facts and fancies and the tuberculosis death-rate

British Institute of Philosophy

On Friday, Nov 14, at 3 P M., Prof. Herbert Dingle, D Sc, will speak at University Hall, 14 Gordon Square, London, W C 1, on the universe in relation to modern physics Cards of admission may be obtained from the director of studies at University Hall

Royal Institution

On Tuesdays, Nov 25, Dec 2, 9 and 16, at 2 30 P M Prof J C Drummond, D Sc, will lecture on recent advances in the science of nutrition and their significance in war-time The meetings will be held at the institution, 2, Albemarle Street, London, W 1

Pharmaceutical Society of Great Britain

A meeting of this society will be held at 17, Bloomsbury Square, London, W C 1, on Thursday, Nov 13, at 2 30 P M, when the Hanbury medal will be presented to Mr Harold King, F R S, a member of the staff of the National Institute for Medical Research Dr King will afterwards speak on chemistry and pharmacy

Royal Society of Medicine

On Tuesday, Nov 11, at 2 30 P M, there will be a discussion in the section of therapeutics and pharmacology on the kidney and hypertension The openers will be Prof Arthur Ellis, Dr Clifford Wilson, Prof G W Pickering and Dr Robert Platt The clinical section will meet at St Mary's Hospital, Paddington, at 2 15 P M., on Nov 14 At 3 30 P M on the same day Prof A J Ballantyne will read a paper on angiomatosis of the retina to the section of ophthalmology The section of neurology will hold a clinical and pathological meeting on Nov 15, at 10 30 A M, at Chase Farm Hospital, The Ridgeway Enfield, Middlesex

L C C Vitamin Tests

The London County Council has arranged for tests on the effect of American vitamin capsules to be carried out on 500 elementary school children, subject to the consent of their parents One vitamin capsule a day will be given on five days a week for nine months to 125 children selected at random in a reception area and to 300–400 children similarly selected from those attending elementary school in London An equal number of children will be chosen as controls who will be given capsules with a harmless inactive content

Hostels for Old Age Pensioners

At a meeting of the old people's welfare committee of the National Council of Social Welfare on Oct 31, Lord Soulbury, chairman of the Assistance Board, announced that where pensioners did not need continuous medical attention or nursing but needed to have such care at hand the board would make their pension sufficient to enable voluntary organisations to maintain hostels for them To this end the supplementary pension would be made sufficient to provide the pensioner with an income of 30*s* a week.

Medical Aid for China

During their second year's work the China Medical Aid Committee were able to send Dr Kent, an Austrian surgeon, and Dr Coutelle, a German physician and physiologist, to China and in November, 1940, they were posted to Red Cross units in Hunan-Hupeh areas Dr Rosa Coutelle and Mrs Maria Kent, a trained nurse, set out to join their husbands in March but owing to enemy action had to return to England There are now nineteen foreign doctors working in the Red Cross units under Dr Lim The units consist of a few trained Chinese first-aid workers and an interpreter The doctors treat the sick and wounded, perform simple operations, treat fractures, teach hygiene and sanitation, and sort out the wounded to be sent to the base hospital 200 miles away The press appeal made by the committee in July (*Lancet*, July 5, p 24) raised £400 and further donations will be welcomed by the treasurer, Dr E H T Hambly, Treharrock, Seer Green, Bucks

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At the annual meeting of the faculty the following were elected office bearers for the ensuing year —president, Mr Roy Young, visitor, Mr James MacDonald, treasurer, Mr William Richard, librarian, Dr W R Snodgrass, other councillors Mr J Scouler Buchanan, Mr Donald Duff, Dr John Gardner, Dr Stanley Graham, Dr John Henderson, Mr J A C Macewen, Dr Donald McIntyre, Dr Noah Morris, Mr William A Sewell, and Mr J Forbes Webster

Alliance of Hospital Administrators

The councils of the Incorporated Association of Hospital Officers (which has hitherto limited its membership to the administrative staffs of voluntary hospitals) and the Incorporated Association of Clerks and Stewards of Mental Hospitals have recommended the fusion of their societies The new body will open its membership to administrative officers of local authority and other hospitals, and a committee will be set up to consider the recruitment and training of administrative hospital staff

Notes, Comments and Abstracts

TO RADIUM SMALLHOLDERS

In addition to the radium held by hospitals under arrangement with the Radium Commission and King Edward's Hospital Fund there is an appreciable amount in the possession of small hospitals, medical practitioners and commercial firms, and the Minister of Health has now issued a pamphlet instructing these users how to protect their supplies All radium exceeding 1 mg in amount should, when not in use, be kept in a bore-hole or steel container of an approved type described in the pamphlet The bore-hole advised is 50 ft deep, and otherwise similar to that lately described by Lederman and Mayneord (*Lancet*, 1941, 2, 461) The container consists of a round or square block of mild steel with a narrow opening leading to a cavity in the centre to hold the radium The opening is closed by a screw plug The walls of the container must be not less than 3 in thick In a hospital in a vulnerable area not more than 350 mg should be in use at any one time Radon should be used instead of radium where possible and the treatment of patients by radium should not continue during an air-raid unless they are in a shelter If a bomb falls where radium is known to be, the medical officer of health should be at once informed He will have the area roped off and notify the Ministry of Health, who will arrange for experts to examine the site

SALAZOPYRIN IN RHEUMATISM

Good results are reported by Svartz,[1] in Stockholm, from the use of a compound of sulphapyridine and salicylic acid in rheumatism She had previously found that though sulphonamides alone were sometimes valuable in septic arthritis they had no effect on the ordinary rheumatic case, but it seemed possible that they might render the responsible organism more sensitive to the action of salicylates Simultaneous medication with sulphonamides and salicylates was therefore tried, but without effect Finally, however, Askelof and Willstædt prepared salicylazosulphapyridine, a preparation which is now produced commercially by Pharmacia of Stockholm under the name Salazopyrin Svartz reports five cases of rheumatic polyarthritis successfully treated with this drug One woman of 33 had had polyarthritis since 1933 and when seen could only walk a few steps difficulty, salazopyrin, 0 5 g four times daily, was begun on Oct 29, 1940, by Jan 31, 1941, movements were almost normal and the patient felt well Another woman of 44 with arthritis of 1½ years' standing, chiefly affecting the knees and metacarpals, was given several courses of salazopyrin amounting in all to 900 tablets of 0 5 g each This lady found herself standing on a chair energetically chasing a moth The other cases reported are similar, except that one developed a toxic rash after treatment for 10 days with 1 g six times daily Svartz also reports four cases of ulcerative colitis in which administration of the drug was followed by complete remission of symptoms Salazopyrin is only slightly soluble in water, but its alkaline salts dissolve fairly well Part of it is excreted unchanged in the urine, causing an orange discoloration if the urine is alkaline It does not give immediate relief of rheumatic pain and it may therefore be necessary to give salicylates with it The dose recommended for adults is 1 g four to six times daily, and treatment can be continued for weeks or months The blood picture should be watched, since mild anæmia was seen in some patients, no serious toxic effects were noted, though the drug had sometimes to be withheld for a time because of a rash

BOOKS FROM THE ARGENTINE

In their new volume on primary malignant tumours of the bronchi and lungs (Buenos Aires Hachette Pp 401), which is the only modern book written in Spanish on this subject, Prof Julio Palacio and Prof Egidio Mazzei describe three new clinical pictures associated with pulmonary growths the osteo-arthropathic, in which hypertrophic osteo-arthropathy is the characteristic sign, the pseudocardiac which produces symptoms resembling angina pectoris, paroxysmal tachycardia or cardiac insufficiency, and a type in which Klumpke-Dejerine paralysis gives a valuable pointer in the diagnosis of carcinoma of the apex of the lungs Several years ago the authors were awarded the Alvarenga prize of the Paris Academy of Medicine for their work on atelectasis of the lung, and in discussing atelectasis caused by bronchial carcinoma they draw attention to two new signs which they have observed deviation of the trachea (palpable in the suprasternal notch) during inspiration, in cases of atelectasis of the superior lobe, and the radiological finding of an unusual degree of translucency in the lung adjoining the atelectic lobe

In his book "Las Neurosis en la Guerra" (Buenos Aires Aniceto López Pp 251) Prof Gregorio Bermann discusses the place of psychology, psychiatry and psychotherapy in the treatment of people affected by war conditions During the Spanish civil war Professor Bermann was chief of the section of neurology and psychiatry at the military hospital at Madrid and his book is based on his own clinical experience Prof Emilio Mira, who spent some months at the Maudsley before taking up a post in South America, has written a foreword to the book

Warner's Calendar of Medical History —Messrs William R Warner & Co did not expect to be able to print further editions of their diary during the war, but they have obtained the authorisation of the paper control to publish a limited number—less than half of last year's edition The calendar is available only to members of the medical profession, and any doctor who is a regular user or who would like a copy for 1942 should write at once to Messrs Warner, Power Road, London, W 14

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Appointments

Bond K E, M B Camb, F R C S temp surgeon to outpatients at the Hampstead General and North-West London Hospital

Morley H S, M D Lond, M R C P examining factory surgeon for Midhurst, Sussex

Parker Alexandrin, M B Edin, D T M & H R M O at the East End Maternity Hospital London

Thomas C L M D Toronto R S O a [illegible] Children, Manchester

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1 Svartz, N *Nord Med* 1941, 9, 554, *Ibid*, 1941, 11, 2261

ORIGINAL ARTICLES

MEDICINE AND DUTY*

T B LAYTON, D S O, M S LOND.

SURGEON TO THE THROAT AND EAR DEPARTMENT OF GUY'S HOSPITAL, OTOLOGIST TO THE FEVER SERVICE OF THE L C C

THE influence of Nelson s order of the day at Trafalgar has come down to us through more than a century Its various manifestations affect our profession there is the duty of the one and of the many, the duty of the immediate emergency and of the never-ending routine

When a boy and a girl sign on at a medical school they join a profession in which they can no longer call any minute of their future lives their own At any moment they may have to give up whatever they are doing to go and see someone in distress, that is one of the glories of our profession If that distress is grave the doctor may have to collect a team to take action or to hand the patient over to a team which is in readiness These are the aspects of duty in acute disease, and once one is inured it is not very hard to rise to them It is no disparagement of the heroes of Trafalgar to say the same of their response to Nelson's signal, when everyone was on tip-toe for a fight Far harder were the two years before Toulon when duty consisted in seeing that every day every rope and every spar was in its place, and when, for many, that was the whole of duty In the same way we have with chronic disease a communal duty, made up of the personal duty of the many Preventive and social medicine are developing around us Our communal duty is not analogous to the work of a gun-team in the *Victory*, or even to that of her whole ship's company, but rather is comparable with the teamwork of the whole fleet We have our firms at Guy's, the success of each depending on the sense of responsibility and duty of each member of it But often one firm needs the assistance of another, and we have not yet replaced the enthusiastic emulation of competing firms by an equally enthusiastic fusion of firms working together We must do this, and in such a way that for one patient a medical firm may fuse with an orthopædic firm, for another with an ear firm, while for a third all three or more may be needed, and we must see that the patient does not fall between two stools and that there is the same individual attention as there was when the patient was entirely under one man Extend that idea to a similar fusion between different institutions, so that a patient may be at the same time under the care of someone at Guy's and someone else at an L C C hospital nearby and perhaps under others at an L C C hospital in the country or at Guy's-in-the-country, and under still more at a convalescent home or a rehabilitation centre belonging to a regional scheme At present this idea that each of us should work for his patient in a medical world which includes several institutions is little developed, but we have to build a new code and a new etiquette between institutions

DESTINY AND THE MIDDLE EAR

I want to try to illustrate these considerations by discussing the inflammations of the middle-ear cleft which I believe form today our most important medical problem from the national point of view I know that I am suspect in making such a statement, for they have been my daily task between the wars First there are cases of acute inflammation of the previously undamaged middle-ear cleft, most of which get well by the processes of nature But a small number demand immediate action by the emergency team and are just as urgent as the most fulminating form of appendicitis, and as with appendicitis the final decision depends on the correct appreciation of a single physical sign Rigidity of the neck is to otitic meningitis of acute disease what rigidity in the abdomen is to commencing peritonitis, and this neck-rigidity may be as difficult to assess as that in the right iliac fossa One thing is certain when you see a discharging ear and a suspicion of rigidity of the neck it is your duty to see that, to quote Wilfred Trotter, " the patient should at the earliest possible moment be put in conditions where any operation that may become necessary can be most safely and quickly performed "

The death of a child is a tragedy, but from the national standpoint it is not merely the fact of death that matters, but the influence which this has on the lives of others When a father or a mother dies and leaves children destitute, the results are more far-reaching than when one of the children is taken away, and this is what happens when an intracranial complication of chronic ear disease arises, for they arise in middle age Every one of these cases is a drama, sometimes it has a happy ending and then we keep in touch with the patient for several years, greeting him with pride, knowing he would not be there if it had not been for us Sometimes it is a tragedy and our part ends in the post-mortem room, examining the intracranial contents to see what we can do in the next case to ensure that it may take a different course The tension of a week's wasted work dies down and leaves us in that state of mental collapse which leads us to push the whole matter out of our minds But it is only the end of the third act of tragedy for the family, left either without its wage-earner or without the mother We all hope to start our children in life where we left off, we are beginning to wonder whether this is a wise wish, but there it is With the extinction of the wage-earner that hope is gone The mother has to take his place and the general standard of living goes down, in many instances, to one in which nutrition and even decency are impaired When the mother dies it is worse, the loss of that life takes effect unto the third and fourth generation These cases put the inflammation of the middle-ear cleft in the forefront of medical problems of national importance, because they are a group of tragedies which could have been prevented —and which should be prevented in the future

Other results affecting the national weal follow failure to cure an acute inflammation of the middle-ear cleft An infant begins to learn by the sense of feel, then the sense of sight is brought into play When he learns to walk he passes out of infancy, and education may be said to begin In the early stages of education hearing is the master sense, he needs it to learn to speak and to pick up scraps of knowledge from those around I do not think that the importance of this stage of a child's education is sufficiently realised If there has been some hardness of hearing he may be so backward as to lead to a suspicion of mental deficiency One of the most difficult examinations in clinical medicine is to test the hearing at this age and to decide whether there is any deafness; but I consider that hardness of hearing which we can hardly call deafness is of serious consequence to the developing mind up to the age when a child can read, and read freely Thus every acute inflammation of the middle-ear cleft if it is not cured before it changes to chronic disease or before there is permanent damage to the middle ear, may alter the whole of the patient's life

An elaborate organisation has been set up by the Board of Education over the whole country, under the Children's Act of 1906, to deal with chronic ear disease in children of school age Doctors, nurses, teachers, and many other people have given their attention to this work, and nothing has come of it in thirty years. That is what we have to face chronic ear disease is incurable It can be prevented by curing the preceding acute inflammation, but once the cutaneous or other secondary organisms have become established the disease is in most cases incurable Many will say I am wrong But though they may have helped many cases of chronic otitis media to get well, these are very few compared with the number of the population going about with chronic ear disease We must approach the problem from a new aspect Let us consider how chronic ear disease affects life after the school age has been reached We may divide it into the effect on education and the effect on the wage-earning capacity For the seriously deaf child there are special schools with expert teachers, or arrangements are made for the child to sit in front of the class near the teacher But these form but a small part of the problem It is the children with an unassessable diminution of hearing, or with deafness

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* A lecture given on the eve of Trafalgar day 1941, at Guy's Hospital

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THOMAS C L M D Toronto R S O at Booth Hall Hospital for Children, Manchester

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[1] Svartz, N *Nord Med* 1941, 9, 554, *Ibid*, 1941, 11, 2261

OUTBREAK C

This outbreak took place in the modern section of an older hospital serving a large industrial population. Unfortunately we did not hear about it until it was over, so that there was no opportunity of studying it at first hand. The maternity unit comprises 4 wards of 6–12 beds each, and 5 single or double rooms, distributed on two floors. The ground floor has its own labour-room and in addition an isolation unit and nursery. The first floor takes the larger number of patients, has 2 labour-rooms, an operating-theatre and 2 nurseries, one of them for premature babies. The total number of beds is 43.

Between July 2 and Sept. 29, 1940, 29 babies became ill in hospital, most of them in July and August. Many of the cases were severe and the fatality (38%) was the highest of this series. The characters of the epidemic were similar to those already described. One main difference in the regimen of this hospital as compared with the others is the preponderance in the use of cow's milk.

Period of epidemic prevalence (July 2–Sept. 29, 1940)	
Babies born in hospital during this period	206
Babies affected in hospital	29
Deaths from neonatal diarrhœa in hospital	11

EPIDEMIOLOGY AND ÆTIOLOGY

Further experience must be gained before adequate discussion under this heading is possible. Each of the three epidemics started explosively, so that considerable numbers of infants were affected within a week or two; after this they progressed more slowly, outbreaks A and B continuing for weeks or months till the hospital was closed. Whatever the causal agent, and by whatever mechanism fresh cases are promoted, it can be said that, once the trouble starts, known methods of isolation as practised do not seem capable of stopping it, and that the individual cases are mild, moderate or severe without reference to such factors as sex, birth-weight, age at onset or stage of the epidemic.

Season.—The outbreaks all began in the warm summer months. It is reported that epidemics may occur at any season. All that can be said is that outbreak B continued without remission through summer into winter (December).

Incubation period.—Certain criteria from A suggest that this is short—from 1 to 8 days.

Age-incidence.—Most babies in outbreaks A and B became ill within the first week of life—the great majority within a fortnight. However, the youngest infants are not alone susceptible, as a follow-up (part of B) revealed that many babies developed diarrhœa after being discharged from hospital apparently well. Again, in C, where for various causes numbers of infants were kept in hospital longer than the usual 10–14-day period after birth, 46% were older than a fortnight when first affected.

Causal origin.—In view of the early age (4 days) at which signs may appear, and the short incubation period, the possibility must be envisaged that the disease is congenital or at least transmitted from mother to child at, or immediately after, birth. In fact, the mothers were healthy for the most part and delivered of apparently healthy children, and where there was maternal illness (eclampsia, pyelitis, breast abscess) it seemed to be no more prevalent among the mothers of affected than among those of the unaffected children. No evidence was discovered to implicate as causal factors morbid conditions such as colds, influenza, furuncles or digestive disturbances among the medical or other staff. Many babies both ill and well had a mild conjunctivitis (? prophylactic use of silver nitrate). A few had minor sepsis of the umbilicus or subcutaneous abscesses. Preceding infections of the upper and lower respiratory tracts, or of the central nervous system, were not found. Terminal bronchopneumonia was noted in some and discovered in others at autopsy, as was also pus in the middle ear.

Routine bacteriological throat and stool cultures were obtained from babies, mothers, medical and domestic staff in outbreaks A and B, and stool cultures from the babies in C, but none of the usual pathogens was found. Cultures from pus in the middle ear revealed organisms of the coliform and diphtheroid groups, as well as occasional staphylococci [illegible] streptococci.

Morbid anatomy.—Careful autopsies were performed on 9 subjects: 1 in outbreak A and 8 in B. None showed changes of note. As a rule the intestinal tract was normal anatomically and histologically. In one or two cases the intestinal mucosa was slightly hyperæmic. The liver, adrenals, spleen, kidneys and central nervous system were little, if any, different from the normal. The presence of terminal bronchopneumonia and otitis media in some instances has been remarked on.

ONSET AND COURSE OF DISEASE

The onset may be sudden or insidious. All three epidemics included examples of both. In B, many of the cases began slowly and appeared to be difficult to recognise in the early stages. In cases of insidious onset the baby begins to suck less vigorously, or becomes indifferent to food, appears slightly limp and ceases to put on weight. These signs are often misinterpreted. The breast milk is thought to be insufficient and a complement of cow's or other milk prescribed. Again, the disease may begin with a mild diarrhœa or merely a green stool; or there may be slight vomiting or a definite loss of weight.

The sudden onset is characterised by profuse diarrhœa, and usually vomiting, and sometimes a dramatic loss in weight. Where the onset is early (4th or 5th day) the physiological drop in weight is at its maximum, or a gain in weight may have set in. A failure to gain, or a further dramatic drop, may be the first sign that the infant is affected. In outbreak C a few infants in the premature class simply showed signs of collapse with anorexia and a greyish or cyanosed appearance, and died in a day or two without diarrhœa or vomiting. This type of onset has also been noted in some aged victims of true dysentery.

In the milder type of case, the stools become rather frequent, 2–5 daily, relaxed or slightly loose, green or yellow in colour. The appetite is as a rule indifferent but may be quite good, and an alteration in the colour of the stools for several days on end may be the only sign of abnormality. Constitutional symptoms are barely discernible. There is no dehydration, no rise in temperature, and beyond a faint pallor and a failure to gain in weight progress seems satisfactory. The stools may become normal and the whole process be over in a few days. But relaxation of the stools may persist for a week or two, and though there may be a continued absence of the more serious symptoms the appetite will remain poor, and the return to birth weight will be considerably delayed.

In those moderately ill, the stools are more frequent—up to 7 or more in the 24 hours. They are apt to be loose or watery, bright green, or yellow or orange. The infant may vomit once a day or more often. The weight falls by 8–16 oz. within 3–4 days of the onset. The baby becomes listless or drowsy and feeds slowly and reluctantly, has a pale or greyish appearance, and may or may not be manifestly dehydrated. He looks somewhat toxic, and the temperature is unstable—rising or falling a degree or so above normal. The illness lasts at least a week, and is generally prolonged into the second or third week, when recovery sets in with improvement of the appetite and a slow but steady accretion of weight. The stools return to normal rather slowly, and tend to remain a little relaxed or green while the infant is much better in all other respects.

The really serious cases are unmistakable. They become worse rapidly with diarrhœa and vomiting and sudden loss in weight. Vomiting is usually serious, frequent, sometimes projectile, and occurs after food and fluid. It may precede the onset of diarrhœa by a day or two and there is often a degree of abdominal distension. The stools number 3–10 in the 24 hours, are loose or watery, and are apt to vary in colour from time to time from green of different hues to yellow or brown and, characteristically, orange. Colic is not a feature. The loss of weight is considerable—1–2 lb. for the average baby. There is serious dehydration, drowsiness alternating with irritability, and sometimes a degree of neck rigidity; but the fontanelle is sunken, and an examination of the cerebrospinal fluid will reveal no change. The face becomes ashen grey, the eyes sunken, and at intervals the lips may be cyanotic. The temperature hovers around 100° F., but may reach 103° F. or 104° F., and the infant looks profoundly toxic. Death usually not serious enough to warrant special arrangements, that waste the nation's energy, because they are not gaining as much from their education as they should. They go out into the world less expert than they should be, whatever their work, because their mental processes are not developed as much as they might have been.

The effect on wage-earning capacity is more uncertain. I do not believe that mere discharge from an ear ever results in a person losing work, having to take work of a lower standard, or having to go off duty. Once the patient has learned how to make a proper toilet of the meatus none of these things will happen; the only reason for his drawing sickness benefit is his doctor's suggestion that he should. There is no reason why anyone should stop work or be admitted to hospital on account of ear discharge without any other symptom. With deafness the problem is more intricate. Once a person is in work he does not lose work because of it. But a deaf man finds great difficulty in getting posts and in holding them; and he is often driven to do poorly paid menial work below the level for which his mental faculties qualify him. But the process does not necessarily end there; he may be driven down into the ranks of the unemployed, from whom come the unemployable. This national problem will in the future become more important because the effect of deafness, or even of hardness of hearing, is much greater in the woman than in the man. There are many jobs a man can continue to do with little or no hearing but very few in which a woman can retain her post.

We must look, then, on every case of acute inflammation of the middle-ear cleft that becomes chronic as a failure, not for any given doctor but for the medical profession as a whole. It is not a matter for specialists, it is one of those bits of medicine common to the whole profession. We must all try to realise that if we have under us a patient with an acute inflammation of the middle-ear cleft we have a short six weeks in which to get it well from the date on which the drum-head ruptures; and by well I mean with a healed drum and normal hearing. We must use that combination of preventive and social clinical medicine of which I spoke earlier, and it will need the teamwork of the whole fleet. But no-one will see the results of his own work; what we do today will take effect in A.D. 2000.

EPIDEMIC NEONATAL DIARRHŒA IN MATERNITY HOSPITALS

I.—CLINICAL ASPECT

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SERIOUS outbreaks of diarrhœa among babies in maternity hospitals have been described of recent years. Excellent accounts of their epidemiological and clinical features have appeared in America (Barenberg et al. 1937,* Frant and Abramson 1937, Rice et al. 1937, Best 1938), where attention has been drawn to their widespread distribution, high morbidity and mortality, and unexplained ætiology. Apart, however, from a paper by Craig (1936) little has appeared to indicate the prevalence of neonatal disease of an epidemic character in this country. The purpose of this communication is to summarise the results of studies into the nature of three of these outbreaks in different cities in England during the latter half of 1940.

These epidemics, which are sometimes referred to as epidemic diarrhœa of the newborn, are probably more common than is generally realised. Because of their tendency to high morbidity and mortality it is important that their features should be recognised as early as possible. We hope that the present account will lead to their more frequent recognition.

The cause or causes of diarrhœa in the neonatal period have not been satisfactorily established, and the opportunity has been taken to pursue certain bacteriological investigations which will be described in a later section of this paper. The outbreaks will be labelled respectively A, B and C. A and B affected hospitals in widely separated cities in the south of England, and C a hospital in a large city in the industrial north.

OUTBREAK A

This occurred in a voluntary lying-in hospital of between 50 and 60 beds. The building is comparatively old and has 5 public wards and 7 small private rooms. There are 10 beds and 10 cots to a ward. There is a single labour room situated between the babies' bathroom and a distributing kitchen. The babies are washed, changed and fed (if not on the breast) in the bathroom. This leads to much contact between them. The hospital is understaffed. There is no division of duties, so that the same nurse attends the mother and feeds, changes and washes the infant. Breast-feeding is the rule, but, when cow's milk is necessary, a pasteurised product is used, suitably diluted, and acidified with lactic acid. It is stored in a refrigerator in a special milk room. Glucose water is given to all babies.

The first baby became ill on May 10, 1940, with sudden loss of weight, severe diarrhœa and some vomiting, and exhibited other symptoms such as drowsiness, dehydration, elevated temperature, a toxic appearance and a hoarse cry. Thenceforth, cases of varying severity appeared every few days through June into July. All the wards and all the babies in the private rooms were affected, and though measures were taken to check it the outbreak persisted until the hospital was closed to further admissions.

Period of epidemic prevalence (May 2–July 20, 1940)

Babies born during this period	250
Babies who exhibited symptoms in hospital	27
(10 came under our observation.)	
Deaths from neonatal diarrhœa in hospital	5
(Deaths at home are not accounted for.)	

OUTBREAK B

This concerned the maternity department of a municipal hospital serving a large city about 130 miles from A. The department is of modern construction, and was opened in 1939. It consists of two identical one-storied buildings separated by a grass plot and with no indoor communication. Each comprises two wings joined together in a wide V facing roughly south. Each wing is subdivided into 11 single or double rooms and 2 small wards of 3 beds. The total number of beds in the department amounts to 88.

By contrast with A, the babies sleep together in a large central nursery, and here they are changed and fed if not on the breast. A bathroom and an isolation room adjoin the nursery. Cots are placed side by side on the framework of a movable trolley which is wheeled along the passage to the respective rooms at feeding time. The artificial foods in use include pasteurised milk, Nestle's, Trufood and Allenbury's. These are kept in the cupboard of a kitchen used for food distribution to the mothers, and there is no refrigerator. Glucose water is given to all babies. Here again the nurses share the duties of attending to mother and child. Each wing has its own labour-room and a separate personnel. A swing door in the passage between the wings can be closed to ensure the mechanical isolation of one wing from another.

When the outbreak came under our notice it appeared to be confined to one wing, where the first diagnosed case occurred on July 7, 1940, and the last on July 27. Out of 42 babies exposed, 11 became ill in hospital at intervals of a day or two; a follow-up inquiry revealed that an additional 12 babies developed the disease within a few days of reaching home and must have been discharged during the period of incubation.

Months later unmistakable cases were recognised in both wings of the twin block. The evidence suggests that the outbreak really began about the middle of June and ran without intermission in one wing or another until it was checked in December. Many deaths occurred, and though all the cases had pronounced gastro-intestinal symptoms, the stated cause of death was rarely connected with or attributed to them. The closing of a block about the third week of November appears to have stopped the outbreak.

Period of epidemic prevalence (June 17–Dec. 15, 1940)

Babies born during this period	540
Minimum number of babies affected in hospital	83
(25 came under our observation.)	
Deaths from neonatal diarrhœa in hospital	25

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* References will be found at the end of the second paper.

spore-bearing bacteria or by other organisms were present in the fæces With these objects in view a fairly elaborate technique was designed of which the following is a summary

TECHNIQUE

A film of the fæces was stained by Gram's method and xamined to see if there was any obvious abnormality in the lative numbers of bacterial types present

Search for organisms of the salmonella and dysentery roups was made by direct plating on MacConkey's agar, and r organisms of the salmonella group in addition by preliminary enrichment in brilliant green and tetrathionate broths

A suspension of fæces was made in N/4 Ringer solution, tandardised by opacity to 3000 million coliform bacilli per ml , and treated as follows (*a*) One part was heated to 70° C or 10 minutes and plated out in duplicate on a glucose blood gar medium One plate was incubated aerobically and the ther anaerobically to detect spore bearing organisms *b*) The other part was not heated Instead, successive tenfold ilutions were made in N/4 Ringer, and 0 1 ml quantities of he 10^{-2}, 10^{-3}, 10^{-4}, and 10^{-5} dilutions were spread on plates of ry blood agar, glucose blood agar (Eggerth and Gagnon 1933), r liver glucose blood agar (Eggerth 1935), which were incubated anaerobically in a modified McIntosh and Fildes jar nd examined usually after 48–72 hours and then again after our or five days These plates were used for determining the relative numbers and types of micro-organisms present The identification of the different types was carried out by the sual routine methods Preliminary observations failed to eveal any advantage in the incubation of plates aerobically s well as anaerobically, and aerobic incubation was therefore iscontinued

The standard suspension was centrifuged at high speed, and tested for toxicity by the inoculation of 0 1–0 2 ml of the supernatant fluid intravenously into mice, and sometimes intraperitoneally as well

The fæces were usually examined on the same day as that on which they were passed If they arrived too late to be examined the same day, they were kept in the refrigerator overnight In some instances they were transmitted by post or rail and did not arrive till the following day Experimental observations on healthy infant stools subjected to these different methods of storage showed that little change in the normal flora resulted Fæces from sick babies were often inoculated immediately after collection on to MacConkey agar plates, in case dysentery bacilli should be present and die out during transmission to the laboratory

FINDINGS IN NORMAL NON-CONTACT INFANTS

At Oxford specimens of stools from 21 healthy noncontact infants aged 7–23 days were examined, and at Cambridge from 36 healthy non-contact infants aged 3–16 days These infants were all in maternity homes free from neonatal diarrhœa All infants were breast fed, though complementary feeds of modified cow's milk were given to a few of them The results are recorded in table I The figures on the whole agree very closely Oxford recorded a slightly higher proportion of coliform bacilli and Cambridge a slightly higher proportion of lactobacilli, but in view of the great variation in frequency to which all groups of organisms were subject in fæces from different infants no weight can be attributed to this discrepancy It will be seen that about 80% of the organisms cultured from the fæces belonged to the lactobacillus group, about 10% to the group of coliform bacilli, and about 4% each were streptococci and staphylococci Organisms of the Gram-negative bacteroides group (Eggerth and Gagnon 1933, Weiss and Rettger 1937, Misra 1938) and of the clostridium group were rarely present

Examination of the individual strains showed that practically all of the lactobacilli were of the *bifidus* type Most of the coliform bacilli were *Bact coli* I type (Report 1930), though occasional strains were identified as *Bact aerogenes*, or belonged to the late-lactose-fermenting or paracolon groups Proteus seemed to be very uncommon Of the streptococci present only a proportion were studied fully The great majority of these corresponded to *Streptococcus fæcalis*, being heat-resistant diplococci, fermenting mannitol but not raffinose, producing the characteristic acid clot with decolorisation in litmus milk, and falling into Lancefield's group D A few of the strains produced true β-hæmolysis, but most were α-hæmolytic With one exception the staphylococci were of the *albus* type and were coagulase-negative *Staphylococcus aureus* was never found in stools from healthy infants at Oxford, and only once at Cambridge The very few anaerobic spore-bearers that were isolated seemed to be closely related to, if not identical with, *Cl paraputrificum*, Bienstock (Hall and Snyder 1934)

These findings are in general accord with the classical observations of Tissier (1900), who first drew attention to the great predominance of *Lactobacillus bifidus* in the stools of healthy breast-fed infants

The intravenous inoculation of mice failed to reveal the presence of any soluble toxin in the stools At Oxford the animals remained alive and well till they were killed on the fifth day or later At necropsy nothing abnormal was found At Cambridge the animals were kept under observation for a longer time Most of them died in 10–35 days after injection No obvious changes were seen post mortem, but from the heart blood or peritoneal cavity coliform bacilli were cultivated These results were attributed to chronic infection with organisms present in the supernatant fluid of the fæces suspensions

FINDINGS IN OUTBREAK A

Samples of stools from 18 *normal contact* infants aged 1–22 days were examined at Cambridge with the results shown in table II Compared with the findings in normal non-contact infants at Cambridge (table I) considerable differences are noticeable The lactobacilli constitute only a small proportion of the fæcal flora, while the coliform bacteria and the staphylococci are preponderant Too much attention should not be paid to these differences, since owing to the large number of specimens received at once the full quantitative technique could not be carried out, and the figures are therefore open to criticism

Samples of stools from 9 sick babies suffering from diarrhœa were examined at Cambridge and 3 at Oxford Macroscopically the stools did not differ greatly from those of the healthy controls Mucus was not infrequently present in small quantity, but not more often than in the stools of the control babies Pus or blood was never observed With few exceptions the reaction was acid to litmus The bacteriological findings are summarised in table II Compared with the figures for normal contact infants in the same hospital, the lactobacilli are seen to be more numerous and the staphylococci less numerous The figures for the coliform bacilli and for the streptococci are much the same In 6 cases the stools were examined after recovery , the results were not appreciably different from those in the early stage of the disease

The number of samples examined in this outbreak was relatively small and the observations on the control normal contact infants were not altogether satisfactory There does not appear, however, to be any considerable difference in the bacterial flora of the stools from the sick and healthy infants in the same hospital, and certainly none that would suggest an adequate cause for the occurrence of diarrhœa

No organisms of the salmonella or dysentery groups were isolated from any of the stools, and in none of them was a soluble toxin demonstrated by mouse inoculation

FINDINGS IN OUTBREAK B

Samples of fæces from 14 normal contact infants were examined at Oxford and 10 at Cambridge The results are given in table III The Cambridge figures showed a lower proportion of lactobacilli and of coliform bacilli and a higher proportion of streptococci than the Oxford figures Taken together it will be seen that the chief difference in the distribution of organisms from that in healthy non-contact infants at Oxford and Cambridge (table I) is that the lactobacilli, though still dominant, are less numerous, and the coliform bacilli, and particularly the streptococci, are more numerous

From sick infants suffering from diarrhœa Oxford examined 10 stools and Cambridge 12 Macroscopically most of the stools were similar to those of healthy babies on a milk diet Mucus was not infrequently present in small quantity, as it was in the stools of the control contact infants, but pus and blood were absent With few exceptions the reaction was acid to litmus The bacteriological findings are summarised in table IV At Oxford a higher proportion of lactobacilli and a lower occurs within ten days, sometimes sooner, and generally within a fortnight Alternatively the symptoms may abate and slow recovery set in

So far as our limited observations go, complications do not appear to be common Otitis media is seldom obtrusive, but too few autopsies were undertaken to enable us to judge its real incidence The same may be said of bronchopneumonia, which when it occurred generally appeared in the final stages of the illness

PROGNOSIS AND TREATMENT

The prognosis is good in mild and moderate cases, and bad in those defined as serious Of those considered serious 62% in outbreak A and 81% in B died The onset of frankly fluid stools, repeated vomiting, restlessness and a hoarse cry worsen the prognosis The colour of the stools means little Orange stools may be present in mild cases as in serious The type of feeding may have some influence on the outcome In outbreak B, 14% of 51 sick infants entirely breast fed died, contrasted with 60% of 30 given artificial milks with or without breast milk In outbreak C, all the infants were being fed on cow's milk mixtures when they developed the disease, and the case-fatality was 38%

No treatment is specific In all but the mildest, parenteral administration of nutrient and salt-replacement fluids, and of blood or plasma is necessary In outbreak C, sulphapyridine was tried in some cases without success Sulphathiazole was tried in those instances where staphylococci were isolated from the stools The presence of these organisms is of problematical significance, so far as our investigations go, and the drug appeared of little value Breast milk would seem to be the feeding of choice

There is only one effective means of halting the spread of the epidemic, and that is to close the entire hospital to admissions, discharge the patients, and thoroughly clean and disinfect the wards before reopening in a week or ten days' time

COMMENT

Neonatal diarrhœa of an epidemic character has recently been described by Rice and his colleagues (1937) as a disease sui generis, using such criteria as (1) its apparent limitation to babies in the first month of life to the exclusion of older infants , (2) the apparent absence of parenteral disease to which it might be secondary , and (3) its non-identification with any known enteral disease However, during infancy the syndrome of diarrhœa, vomiting and associated effects identical with that of neonatal diarrhœa may arise from a number of infections well recognised or obscure, and until it has been established that epidemics of diarrhœa among the newborn are due to one and not to various ætiological agents the basis for regarding them as specific must rest on an insecure foundation

Meantime, the term " epidemic diarrhœa of the newborn " will serve a useful purpose if it leads to the more critical scrutiny of infants during their sojourn in hospital, and to the recognition of diarrhœa of an epidemic character at an early stage Mild cases are easily missed Slight loss of weight or vomiting in very young infants is a customary experience from irrelevant causes, and apt to be regarded casually by nurses and even experienced sisters The occasional green stool is a commonplace, and it is unnecessary to exaggerate the importance of these minor symptoms But it should be borne in mind that for a period of weeks they may be the only token that one baby after another is being affected by the disease in question, until there is a sudden flare-up of serious cases, some of which will be fatal Another danger is that a considerable proportion of babies may be discharged apparently well but incubating the disease They are lost sight of Many of them will be admitted to children's hospitals, where the origin of the disease is never suspected In fact the number affected by epidemic diarrhœa and the total mortality is probably much greater than one may conclude from a mere study of maternity hospital statistics

Epidemic diarrhœa of the newborn is not a new disease It has probably occurred as long as maternity hospitals have been in existence But the gravity of its effects have not been sufficiently realised The repetition of an outbreak in the same institution does not appear to be common until, perhaps, after the lapse of many years, so that hospital staffs are not familiar with it, and may not tackle it boldly at the beginning

Furthermore we have the impression that where an outbreak does arise the hospital authorities tend to be unduly reticent, fearing perhaps for the reputation of the place Until we are able to prevent these outbreaks it is probable that they will become more common with the expansion of hospital facilities and the decreasing number of confinements in the home If what has been described in these three epidemics reflects, as it may well do, a state of affairs occurring in other large centres of population, the total of wasted life and effort must be already considerable, and one that the nation cannot afford, least of all now

When an outbreak is suspected no effort should be spared to determine its true nature, and until this has been done rigid methods should be employed to safeguard those as yet unaffected When a definite diagnosis has been reached the hospital should be closed at once and the patients discharged If, at the same time, a careful investigation could be made and the results brought to the notice of the profession the accumulated data would add to our knowledge and might aid in the solution of the problem

SUMMARY

Three outbreaks of diarrhœa confined to newborn babies arose during the latter half of 1940 in maternity hospitals serving three widely separated cities in England They were essentially similar in their epidemiological and clinical features Large numbers of infants were affected and there was an aggregate case-fatality of 29%

It is suggested that outbreaks of neonatal diarrhœa are of more general occurrence than is realised, and may constitute an important factor in the maintenance of high neonatal mortalities

It is important that the nature of these outbreaks should be recognised at an early stage so that measures can be taken for the safety of present, and the prevention of future, contacts

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EPIDEMIC NEONATAL DIARRHŒA IN MATERNITY HOSPITALS

II —BACTERIOLOGICAL ASPECT

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M R C S

FORREST FULTON,
B M OXFD

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HITHERTO the bacteriological findings in neonatal diarrhœa, or epidemic diarrhœa of the newborn as it is often called, have been variable and inconclusive In the United States McKinlay (1937) isolated an unidentified species of salmonella from the stools Kimberley (1939) found *Clostridium welchii* to be the predominating organism in the stools, but he did not regard it as of any ætiological significance Costello and Lind (1939) attributed the disease to a pathogenic strain of *Proteus vulgaris* associated with *Bacterium coli* Cron, Shutter and Lahmann (1940) cultured hæmolytic streptococci from the throat and from the stools of all the cases examined, and from the peritoneal fluid in 10 out of 13 cases coming to autopsy Frant and Abramson (1938), Greenberg and Wronker (1938), and Forbes and Olsen (1939), on the other hand, failed to find any bacteria of importance In this country Bloch (1941) states that in the outbreak he studied infection was obviously respiratory, and that staphylococci were found in the nose of some of the cases and contacts

In starting our inquiry it seemed important (*a*) to make as complete a study as possible of the bacterial flora of the fæces of normal and affected infants, and to find out whether the qualitative or quantitative distribution of organisms in the stools was disturbed during the course of the disease , (*b*) to search for known pathogenic organisms, such as those of the salmonella and dysentery groups , and (*c*) on the analogy of lamb dysentery to determine whether toxins formed by anaerobic

TABLE IV—OUTBREAK B DISTRIBUTION OF BACTERIA IN FÆCES OF SICK INFANTS

Type	Oxford (10 infants)			Cambridge (12 infants)			Oxford and Cambridge (22 infants)		
	Samples positive	Per cent of flora		Samples positive	Per cent of flora		Samples positive	Per cent of flora	
		Limits when present	A M		Limits when present	A M		Limits when present	A M
Lactobacilli	9	9–98	71	11	5–87	50	20	5–98	60
Coliform	9	1–91	22	11	10–100	38	20	1–100	31
Streptococci	4	< 1–10	2	5	2–28	5	9	< 1–28	4
Staphylococci	5	< 1–22	5	2	2–58	6	7	< 1–58	5
Clostridia	5	< 1	< 1				5	< 1	< 1
Other organisms*				3	4–6	1	3	4–6	1

* Other organisms were proteus and yeasts

(3) *Infection with a pathogenic organism that does not develop readily in culture*—Though the media we used are able to grow most organisms that are likely to be met with in the intestine, it is possible that some pathogenic organism may have been present in the fæces of the sick infants which failed to develop under the cultural conditions we were employing We do not regard this as probable, since if such an organism had been present in anything but small numbers, it would probably have been detected in the direct smear examination Nevertheless, in any future investigation the greatest variety of culture media and of cultural conditions should be employed in the hope of detecting some organism whose requirements are different from those of the more usual pathogenic intestinal bacteria

(4) *A toxin formed by an organism in the intestine*—The occurrence of dysentery in newborn lambs due to the formation in the intestine of a powerful toxin by *Cl welchii* type B affords a strong analogy for the possibly similar causation of neonatal diarrhœa in human infants This line of investigation seemed all the more promising since Kimberley (1939) had recently reported the finding of *Cl welchii* as the predominant organism in the stools of infants suffering from neonatal diarrhœa Our attempts to confirm this hypothesis, however, met with complete failure Anaerobic organisms were seldom found, and then only in small numbers. Moreover, the direct examination of the fæces for soluble toxins to mice proved negative The possibility that a toxin was formed by *Staph aureus* in the intestine seemed very unlikely, since these organisms were rarely found The formation in the intestine of toxic split-products from one of the milk proteins by a bacterial species, or combination of species, not generally considered pathogenic must also be envisaged, but so far we have no evidence to support it

(5) *A bacterial toxin ingested with the food*—*Staph aureus* is a not uncommon cause of acute mastitis in cows The milk may contain an enterotoxin formed as the result of the growth of the staphylococci in the udder, though more usually the toxin is not present in sufficient quantities to be detectable till the milk has been left for a few hours at a suitable temperature after withdrawal (Barber 1914, Crabtree and Litterer 1934, Shaughnessy and Grubb 1936) It seemed not impossible that an enterotoxin-producing strain of *Staph aureus* might gain access to a maternity ward, infect the breasts of some of the mothers, and lead to the development of toxicity in the milk This hypothesis received some support from the finding in outbreak C that a number of strains of *Staph aureus* isolated from the milk of a tuberculin tested herd supplying the hospital were able to produce an enterotoxin It received further support when we found that a number of the mothers of sick babies in outbreak B were secreting milk containing pathogenic *Staph aureus* When we examined these strains, however, by the kitten test, none of them was found capable of forming an enterotoxin Moreover subsequent observations showed that coagulase-positive strains of *Staph aureus* are frequently present in the milk of healthy mothers with healthy babies While we would not like to exclude the hypothesis of toxin formation by staphylococci or some other organism in the maternal breast, we must admit that the evidence so far available is far too meagre to justify our regarding it as more than a possible cause in some outbreaks

(6) *Secondary to a systemic infection with an unknown organism*—It is possible that the diarrhœa may result from general toxæmia due to infection of some part of the body other than the intestine, such as the middle ear or lung No opportunity was afforded at Oxford or Cambridge of exploring this suggestion, but the results of examinations made locally as well as the findings of other workers do not seem to lend it much support

(7) *A virus infection*—To the best of our knowledge no primary infection of the human intestine with a virus has so far been described, though in certain virus infections of animals, such as rinderpest of cattle and ectromelia of mice, extensive invasion of the intestine may occur The high degree of infectivity of neonatal diarrhœa is consistent with a virus causation, and this possibility should be kept in mind in any future investigation In only one outbreak was post-mortem material examined for the presence of viruses—by Dr van den Ende and Miss Dora Lush—and the results were entirely negative. Prof James McIntosh has suggested in conversation that the condition may be due to infection of the parasympathetic ganglia with a neurotropic virus leading to increased peristalsis This suggestion again should be borne in mind in any future investigation, but the very short incubation period of the disease in some cases is slightly against it

(8) *Infection with a protozoon*—*Giardia intestinalis* and certain other protozoa are responsible for enteritis in children, and it is conceivable that neonatal diarrhœa may be primarily a protozoal infection Although this possibility cannot be entirely excluded, it may be noted that examination at Cambridge of unstained films of fæces from outbreaks A and B failed to reveal the presence of any protozoa

Other hypotheses might be suggested, but to no particular purpose The comparatively mild disturbance in the normal bacterial flora of the intestine in infants suffering from neonatal diarrhœa—a disturbance that may easily be due to the more rapid passage of food through the intestine with consequently insufficient time for the lactobacilli to proliferate in the lower bowel—suggests that the disease is not due to the prodigious multiplication of an abnormal bacterium gaining access to the intestine The relatively insignificant post-mortem findings, both macroscopic and microscopic, are suggestive more of a toxæmic condition or a virus infection than of a primary bacterial enteritis

From a bacteriological point of view it is entirely possible that neonatal diarrhœa is not due to a single pathogenic agent The diverse findings that have been recorded in this disease (see opening paragraph of this article) are curiously reminiscent of those in summer diarrhœa of children, in which the predominant organism in different countries of the world has been found to be *Bact shigæ*, *Bact flexneri*, *Bact sonnei*, a member of the salmonella group, *P vulgaris*, *P morgani*, *Pseudomonas pyocyanea*, or *Cl welchii* (see Topley and Wilson 1936) The gastro-enteritis of infants that have passed the neonatal period, which has recently been described by Dobbs (1941) as the greatest menace to infants with pyloric stenosis admitted to English hospitals, likewise remains of uncertain ætiology It may be that all these different diarrhœal complexes are of similar causation, and are due to (*a*) a primary virus infection or (*b*) some systemic bacterial infection or metabolic disturbance, either or both of which paves the way for the proliferation in the intestine of any pathogenic or potentially pathogenic organism that happens to be present In this connexion it may be that organisms which are non-pathogenic to adults may under favourable conditions assume pathogenicity for infants and young children

CONCLUSIONS

1 Though it would be unjustifiable to draw any definite conclusions from the limited material we have examined, there seems no evidence to suggest that organisms of the salmonella or dysentery groups are concerned in neonatal diarrhœa

TABLE I—DISTRIBUTION OF BACTERIA IN FÆCES OF NORMAL NON CONTACT INFANTS AGED 3–23 DAYS

Type	Oxford (21 infants)			Cambridge (36 infants)			Oxford and Cambridge (57 infants)		
	Samples positive	Per cent of flora		Samples positive	Per cent of flora		Samples positive	Per cent of flora	
		Limits when present	A M		Limits when present	A M		Limits when present	A M
Lacto bacilli	21	1–100	75	35	29–99	84	57	1–100	81
Coliform	18	< 1–99	16	32	< 1–60	7	50	< 1–99	10
Strepto cocci	8	< 1–49	5	14	< 1–16	3	22	< 1–19	4
Staphylo cocci	7	2–20	3	25	< 1–19	4	32	< 1–19	4
Bacteroides	1	17	1	—	—	—	1	17	< 1
Clostridia	1	< 1	< 1	11	< 1–4	2	12	< 1–4	1

Fæces at Oxford were plated on liver blood glucose agar at Cambridge on blood agar or glucose blood agar

A M = arithmetic mean

proportion of coliform bacilli were found than at Cambridge, otherwise the results agree fairly closely Compared with the findings from the control contact infants in institution B (table III), the combined figures for the sick infants show a higher proportion of coliform bacilli and a lower proportion of streptococci

From no sample of fæces were salmonella or dysentery bacilli isolated, and no sample was found to be toxic for mice

Since it seemed possible that neonatal diarrhœa might be due to a staphylococcal enterotoxin elaborated in the maternal breast, an examination was made for staphylococci in the milk of sick babies' mothers Ten strains of these organisms were isolated from seven samples of milk Four of them proved to be of the *aureus* and six of the *albus* type The four *aureus* strains were coagulase-positive and three of them produced an α-hæmolysin None of them produced a β-hæmolysin, and none of them produced enterotoxin as judged by the kitten test of Dolman, Wilson and Cockcroft (1936) The six *albus* strains were all coagulase-negative, hæmolysin-negative and enterotoxin-negative

Five strains of staphylococci were isolated at Oxford from the fæces of infants with neonatal diarrhœa Two of these were of the *aureus* type, and were coagulase-positive but enterotoxin-negative Three were of the *albus* type and were both coagulase- and enterotoxin-negative

FINDINGS IN OUTBREAK C

No samples of fæces were available from this outbreak, but six strains of staphylococci that had been isolated from the milk of a tuberculin-tested herd supplying the hospital were sent for examination Four of the strains were of the *aureus* type They were coagulase-positive, and produced an α-hæmolysin and an enterotoxin The enterotoxin formed by two of the strains was so powerful that the kittens died within 24 hours Only one strain was tested for *β-hæmolysin, and this was positive* Of the two other strains, one was of the *albus* type and the other produced an orange pigment Both were coagulase- *and enterotoxin-negative*

TABLE II—OUTBREAK A DISTRIBUTION OF BACTERIA IN FÆCES OF 18 NORMAL CONTACT INFANTS AGED 1–22 DAYS, AND OF 12 SICK INFANTS AGED 1–21 DAYS

NORMAL CONTACT INFANTS				SICK INFANTS			
Type	Samples positive	Per cent of flora		Type	Samples positive	Per cent of flora	
		Limits when present	A M			Limits when present	A M
Lactobacilli	11	2–41	11	Lactobacilli	10	2–73	30
Coliform	17	< 1–96	44	Coliform	12	8–96	55
Streptococci	5	< 1–91	6	Streptococci	12	1–21	8
Staphylococci	14	1–90	32	Staphylococci	7	< 1–15	4
Other organisms *	11	1–64	7	Bacteroides	1	15	4
				Clostridia	2	< 1	< 1

* Other organisms comprised mainly micrococci and diphtheroids

DISCUSSION

The main question at issue is What is the cause of neonatal diarrhœa ? The following possibilities must be considered

(1) *Specific infection with an organism of the salmonella or dysentery groups*—Though Hormaeche and his associates (Bonaba et al 1940) found that 20% of enteritis in infancy and childhood in Uruguay were due to salmonella infection, and 32% to dysentery infection we have completely failed to isolate any member of these groups of organisms It may be remarked that so far as we are aware Hormaeche did not examine any outbreak of neonatal diarrhœa With the exception of a single outbreak described by McKinlay (1937) who reported the isolation of an unidentified strain of salmonella from the stools of the infants during life and from the heart blood and viscera of one case at autopsy, no evidence has yet been adduced to incriminate these organisms in the causation of this condition

(2) *Infection with a normally non-pathogenic bacterium*—This is the view taken by Costello and Land (1939), who attribute the disease to a pathogenic strain of *P vulgaris* associated with *Bact coli* Cass (1941) likewise seems to take the same view She found an organism, which was identified, probably incorrectly, as *B lactis aerogenes,* in the fæces of 5 sick infants From 2 of the infants that died it was isolated from a consolidated lung and from an umbilical thrombus respectively Since, however, the same organism was found in the fæces of at least 4 out of 6 healthy infants (no mention is made of the findings in one of the infants), it seems very doubtful whether her conclusion is justified Our own findings show that the proportion of lactobacilli in the stools is diminished and the proportion of coliform bacilli, and to a less extent of streptococci,' increased Most of the coliform bacilli appear to be of the *Bact coli* I type and most of the streptococci appear to be of the enterococcus type belonging to Lancefield's group D Neither of these organisms can be regarded as abnormal inhabitants of the bowel, and their pathogenic rôle might therefore be discounted The fact, however, that these organisms were found in much the same proportions in the fæces of healthy contact infants in the same outbreaks, while they were present in much smaller proportions in the fæces of healthy non-contact infants in normal maternity homes makes one cautious in adopting such a conclusion Without further evidence it is clearly impossible to decide whether these organisms were the primary cause of the disease or whether their undue proliferation was secondary to a disturbance of the bowel caused by some other agent *Proteus vulgaris* was rarely met with, and its causative rôle in the two outbreaks that were investigated can be ruled out

TABLE III—OUTBREAK B DISTRIBUTION OF BACTERIA IN FÆCES OF NORMAL CONTACT INFANTS

Type	Oxford (14 infants)			Cambridge (10 infants)			*Oxford and Cambridge* (24 infants)		
	Samples positive	Per cent of flora		Samples positive	Per cent of flora		Samples positive	Per cent of flora	
		Limits when present	A M		Limits when present	A M		Limits when present	A M
Lactobacilli	12	7–95	66	8	25–90	47	20	7–95	58
Coliform	12	1–100	21	8	3–28	9	20	1–100	16
Strepto cocci	10	< 1–93	11	8	9–91	31	18	< 1–93	19
Staphylo cocci	3	< 1–15	1	5	1–17	4	8	< 1–17	3
Bacteroides	1	6	< 1				1	6	1
Clostridia	1	< 1	< 1				4	< 1	< 1
Diph-theroids				3	16–42	9	3	16–42	4

TABLE IV—OUTBREAK B DISTRIBUTION OF BACTERIA IN FÆCES OF SICK INFANTS

Type	Oxford (10 infants)			Cambridge (12 infants)			Oxford and Cambridge (22 infants)		
	Samples positive	Per cent of flora		Samples positive	Per cent of flora		Samples positive	Per cent of flora	
		Limits when present	A M		Limits when present	A M		Limits when present	A M
Lactobacilli	9	9–98	71	11	5–87	50	20	5–98	60
Coliform	9	1–91	22	11	10–100	38	20	1–100	31
Streptococci	4	<1–10	2	5	2–28	5	9	<1–28	4
Staphylococci	5	<1–22	5	2	2–58	6	7	<1–58	5
Clostridia	5	<1	<1				5	<1	<1
Other organisms*				3	4–6	1	3	4–6	1

* Other organisms were proteus and yeasts

(3) *Infection with a pathogenic organism that does not develop readily in culture* —Though the media we used are able to grow most organisms that are likely to be met with in the intestine, it is possible that some pathogenic organism may have been present in the fæces of the sick infants which failed to develop under the cultural conditions we were employing We do not regard this as probable, since if such an organism had been present in anything but small numbers, it would probably have been detected in the direct smear examination Nevertheless, in any future investigation the greatest variety of culture media and of cultural conditions should be employed in the hope of detecting some organism whose requirements are different from those of the more usual pathogenic intestinal bacteria

(4) *A toxin formed by an organism in the intestine* —The occurrence of dysentery in newborn lambs due to the formation in the intestine of a powerful toxin by *Cl welchii* type B affords a strong analogy for the possibly similar causation of neonatal diarrhœa in human infants This line of investigation seemed all the more promising since Kimberley (1939) had recently reported the finding of *Cl welchii* as the predominant organism in the stools of infants suffering from neonatal diarrhœa Our attempts to confirm this hypothesis, however, met with complete failure Anaerobic organisms were seldom found, and then only in small numbers Moreover, the direct examination of the fæces for soluble toxins to mice proved negative The possibility that a toxin was formed by *Staph aureus* in the intestine seemed very unlikely, since these organisms were rarely found The formation in the intestine of toxic split-products from one of the milk proteins by a bacterial species, or combination of species, not generally considered pathogenic must also be envisaged, but so far we have no evidence to support it

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(8) *Infection with a protozoon* —*Giardia intestinalis* and certain other protozoa are responsible for enteritis in children, and it is conceivable that neonatal diarrhœa may be primarily a protozoal infection Although this possibility cannot be entirely excluded, it may be noted that examination at Cambridge of unstained films of fæces from outbreaks A and B failed to reveal the presence of any protozoa

Other hypotheses might be suggested, but to no particular purpose The comparatively mild disturbance in the normal bacterial flora of the intestine in infants suffering from neonatal diarrhœa—a disturbance that may easily be due to the more rapid passage of food through the intestine with consequently insufficient time for the lactobacilli to proliferate in the lower bowel—suggests that the disease is not due to the prodigious multiplication of an abnormal bacterium gaining access to the intestine The relatively insignificant post-mortem findings, both macroscopic and microscopic, are suggestive more of a toxæmic condition or a virus infection than of a primary bacterial enteritis

From a bacteriological point of view it is entirely possible that neonatal diarrhœa is not due to a single pathogenic agent The diverse findings that have been recorded in this disease (see opening paragraph of this article) are curiously reminiscent of those in summer diarrhœa of children, in which the predominant organism in different countries of the world has been found to be *Bact shigæ Bact flexneri*, *Bact sonnei*, a member of the salmonella group *P vulgaris P morgani*, *Pseudomonas pyocyanea*, or *Cl welchii* (see Topley and Wilson 1936) The gastro-enteritis of infants that have passed the neonatal period, which has recently been described by Dobbs (1941) as the greatest menace to infants with pyloric stenosis admitted to English hospitals, likewise remains of uncertain ætiology It may be that all these different diarrhœal complexes are of similar causation, and are due to (*a*) a primary virus infection or (*b*) some systemic bacterial infection or metabolic disturbance, either or both of which paves the way for the proliferation in the intestine of any pathogenic or potentially pathogenic organism that happens to be present In this connexion it may be that organisms which are non-pathogenic to adults may under favourable conditions assume pathogenicity for infants and young children

CONCLUSIONS

1 Though it would be unjustifiable to draw any definite conclusions from the limited material we have examined, there seems no evidence to suggest that organisms of the salmonella or dysentery groups are concerned in neonatal diarrhœa

2 There is no evidence of the formation of soluble toxic substances by anaerobic bacilli in the intestine, analogous to what occurs in lamb dysentery

3 There is no evidence of the formation of toxic substances under bacterial action in the maternal breast, though this possibility cannot be excluded

4. The fact that the fæcal flora in diseased infants differs only slightly from that in normal infants under similar environmental conditions suggests that neonatal diarrhœa is not ordinarily caused by an abnormal organism gaining access to the intestine and multiplying prodigiously

5 It seems more probable that neonatal diarrhœa results from either (*a*) a virus invading the intestine, or possibly the parasympathetic ganglia, and giving rise to increased peristalsis , or (*b*) a systemic infection, intoxication, or general metabolic disturbance leading to the proliferation of any pathogenic or potentially pathogenic organism that happens to be present in the bowel

SUMMARY

Normal infants —A quantitative cultural examination was made at Oxford and Cambridge of the fæcal flora of 57 normal non-contact breast-fed infants, 3–23 days of age, in maternity homes free from neonatal diarrhœa On the average *Lactobacillus bifidus* was found to constitute about 80% of the organisms, coliform bacilli about 10%, and streptococci and staphylococci each about 4% Members of the clostridium group and of the bacteroides group were found infrequently, and then in only small numbers The proportions, however, in which the different organisms were present was subject to great variation from infant to infant Most of the coliform bacilli belonged to the *Bact coli* I type, and most of the streptococci to the enterococcus type *Staph albus* was found in rather more than half the infants, but *Staph aureus* was isolated only once

Infants with neonatal diarrhœa —The fæcal flora was studied in two outbreaks, a total of 34 infants being examined The proportion of lactobacilli was reduced to 30 and 60%, and the proportion of coliform bacilli increased to 55 and 31% respectively Very similar changes, however, were found in control healthy contact infants during the same outbreaks The proportion of streptococci and staphylococci showed but little change Organisms of the clostridium and bacteroides groups were seldom present No organisms of the salmonella or dysentery groups were found, and no evidence was obtained of the existence in the stools of soluble toxins for mice In one outbreak *Staph aureus* was isolated from the milk of a number of mothers with sick children and was found to be coagulase-positive and hæmolysin-positive None of the four strains studied, however, was able to form an enterotoxin On the other hand, four strains isolated in connexion with another outbreak from the milk of a tuberculin-tested herd supplied to the hospital were found to be coagulase-positive, hæmolysin-positive, and enterotoxin-positive.

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NEPHRECTOMY IN UNILATERAL RENAL DISEASE WITH HYPERTENSION

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THE association between renal disease and hypertension is well recognised In view of this it seems that cases of hypertension without clinically obvious renal deficiency are too often grouped as essential hypertension Schroeder and Steele[26] investigated 71 cases diagnosed as essential hypertension and found that 50 showed abnormalities of the urinary tract, 38 being unilateral Of 600 cases of hypertension, Maher and Wosika[17] demonstrated urological disorders in 101

In cases which have unilateral renal lesions amenable to surgical treatment, it is clearly of value to study the effects of therapy on the hypertension with a view to discovering possible ætiological agents We have recently had the opportunity of studying 2 such cases

CASE-HISTORIES

CASE 1 —A man, aged 35, was admitted complaining of frequent attacks of left sided renal colic About 4½ years before he had severe headaches and morning epistaxis, and a few months later was admitted to hospital for difficulty in walking and partial aphasia There he was found to have a right hemiplegia and a blood pressure of 200/130 mm Hg, his urine contained albumin but no red cells or casts , his blood urea was 26 mg per 100 c cm The symptoms disappeared with rest and he was discharged as a case of essential hypertension Two years later he was again complaining of headaches and epistaxis, but also of pain in the left loin which gradually increased in frequency and severity until he was readmitted to hospital on Aug 19, 1940 Examination showed slight involuntary movements of the right hand with increased deep reflexes in the arm and leg on that side and absence of the right abdominal reflexes , there was a right extensor plantar response The pulse was regular , the blood pressure varied from 235/140 to 245/140 There was slight enlargement of the heart to the left and an accentuated aortic second sound Urine albumin present , numerous pus cells, a few red cells and cellular casts Blood urea 30 mg per 100 c cm A radiogram showed opacities in the left renal area and intravenous pyelography localised these to the renal pelvis There was deficient excretion on the left side, but normal excretion on the right side

Nephrectomy was performed by Mr N Hodgson on Sept 2 At the lower pole the kidney substance was largely replaced by caseous material , in the mid zone there was a tuberculous focus completely destroying an area about 3 cm in diameter The pelvis was not dilated At the upper pole there was one area suggestive of hypertensive renal atrophy Histological examination showed active renal phthisis Outside the tuberculous areas there was an occasional sclerosed glomerulus, otherwise the glomeruli showed dilatation of the capsular spaces Some of the arterioles and a branch of the renal artery at the hilus showed muscular hypertrophy

The patient made a rapid recovery from the operation and there was immediate symptomatic improvement He was discharged from hospital on the 14th postoperative day, and has been seen at intervals in the succeeding 7 months While in hospital, and at his subsequent visits, the blood-pressure was taken under standard conditions After a transitory fall to below normal levels, as a result of postoperative shock, the pressure was maintained at a normal level for a time, and then rose slightly to the region of 150/100, where it has remained When last seen, hypertensive symptoms had completely disappeared, and the patient has joined the N A A F I and is prepared for foreign service

CASE 2 —A man, aged 55, was admitted to hospital complaining of a dull aching pain in the right loin of one week's

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DR CROWLEY AND OTHERS REFERENCES (*continued*)

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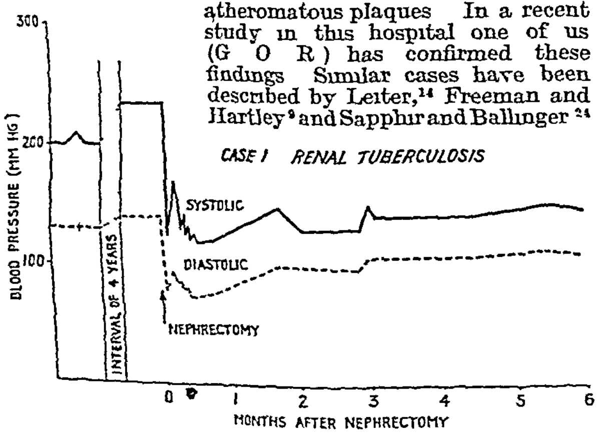
duration He had also noticed blood in his urine with occasional small clots A mass was felt in the region of the lower pole of the right kidney The blood pressure varied from 195/105 to 185/95 Cystoscopy and retrograde pyelography were performed on March 3, 1941 The right ureteric orifice was inflamed and pouting, the radiogram showed a filling defect of the right renal pelvis and major calyces Nephrectomy was performed by Mr W A Hewitson on March 10, 1941 More than half the kidney substance was replaced by yellow tumour nodules with numerous areas of hæmorrhage, the main renal vein at the hilus was almost occluded by tumour The histological appearances were typical of hypernephroma

The patient made an uninterrupted recovery The blood-pressure declined to 130/80, and has remained at this level

DISCUSSION

The relation between hypertension and a coincidental unilateral renal lesion is best demonstrated by the result of removal of the affected kidney We have been able to find 28 previously reported cases [1, 2, 5, 6, 7, 8, 13, 16, 19, 20, 21, 23, 25] An analysis of these cases shows that they fall into four groups, each of which has its experimental counterpart

1 *Renal arterial occlusion*—Goldblatt and his collaborators[10] have shown that partial occlusion of the main renal artery produced hypertension Leadbetter and Burkland[13] have recorded a case in a child with hypertension in which nephrectomy was performed for a ptosed kidney, the renal artery of which was found to be partially obstructed by a smooth-muscle tumour The operation resulted in a cure of the hypertension In an examination of autopsy material, Blackman[4] has shown that in most cases with essential hypertension there is partial occlusion of one or both main renal arteries by atheromatous plaques In a recent study in this hospital one of us (G O R) has confirmed these findings Similar cases have been described by Leiter,[14] Freeman and Hartley[9] and Sapphir and Ballinger[24]

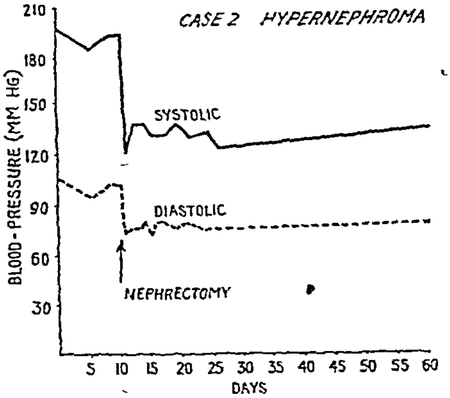


2 *Lesions resulting in partial occlusion of the renal vein*—Bell and Pederson[3] and Menendez[18] showed that experimental partial occlusion of the renal vein resulted in hypertension This has been recorded by Perry and Taylor[22] in an autopsy on a child with hypertension apparently due to thrombosis of the renal veins Our second case is highly suggestive of an ætiological association between partial venous occlusion and hypertension

3 *Diseases of the kidney substance*—The association of chronic diffuse nephritis with hypertension is too well known to require further comment Attention has lately been drawn to the occurrence of hypertension in cases of chronic pyelonephritis, even when the lesion is unilateral[15] Several cases of this type with successful surgical intervention have been reported, and our first case is another example Experimentally, chronic interstitial fibrosis of the kidneys produced by X rays has resulted in hypertension[12]

4 *Lesions causing obstruction to the outflow of urine*—Harrison and his colleagues[11] produced hypertension by occlusion of one or both ureters Clinical examples of this type are frequent

It appears that in most of the cases reported in the literature removal of the diseased kidney has been followed by a substantial and prolonged fall in the blood-pressure It might be claimed that such a fall would follow any major surgical operation Volini and Flaxman[illegible] have investigated the effect of a variety of non-specific operations carried out on hypertensive patients They have shown that, although in many cases there is definite symptomatic improvement, there is no alteration in the blood-pressure apart from the transitory fall due to postoperative shock In all except 5 of the recorded cases the blood-pressure fell to 150/100 or lower after unilateral nephrectomy, and remained at this level Of the exceptions, in one the pressure remained between 140/74 and 160/90 for a considerable time (unstated), but 11 years later it had risen to 190/122[8], no investigation of the remaining kidney was carried out at that time, so it is possible that it had become diseased At the time of operation 2 other reported cases[25] showed evidence of diminished renal function in the intact kidney so it seems probable that they were not cases of unilateral renal disease In the fourth unsuccessful case, the pathology was not clearly demonstrated[23] In the case recorded by Mulholland,[19] the lesion (renal calculus) had been present 14 years before, at which time the patient had refused operation When treatment was undertaken, severe cerebral symptoms were present; these decreased sufficiently after nephrectomy for the patient to do her normal work



It is premature to speculate about the mechanism whereby hypertension is produced in these cases but it is clear that a careful investigation of all cases of supposed essential hypertension will reveal many cases with lesions of one kidney amenable to surgical treatment The recorded cases show that when hypertension is associated with unilateral renal disease relief both of the hypertension and the symptoms will probably follow nephrectomy

SUMMARY

Two cases of hypertension, one of which had previously been classed as essential hypertension, are reported in which unilateral renal lesions were treated by nephrectomy with significant lowering of the blood-pressure

Similar cases reported elsewhere fall into four groups showing renal arterial occlusion, partial occlusion of a renal vein, diseases of the kidney substance, or lesions causing obstruction to the outflow of urine Each of these has an experimental counterpart

In view of the therapeutic results and the known association between unilateral renal disease and hypertension, all cases of chronic hypertension should have a complete urological investigation

We wish to thank Mr N Hodgson, Mr W A Hewitson and Dr J C Spence for permission to use the records of the cases which were under their care

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BLACK-CURRANT PUREE AS A SOURCE OF VITAMIN C

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THIS investigation was started to determine the minimal dose of vitamin C, in the form of a black-currant puree, that was required to supplement adequately the routine diet in some children's wards of an E M S hospital Black-currant puree was chosen as being the most satisfactory substitute for orange juice available (Olliver 1940) During the winter and spring the diet at the hospital was as good as the local food position allowed and probably better than that of many children in this country at the time Nevertheless it was found that the vitamin-C intake was unlikely to exceed 5 mg ascorbic acid a day and that only if the children ate up all their ration of greens One child, who had been in hospital for several months, actually developed mild clinical scurvy

In planning the investigation it was decided to adopt the simple technique of Pemberton (1940), owing to the difficulties entailed in collecting accurately over a given period urine from infants and small children in a ward In the morning the child passes a specimen of urine and is then given a test dose of 50 mg of ascorbic acid per stone weight After about 2½–3 hours urine is again passed and the specimen discarded The urine is passed again about 2 hours later The ascorbic acid in the first and third specimens is then estimated by the technique of Harris and Ray (1935) An increase of at least 3 mg per 100 c cm is taken to indicate a reasonable degree of saturation

RESULTS

Fifty-nine children were given a preliminary test and not one gave a positive result The children were then given a daily supplement either of synthetic ascorbic acid or of black-currant puree The puree used contained 0 8–0 9 mg ascorbic acid per g and was well tolerated even by the youngest children The usual dose was 50 mg of ascorbic acid or 1½ oz of puree (40 mg of ascorbic acid) Periodic re-tests at about weekly intervals were made to see if any improvement had occurred In only two out of thirty-five children in the hospital were there any signs of improvement after 9–20 days on the supplement, although healthy children living on a farm selected as a control group on a better diet became saturated in just over a week

It was then decided to saturate the children with a daily dose of 50 mg per stone and to re-test at three-day intervals (transport difficulties prevented more frequent testing) Fourteen children became saturated in the first 3-day period, and seven of these had previously been given 40–50 mg of ascorbic acid daily Six children took 3–6 days to saturate, and two of these had previously been given ascorbic acid Six children took over 6 days and one failed to become saturated in 24 days It is of interest to compare these results with those of Harris (1940) Using a somewhat similar saturation technique he found that subjects having a satisfactory diet gave a positive saturation test on the first or second day of the saturation dose, and that the worse the diet had been the longer was the time taken to obtain a positive result It will be seen that in many cases the degree of unsaturation was extreme

Once saturated, the children were given either ¾ or 1½ oz of black-currant puree daily (20 or 40 mg ascorbic acid) and were re-tested at intervals of 9–10 days If saturation was maintained on 1½ oz then ¾ oz was tried Unfortunately many of the children were discharged before the lower dose could be tried, so the attempts to find the minimal maintenance dose of ascorbic acid were only partially successful The average maintenance dose at different ages was as follows The results obtained have been expressed as mg of ascorbic acid per stone recorded at different ages

Ages	mg ascorbic acid per stone	Av
0– 3	11, 13, 17, 8, 16	15
3– 6	10, 4, 14	9
6– 9	6, 4, 7, 6, 7	6
9–12	4, 8, 10	7

It is probable that the actual minimal maintenance dose is less than these figures suggest It is hoped that further work will produce a more accurate result

A child of 1½ years with clinical scurvy was investigated in the earlier stage of this work She was cured by six daily doses of 4 oz black-currant puree and 1 oz a day was more than sufficient to maintain saturation

The diseases for which the children were admitted were various, both surgical and medical, and included such cases as talipes, harelip, mastoid (postoperative), cervical adenitis, asthma, debility, bronchiectasis and subacute nephritis, but by the time the maintenance test periods had been reached all but a few of the children were convalescent, afebrile and free from symptoms Eight cases either failed to saturate within 9 days or failed to maintain saturation on 40 mg per day, their diagnoses were chorea (2), hyperthyroidism (1), ulcerative colitis (2), recurrent pyrexia (1) and cœliac disease (2) The following case is an example of the findings in the majority of cases

Date	Daily dose of ascorbic acid	Ascorbic acid in urine	
		Before test dose	*3–5 hr after test dose*
		mg per 100 c cm	
April 11	None	0 15	None
,, 28	50 mg (ascorbic acid)	0 8	0 55
May 2–4	200 mg (in 3 days)	1 1	25 6
,, 13	40 mg (1½ oz b c puree)	13	55
,, 23	40 mg (1½ oz b c puree)	2 2	29 8
June 2	20 mg (¾ oz b c puree)	0 7	24

Age 6½ years weight 49 lb , admitted for investigation of state of lungs ? bronchiectasis

The difference in response to the test dose when saturation is attained is striking The ascorbic-acid content of the first specimen of urine before the test dose has very little value as an index of saturation, for unless an excess is being given, the urine contains little or no ascorbic acid

DISCUSSION

This experiment is only a preliminary survey and the conclusions reached are only approximately correct There are three sources of error, the first two of which we believe to cancel out the third The first is the variable amount of ascorbic acid taken in the diet—this has been assessed at 5 mg daily and ignored The second is the effect of the test dose given at irregular intervals, never less than 10 days and often as much as 21 days This would, of course, increase the minimal maintenance dose, but the amount cannot be calculated, as the excess over the saturation requirements is rapidly excreted , in effect this means that the subject starts every new test period freshly saturated and with an unknown but small amount of ascorbic acid in hand The third error is due to our inability to complete the full test in every subject by finding the level at which saturation is not maintained. In most cases, however, the response to the test dose was definitely smaller on the lower dose, indicating a decrease of the saturation level, and thus there was reason to consider that the minimal maintenance dose had been reached to within a few milligrammes

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SUMMARY

Convalescent children in a children's ward were saturated with ascorbic acid Ascorbic acid in the form of black-currant puree was then given as a dietary supplement and the level at which saturation could be maintained was determined by the urinary response to a test dose of ascorbic acid The level of the daily dose was found to vary from 15 to 6 mg per stone according to age, corresponding to average daily doses of 1½–2 oz puree per child

Our thanks are due to Dr Janet Gimson and the ward sisters and staff for help in collecting the specimens, to Messrs Chivers for supplies of black currant puree and to Miss Mamie Olliver for some analyses and advice

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LUPUS ERYTHEMATOSUS AND TUBERCULIN TESTS

JOHN KELVIN, M B LEEDS, L R C P E

THE ætiology of lupus erythematosus is still in dispute Some authorities regard it as always a tuberculide, some as always a result of focal sepsis, some think it may be either one or the other, some blame an undiscovered organism, and some suggest that the toxin of either the tubercle bacillus or a streptococcus has sensitised the skin to light This last explanation should mean that the condition is simply an actinic dermatitis If so, why should light produce the peculiar lesion of lupus erythematosus? And why should two entirely different organisms produce the same unique bizarre and—in general practice—rare lesion? It is easy to understand that different causative factors might produce dermatitis or erythema, but this lesion is distinctive Can more than one organism produce a gumma?

In my opinion lupus erythematosus is due to an innate characteristic of the skin, usually congenital but sometimes acquired, which renders it peculiarly susceptible to the action of mild tubercle toxin The action of the toxin is aggravated by irritation, which may be extrinsic (heat, cold, friction, injury or light), or intrinsic (sepsis or worry) The irritation produces a secondary specific toxin which actually causes the lesion and I believe this toxin to be of the nature of a mild slowly acting caustic

These opinions are based on the results of tuberculin testing in a series of 148 cases of lupus erythematosus (including 3 of the disseminated variety) and 240 people with healthy skins or other dermatological conditions All the patients, except one aged 14, were adults The results are shown in tables I and II In addition, simultaneous Mantoux and Lederle tests were carried out on 300 cases of miscellaneous dermatoses, including 6 tuberculides Of the 300, 61 (20%) gave a positive Mantoux test and 56 (19%) a positive Lederle test

TABLE I—RESULTS OF MANTOUX TEST IN 86 CASES OF LUPUS ERYTHEMATOSUS AND 140 CONTROLS

Strength of old tuberculin used	Lupus erythematosus		Controls		
	Cases	Positive	Diagnosis	Cases	Positive
1/100, 1/1000, 1/10,000	24	15 (62 5%)	Miscellaneous dermatoses	20*	8 (40%)
1/500 1/1000	17	14(82%)	,,	24	4 (16 6%)
1/1000	25	19(76%)	,,	32	5 (16%)
1/600 1/650 1/660, 1/700, 1/750	20	15(75%)	,, Psoriasis Tuberculides Healthy skin	34 10 10 10	5 (15%) 3 (30%) 6 (60%) 0
Totals	86	63(73%)	—	140	31 (21 5%)

* Including 2 tuberculides

It will be seen that altogether 105 of the 148 cases of lupus erythematosus gave a positive tuberculin reaction (71%), compared with 43 of the 240 controls (18%) Moreover, a tuberculous history—old tuberculous glands, healed phthisis, or tuberculosis in the family—was commoner among the cases of lupus erythematosus than among the controls In one patient the lesions of lupus erythematosus were seen alongside and merging into the tuberculous lesions of Bazin's disease other observers have reported them in association with lupus vulgaris

The incidence of sepsis was no commoner among the cases of lupus erythematosus than among the controls Moreover, sepsis is too common and lupus erythematosus too rare for sepsis to have any important ætiological significance On the other hand, where septic foci are found in cases of lupus erythematosus they might easily be primarily tuberculous foci in which secondary infection has obscured the picture I performed "septic" tests, analogous to the Mantoux test, in a small series of cases, but failed to demonstrate any increased sensitivity to the toxins of septic organisms Thus I tested 24 cases of lupus erythematosus with the toxins of three organisms, used separately—those of *Streptococcus hæmolyticus Strep viridans* and a staphylococcus Only one patient responded, giving positive reactions to *Strep hæmolyticus* and the staphylococcus Among 20 controls, too, only one patient responded, giving a positive reaction to the hæmolytic streptococcus but to neither of the other two organisms I then used a mixture of all three toxins on 16 other cases of lupus erythematosus, none of which gave a reaction, whereas there were 8 positive responses in a group of 48 controls

TABLE II—RESULTS OF LEDERLE (VOLLMER) TUBERCULIN PATCH TEST IN 62 CASES OF LUPUS ERYTHEMATOSUS AND 100 CONTROLS

Lupus erythematosus		Controls		
Cases	Positive	Diagnosis	Cases	Positive
—	—	Miscellaneous dermatoses	80*	12 (15%)
62	42 (67 7%)	Healthy skin	20	0
		Total	100	12 (15%)

* Including 2 tuberculides

Various causative factors have been suggested by different investigators, but countless people have one or more such factors operating strongly without developing lupus erythematosus Further, in other dermatoses alleged to be due to toxins—pemphigus, for example—the mucous membranes are affected, in lupus erythematosus the mucous membranes are rarely attacked primarily and I think this also points to an innate susceptibility on the part of the skin

In my view the ætiology of the condition has the following sequence —

Congenital predisposition → tuberculous toxin → some form of irritation → secondary toxin → lupus erythematosus

The endotoxin of the tubercle bacillus is incriminated rather than the bacillus itself because Koch's bacillus is not found in the lesions on microscopic examination, nor are tubercles present Light has been assigned a share in causation by some because the lesions of lupus erythematosus appear on exposed areas, these areas, however, are exposed to general and constant irritation from various factors including light, so that "exposed parts" can be taken to be synonymous with "irritated parts" Finally, it seems to me that only a substance with a cauterising action could produce the characteristic lesions and this I believe to be produced in the congenitally susceptible skin as a result of irritation

SUMMARY

A series of 148 cases of lupus erythematosus and 240 people with normal skins or other dermatological conditions were submitted to Mantoux or Lederle tuberculin tests, 71% of the lupus erythematosus cases gave positive reactions, compared with 18% of the controls

Tests analogous to the Mantoux test were performed with the toxins of three septic organisms—*Strep hæmolyticus*, *Strep viridans* and a staphylococcus—on

24 cases of lupus erythematosus and 20 controls Only one patient in each group gave a positive result When a mixture of all three toxins was used there were no positive results in 16 cases of lupus erythematosus, but 8 positives in 48 controls

It is suggested that lupus erythematosus is produced in susceptible people by the action of tuberculous toxin, extrinsic or intrinsic sources of irritation acting as secondary factors

PREVENTION OF DROPLET-BORNE INFECTIONS BY SPRAY

A FIELD EXPERIMENT

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M B EDIN, F R C S
COLONEL, A M S

I C GILLILAND,
M B EDIN
MAJOR, R A M C

INCREASING interest has lately been centred on the use of various methods designed to minimise the spread of infections, and the outbreak of war has stimulated research with a view to applying the results of laboratory observations to the treatment of crowded rooms and air-raid shelters The limitations of the laboratory experiments have been realised by Andrewes,[1] who in the summary of a recent paper says "We have discovered certain methods for the control of respiratory disease, none of these is of proved efficacy in the field, though all of them have given encouraging results in the laboratory" The necessary field experiments can be carried out most accurately under Service conditions, where large bodies of troops can be surveyed in strictly comparable conditions With this end in view we carried out such an experiment during the respiratory epidemic period of January–March, 1941

Two main conditions must be established for the statistical results to be of value First, the methods used must be so simple that there is a real likelihood of their being effectively carried out by the N C O s charged with the duty, and the materials used must be cheap and readily available, this prevents the use under Service conditions of the more complicated forms of spray and especially of the continuous electrically operated spray Secondly, a sufficiently large number of men, with an equal number of controls, all equally exposed to the introduction of infection from their contacts with the civil population, and all living under identical conditions of accommodation, clothing, diet and occupation, must be involved in the experiment The personnel of a searchlight brigade were selected as satisfactory subjects, for, with the exception of a few headquarters personnel occupying buildings, the men were all accommodated in huts under comparable conditions, receiving the same short home leave The brigade was widely dispersed over a mixed urban, mining and agricultural area of Scotland with fairly equal access to picture houses and other places of entertainment Thanks to the collaboration of Brigadier A H Morton and the regimental commanders the following arrangements were made

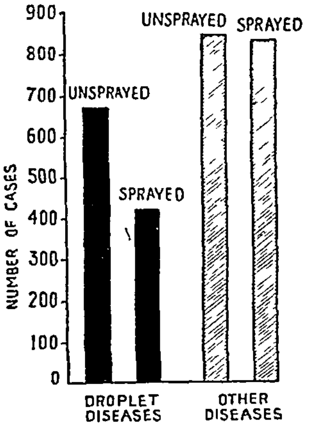

FIG 1—Total incidence of disease, Jan 5–April 6 1941

Twelve batteries were selected, each battery area adjoining that of its neighbours without any gaps between them Alternate batteries were sprayed over the whole area, leaving the intervening ones unsprayed Thus sprayed and unsprayed personnel were fairly evenly distributed over the segment of the British Isles involved By this means some 3000 men were subjected to spray with about an equal number of controls

Laboratory investigations have shown that hypochlorite solutions are effective in low concentrations Hypochlorite was easily accessible to the units in question in the form of th water-sterilising powder actually in use for the treatment o water supplies Simple intermittent spraying was therefor carried out in all huts, kitchens, messing rooms, &c with a approximately 1% solution of this bleaching powder Th spraying was carried out with the "Flit gun" variety o sprayer

Spraying batteries were instructed to spray every hut thrice daily—at reveille, on coming off duty in the late afternoon, and at lights out, these being the periods at which the greatest concentration of salivary droplets may be expected The Flit gun container was filled with water and a half scoopful of water sterilising powder added to it and shaken The N C O in charge then walked slowly round the hut spraying obliquely upwards towards the ceiling and continued to do so until the whole hut had a quite noticeable but not irritating odour of hypochlorous acid Complicated methods of control of dosage were clearly out of place and the exact strength of the spray varied because of differences in the construction of different makes of sprayer and deterioration of the solution which is often left in the gun and used again without being freshly made up The method of spraying to the limit of nasal tolerance for hypochlorous acid is both a simple and practical guide to the unskilled soldier

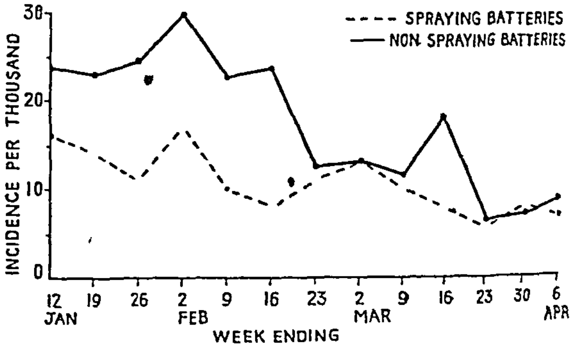

FIG 2—Incidence of droplet infections per thousand

The medical officers of both sprayed and unsprayed batteries completed a weekly return to the brigade senior medical officer showing (*a*) the ration strength of the battery for the week, (*b*) the number of men reporting sick on account of droplet infection, (*c*) the number of cases of sickness from causes other than droplet infections, and (*d*) the diagnoses of all cases of droplet infections All returns were then correlated by the brigade S M O and shown as incidence per 1000 personnel in sprayed and unsprayed groups The returns were corrected for variations in strength of batteries

RESULTS

During the period under review the total number of cases of droplet-borne diseases reporting sick in the sprayed community amounted to 425, compared with 670 in the unsprayed group The difference of 37% does not merely reflect a difference between the general sick-rate in the two groups, as is demonstrated by the fact that the non-droplet sick-rate in each is almost exactly the same, amounting to 834 in the sprayed and 850 in the non-sprayed (fig 1) A graph (fig 2) of cases of droplet infection in each week per 1000 personnel shows that the difference between sprayed and unsprayed groups is greatest during the period of maximum incidence of droplet-borne disease The curves meet at the end of the experimental period when epidemics of influenzal colds had died down It is significant that the outlines of the two curves follow each other fairly closely

There were no complaints of damage to clothing or metal parts of weapons by the bleach spray Sprayers of various makes but of similar design were used and it was found that some of them became unserviceable by rust on plungers and corrosion of containers The better, but not necessarily more expensive, type of sprayer has a piston and piston shaft constructed of rustless material The well-constructed container of galvanised iron which is associated with this will stand up to the corrosive effect of bleach solution for one season in most cases In the event of spraying being used on a large scale a non-corrodable material should be used

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MODE OF ACTION

In an attempt to determine how the spray acts the assistance of Dr C. P. Stewart was enlisted and an apparatus was constructed to aspirate a measured volume of air (about 20 litres) through a solution of potassium iodide to detect chlorine by the liberation of iodine. The apparatus is capable of detecting 0·01 mg. of chlorine in the volume of air taken. The door and windows of the hut were closed and spraying carried out by the N.C.O. in the normal manner. The air drawn through five minutes later showed no detectable amount of chlorine in spite of the fact that a definite odour of hypochlorous acid persisted. It was observed that the spray droplets appeared to settle rapidly and to dry off on floor, walls and window ledges. Dust from these situations was accordingly tested with potassium iodide and starch and in every instance showed the presence of available chlorine. Later experiments under laboratory conditions showed that chlorine could be detected from the dust up to six hours after a single spraying. From these observations several modes of action may combine to produce beneficial results:

A sedimentation effect by spray droplets entangling and carrying down with them the smaller infected salivary droplets.

A direct sterilising effect on the organisms suspended in these droplets.

A further temporary effect in laying and sterilising organisms in dust on the floor.

A slow continuous action by the release of chlorine from the fine deposit of bleaching powder spread over the hut, persisting until renewed on the next routine spraying.

DISCUSSION

At first sight the 37% reduction in the incidence of droplet-borne disease in the sprayed groups looks significant but a detailed study of the figures from individual batteries makes it less convincing (see table).

INCIDENCE OF SICKNESS IN INDIVIDUAL BATTERIES CORRECTED FOR STRENGTH OF BATTERIES

SPRAYED			UNSPRAYED		
Battery	Non-droplet diseases	Droplet diseases	Battery	Non-droplet diseases	Droplet diseases
A	68	71	G	109	182
B	135	45	H	251	223
C	158	61	I	174	77
D	145	65	J	120	45
E	103	85	K	110	82
F	225	95	L	85	63
Total	834	425		850	670

It is evident that the figures for G and H Batteries in the unsprayed group are largely responsible for the apparent differences between the groups and that if these two batteries were neglected the incidences of droplet disease would be approximately the same in the sprayed and unsprayed group. The figures for G and H Batteries may be explained on one of the following hypotheses: (a) A local condition in the batteries concerned, such as a slack or over-conscientious medical officer, a poor level of general health, or low morale among the troops; or (b) an epidemic of catarrhal disease involving these two batteries. If any local conditions had been responsible the level of non-droplet sickness in these two batteries should have been correspondingly high. This is not so. H Battery, with a very high non-droplet and droplet rate, may usefully be compared with F Battery in the sprayed group which shows an almost equally high non-droplet rate with a reasonably low droplet rate. G Battery's non-droplet rate is not abnormally high and it is interesting to compare it with the figures of D Battery in the sprayed group. G and D Batteries belong to the same regiment, occupying adjacent areas of a strictly comparable rural type of country, without special exposure to infections. G showed a very high droplet rate while D, with a much higher general-sickness rate, had roughly a third of G's droplet rate. The conclusion is that the high incidence in G and H Batteries is the result of local epidemics of catarrhal disease. It is perhaps significant that two out of six unsprayed batteries suffered in this way while none of the sprayed batteries, even though in areas closely adjacent to the affected batteries, were involved.

SUMMARY

A controlled experiment using the most elementary and simple form of spraying with a hypochlorite solution affords some evidence that this method is capable of diminishing the spread of droplet-borne infections within a unit. The method achieves its best results during epidemic periods.

We are indebted to Major J. L. Cowan, R.A.M.C., for assistance in the earlier stages of the investigation and to the regimental medical officers of the brigade without whose coöperation this experiment could not have been carried out.

BIOPSY OF THE ENDOMETRIUM

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(*The Williamson Laboratory, St. Bartholomew's Hospital*)

For some years American gynæcologists have been obtaining biopsy specimens of the endometrium for histological examination without anæsthesia as an out-patient examination. In this country a small number of gynæcologists have adopted this practice and it is the purpose of this communication to put on record my experience of 238 biopsies in 84 patients over a period of a year at St. Bartholomew's Hospital in the hope that the safety and efficacy of this simple and convenient method of investigation may recommend it to others. The number of cases is not great since the war curtailed the work, but the figures are adequate for the conclusions drawn.

Most curettage operations are undertaken for purposes of diagnosis, but if exact information of the behaviour of the endometrium is to be obtained it is important that the curetting be done at a definite phase of the menstrual cycle. Pressure on hospital beds and the size of the waiting-list seldom allow of this exact timing, and often the bed is wasted and the patient is submitted to an operation the results of which are fruitless. Another small point is that the operation is often performed by a junior colleague or house-surgeon who does not know the exact reason for the curettage and who, from inexperience, may obtain a specimen—possibly from the isthmus or endocervix—which is inadequate for histological study. Endometrium most representative of the whole may best be obtained at the fundus, and after a little practice an operator of average dexterity will almost always procure his specimen from this region; moreover, he will know by inspection whether he has secured a useful piece or must explore a second time. In this way, always seeing the same cases and always operating himself, he is sure of the exact continuity of his specimens, which is essential in diagnosis and in the ultimate histological assessment of the results of any given endocrine therapy.

There are at present two methods whereby one may obtain exact information about a woman's menstrual cycle—by serial biopsy of her endometrium and by biological assay of her hormones either circulating in the blood-stream or excreted as end-products in her urine. The estimation of urinary pregnandiol is a good example of such biological assay, and its presence at a given time in a given quantity is at least presumptive evidence of ovulation and corpus-luteum formation. This evidence becomes more than presumptive if a biopsy specimen taken in the last week of a 28-day cycle shows an endometrium with well-marked secretory-phase changes in the glands and stroma. As a positive check on the efficacy and the dosage of hormone therapy endometrial biopsy is again extremely valuable, and in many cases in this series it has made it possible to demonstrate œstrogenic and secretory changes in the endometrium where a previous serial biopsy had shown them to be deficient or absent. The method must never be used in an attempt to diagnose malignant disease in the cavity of the uterus. Endometrial biopsy as performed on outpatients has considerable advantages from an economical point of view. An examination that would

24 cases of lupus erythematosus and 20 controls Only one patient in each group gave a positive result When a mixture of all three toxins was used there were no positive results in 16 cases of lupus erythematosus, but 8 positives in 48 controls

It is suggested that lupus erythematosus is produced in susceptible people by the action of tuberculous toxin, extrinsic or intrinsic sources of irritation acting as secondary factors

PREVENTION OF DROPLET-BORNE INFECTIONS BY SPRAY

A FIELD EXPERIMENT

D STEWART MIDDLETON,
M B EDIN, F R C S
COLONEL, A M S

I C GILLILAND,
M B EDIN
MAJOR, R A M C

INCREASING interest has lately been centred on the use of various methods designed to minimise the spread of infections, and the outbreak of war has stimulated research with a view to applying the results of laboratory observations to the treatment of crowded rooms and air-raid shelters The limitations of the laboratory experiments have been realised by Andrewes,[1] who in the summary of a recent paper says "We have discovered certain methods for the control of respiratory disease, none of these is of proved efficacy in the field, though all of them have given encouraging results in the laboratory" The necessary field experiments can be carried out most accurately under Service conditions, where large bodies of troops can be surveyed in strictly comparable conditions With this end in view we carried out such an experiment during the respiratory epidemic period of January–March, 1941

Two main conditions must be established for the statistical results to be of value First, the methods used must be so simple that there is a real likelihood of their being effectively carried out by the N C O s charged with the duty, and the materials used must be cheap and readily available, this prevents the use under Service conditions of the more complicated forms of spray and especially of the continuous electrically operated spray Secondly, a sufficiently large number of men, with an equal number of controls, all equally exposed to the introduction of infection from their contacts with the civil population, and all living under identical conditions of accommodation, clothing, diet and occupation, must be involved in the experiment The personnel of a searchlight brigade were selected as satisfactory subjects, for, with the exception of a few headquarters personnel occupying buildings, the men were all accommodated in huts under comparable conditions, receiving the same short home leave The brigade was widely dispersed over a mixed urban, mining and agricultural area of Scotland with fairly equal access to picture houses and other places of entertainment Thanks to the collaboration of Brigadier A H Morton and the regimental commanders the following arrangements were made

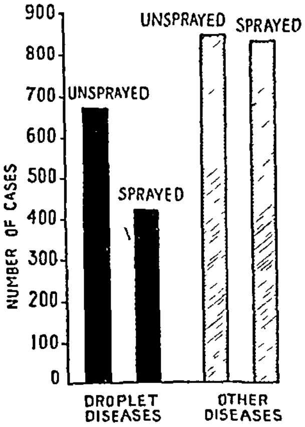

FIG 1—Total incidence of disease, Jan 5–April 6, 1941

Twelve batteries were selected, each battery area adjoining that of its neighbours without any gaps between them Alternate batteries were sprayed over the whole area, leaving the intervening ones unsprayed Thus sprayed and unsprayed personnel were fairly evenly distributed over the segment of the British Isles involved By this means some 3000 men were subjected to spray with about an equal number of controls

Laboratory investigations have shown that hypochlorite solutions are effective in low concentrations Hypochlorite was easily accessible to the units in question in the form of water-sterilising powder actually in use for the treatment water supplies Simple intermittent spraying was therefore carried out in all huts, kitchens, messing rooms, &c with an approximately 1% solution of this bleaching powder The spraying was carried out with the "Flit gun" variety of sprayer

Spraying batteries were instructed to spray every hut thrice daily—at reveille, on coming off duty in the late afternoon, and at lights out, these being the periods at which the greatest concentration of salivary droplets may be expected The Flit gun container was filled with water and a half scoopful of water-sterilising powder added to it and shaken. The N C O in charge then walked slowly round the hut spraying obliquely upwards towards the ceiling and continued to do so until the whole hut had a quite noticeable but not irritating odour of hypochlorous acid Complicated methods of control of dosage were clearly out of place and the exact strength of the spray varied because of differences in the construction of different makes of sprayer and deterioration of the solution which is often left in the gun and used again without being freshly made up The method of spraying to the limit of nasal tolerance for hypochlorous acid is both a simple and practical guide to the unskilled soldier

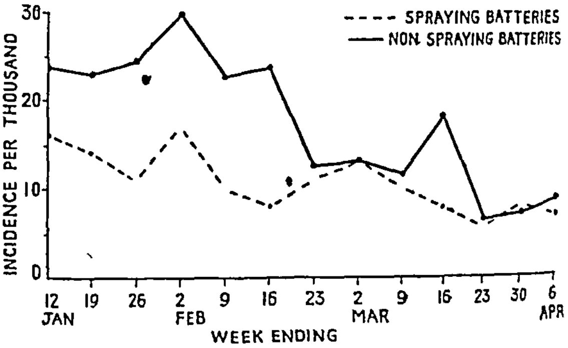

FIG 2—Incidence of droplet infections per thousand

The medical officers of both sprayed and unsprayed batteries completed a weekly return to the brigade senior medical officer showing (a) the ration strength of the battery for the week, (b) the number of men reporting sick on account of droplet infection, (c) the number of cases of sickness from causes other than droplet infections, and (d) the diagnoses of all cases of droplet infections All returns were then correlated by the brigade S M O and shown as incidence per 1000 personnel in sprayed and unsprayed groups The returns were corrected for variations in strength of batteries

RESULTS

During the period under review the total number of cases of droplet-borne diseases reporting sick in the sprayed community amounted to 425, compared with 670 in the unsprayed group The difference of 37% does not merely reflect a difference between the general sick-rate in the two groups, as is demonstrated by the fact that the non-droplet sick-rate in each is almost exactly the same, amounting to 834 in the sprayed and 850 in the non-sprayed (fig 1) A graph (fig 2) of cases of droplet infection in each week per 1000 personnel shows that the difference between sprayed and unsprayed groups is greatest during the period of maximum incidence of droplet-borne disease The curves meet at the end of the experimental period when epidemics of influenzal colds had died down It is significant that the outlines of the two curves follow each other fairly closely

There were no complaints of damage to clothing or metal parts of weapons by the bleach spray Sprayers of various makes but of similar design were used and it was found that some of them became unserviceable by rust on plungers and corrosion of containers The better, but not necessarily more expensive, type of sprayer has a piston and piston shaft constructed of rustless material The well-constructed container of galvanised iron which is associated with this will stand up to the corrosive effect of bleach solution for one season in most cases In the event of spraying being used on a large scale a non-corrodable material should be used without a rest period If this dose is adjusted for body-weight it represents less than half the doses suggested by Manson-Bahr for adults and children

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[1] Andrewes, C H *Lancet*, 1940, 2, 770

Phenothiazine was sent to me by Dr C M Scott for clinical trial and I have used it, in a preliminary investigation, in 8 children In one of these (case 1) poisoning occurred

CASE 1—Girl, aged 12 years Weight 78 lb Referred from the school clinic for treatment of threadworms on July 3, 1941 Phenothiazine 4 g for seven days prescribed On July 10 the child was jaundiced with a furred tongue Her mother stated that for three days she had been ill, her chief symptoms were nausea, anorexia, insomnia and depression On July 17 jaundice had faded, but she was obviously anæmic and a blood count showed red cells 2,900,000 Hb 60%, white cells 8900 per c mm, neutrophils 44% (3916), lymphocytes 53% (4717) and monocytes 3% (267) On the 24th, after a week's treatment with iron, a blood examination showed red cells 3,330,000, Hb 68%, C I 1 02, average diameter of red cells 7 6 μ, white cells 4300, platelets 300,000, volume of packed red cells 36 9% of blood volume, mean corpuscular volume 110 8 c mm (normal 78–94 c mm, average 86 c mm), eosinophil polymorphs, 2% (86), monocytes 2 5% (108), lymphocytes 50% (2150), neutrophil polymorphs 45 5% (1956), neutrophil nuclear index

Patient i, 46, ii, 46, iii, 8, iv, 0, v, 0
Normal 12 25 25 15 4

Red cells show little variation in size and shape, no stippled or nucleated reds seen, reticulocytes number about 10% of the red cells

Urine—Acid, no albumin, no sugar, microscopically clear, no blood pigments &c, present Van den Bergh negative

Complete recovery occurred in one month from the onset of symptoms

The effects of phenothiazine poisoning in this child were shown by the anæmia and jaundice It is improbable that the jaundice was hæmolytic in origin, since the anæmia was not sufficiently profound for this, moreover, the clinical condition of the child was strongly suggestive of a hepatitis This toxic effect on the liver has not been previously reported, but it might have been forecasted in view of the chemical structure of phenothiazine It is well known that substances containing benzene, such as trinitrotoluene, dinitrobenzene, dinitrophenol and arsenobenzene derivatives, are poisonous both to the liver and the blood elements As has been suggested above, no help in the differential diagnosis of the jaundice can be expected from the van den Bergh test, which gives an invariable positive indirect reaction when phenothiazine is being taken The blood-picture in this child showed a severe degree of anæmia and a leucopenia, with evidence of active hæmopoiesis in red cells and neutrophils

Of the other patients treated with phenothiazine, blood examinations were made before and after treatment in 2 and in one there was evidence of a moderate anæmia

CASE 2—Boy, aged 5 years Weight 38 lb Referred from the school clinic for treatment of nocturnal enuresis on July 24, 1941 He was found to be suffering from threadworms also His blood examination made before treatment with phenothiazine showed red cells, 4,600,000 per c mm, Hb 83%, reticulocytes less than 1%, eosinophils 2000 per c.mm He was given 0 5 g phenothiazine three times a day for a week. Blood examination then showed red cells 4,000,000, Hb 72%, C.I 0 9 average diameter of red cells 7 6 μ, white cells 7000, platelets 200,000, cell volume 37 5% of blood-volume, mean corpuscular volume 93 75 c μ Red cells show relatively little variation, about 3% are reticulocytes Eosinophil polymorphs 13% (900), neutrophil polymorphs 33% (2320), lymphocytes 51% (3570), monocytes 3% (210)

Urine—Some epithelial cells Very few leucocytes present No threadworms were seen after four days' treatment, but eosinophils were still high at 900 per c mm

Judging by the American series quoted above, poisoning may be expected in a fair proportion of cases if a total dosage of more than 15 g is administered to adults This does not include instances of idiosyncrasy which have not yet been reported but which may be expected to occur rarely Since evidence of poisoning was discovered in 2 of these 8 children, I decided to assess total dosage in future by body-weight Accepting the American standard of 15 g for an approximate weight of 150 lb, 1 g for every 10 lb of body-weight was used as the total dose This amount was spread over 3–5 days and if the threadworms had not entirely disappeared a second course was given a week later More than 20 children were thus treated, several of them required the second course but all of them were declared by their mothers to be free of threadworms One child was stated to be depressed and another off her food while under treatment No further evidence of toxicity was discovered until the last case of the series

CASE 3—Girl, aged 2½ years Referred from the school clinic for treatment of threadworms Weight 29 lb Phenothiazine 1 g for three days prescribed On the second day of treatment the child was sick and lacked appetite, on the third day the mother noticed that the child was yellow The next day, on examination, jaundice was confirmed, the liver was enlarged to just above the umbilicus and appeared tender the urine was red with the excreted dye Blood examination on the fifth day showed red cells 41,200,000, Hb 75%, C I 0 89 average diameter of red cells 7 55 μ; white cells 9300, platelets 400,000, eosinophil polymorphs 7%, basophil polymorphs 0 3%, neutrophil polymorphs 24 3%, lymphocytes 63% (5859), monocytes 5 3% (493), neutrophil nuclear index Patient *1*, 62, *2*, 30, *3*, 8, *4*, 0 *5* 0 Normal *1* 12 *2*, 25, *3*, 44 *4* 15 *5* 4

A week later the child's general health had improved; her appetite was normal and the liver was smaller but the conjunctivæ were still bile-stained This child's blood showed a mild anæmia with moderate stimulation of hæmopoiesis She was undoubtedly suffering from a toxic hepatitis

EFFICACY OF PHENOTHIAZINE

The employment of a potentially toxic drug in the treatment of a comparatively trivial infestation requires justification Although trivial infestation by oxyuris vermicularis is very common, large-scale investigations in lower and middle class white children in Washington D C gave a 50% incidence in children from six to eighteen years of age No comparable investigation has been made in this country, it is a formidable research, because routine examinations of fæces are without value and the eggs have to be sought in peri-anal smears The ordinary clinical standard of cure is a statement by the mother that she can no longer see threadworms in the child's fæces This standard is frequently shown to be faulty by the re-emergence of threadworms, sometimes years later Assessed even by these standards, the uniformly effective drug has not yet been discovered. Hexylresorcinol, as employed in an elaborate technique by Brown (1932), gave complete success judged by the highest standards Wright and Brady (1940) obtained 60–90% cures in adults and children with gentian violet by mouth It is probable that Butolan and its more recent equivalents which have been widely used in this country have a comparable efficiency with gentian violet

It is unfortunate therefore that phenothiazine which appears to be completely successful in the treatment of threadworms should sometimes be toxic to the host even in small doses Consideration of case 3 suggests that it will be wise in future to restrict its use to cases where less dangerous therapies have repeatedly failed Its administration should then be strictly supervised

SUMMARY

Phenothiazine has been shown to be an effective remedy against threadworms in more than 30 cases

Phenothiazine is poisonous to the blood and the liver in much smaller doses than have been suggested for the treatment of threadworms Three cases of anæmia following its use have already been recorded in the literature and 3 further instances are given here In 2 children it also produced a toxic hepatitis

Phenothiazine is probably too dangerous a remedy to be used in the routine treatment of threadworms

I am grateful to Dr G R Osborn, pathologist to the hospital, for the pathological investigations recorded and to Dr C M Scott, of Imperial Chemical Industries Ltd, who supplied me with phenothiazine

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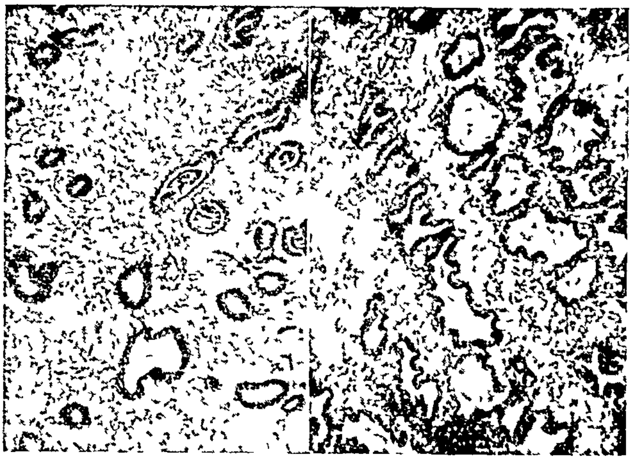
entail the use of a hospital bed for a month, and immobilise a woman who may be extremely unwilling to leave her family or her job, can be carried out in this way equally well and perhaps better without admission to hospital, crowded gynæcological waiting-lists are thus kept free for the more urgent hysterectomies and prolapses

TECHNIQUE AND RESULTS

The present series consists of 84 patients 44 cases of sterility, 31 cases of irregular uterine bleeding and 9 cases of amenorrhœa The total number of biopsies performed in these women was 238, the average number being 2 or 3 in each case and the highest individual score 10, several had 5, 6 or 7 biopsies


(a) (b)

Biopsy specimens of endometrium (a) Œstrogenic, (b) secretory phase

The technique is simple At the first examination a careful history is taken and the menstrual cycle should be plotted on a printed menstrual history case sheet A bimanual pelvic examination is made and a vaginal speculum passed, the cervix being inspected to exclude any organic lesion Any cervical infection is best treated and eliminated before the performance of endometrial biopsy If the case is suitable for biopsy the patient is asked to attend on the day chosen with reference to her menstrual chart, and it has always been my practice to explain what the examination entails and the reasons for it, thereby ensuring the patient's cooperation and confidence No shaving of the vulva and perinæum is necessary, but the patient is instructed to have a bath on the morning of operation after cutting the pubic hairs reasonably short When the biopsy is to be taken she is placed in the lithotomy position, the vagina and cervix are well cleaned and the vagina swabbed out with Dettol The operator should wear a mask, gown and rubber gloves, which are kept in a special drum in the outpatient clinic A small Auvard's speculum is introduced and the sister retracts the anterior vaginal wall if necessary The cervix is grasped with light fine volsella and gently steadied, and a small malleable sound is passed to ascertain the direction and size of the cervical canal, occasionally this is narrow and one or two small dilators may then be passed A fine sharp curette is introduced and a specimen of endometrium obtained from the fundus

With practice, the whole proceeding takes only a few minutes and the quicker it is done the less likely is the patient to be worried by it No special instruments are required and in all these cases a small fine ethmoid curette was used and proved itself a trusty and efficient instrument No special suction curette was ever used All the instruments are sterilised by boiling for each case, and if the pressure of work is severe they can be duplicated to save time After the examination the woman is sent to dress and always interviewed before she leaves hospital to make sure that she is feeling no ill effects She is also warned to expect a faint show for 24 hours or so and assured that this is normal

The pain experienced varies in different women The cervix, like most hollow viscera, can be cut and burned by the cautery with relatively little discomfort in the conscious patient, but she rather resents it being stretched The passage of a dilator is usually c[illegible] on and in some cases complained of as painful, th[illegible] seldom as severely so, hence it is important to use a small instrument In two of my cases both nulliparæ, it was impossible to pass an instrument into the cervical canal and these cases had perforce to be put on the inpatient waiting-list Needless to say, unmarried or virgin patients are as a general rule unsuitable for biopsy without hospital admission Considering the series as a whole, pain and discomfort during the operation provided a contra-indication in very few patients Of other minor ill effects, one patient had a mild syncopal attack and nearly fainted and one was sick These symptoms occurred in the earlier cases, with increasing experience and dexterity untoward effects were rare

In assessing the value of this method of investigation the main criterion is the histological information obtained A biopsy specimen may be said to be satisfactory if it contains a fair-sized piece of endometrium showing the stromal and glandular pattern clearly, so that study of it will definitely place the endometrium in a given category—typically œstrogenic (fig a) or typically secretory (fig b) With a good section there will be no doubt or hesitation in so placing it In this series 210 of the 238 specimens were classed as good, 18 as adequate, and 10 as useless In this last class are included those sections which contained no endometrium, or only cervical mucosa There is a notable improvement in the proportion of good specimens among the later cases of the series and this is of course the result of practice

SUMMARY

Biopsy of the endometrium has been performed 238 times in 84 outpatients

It is a simple and safe procedure that can be conducted without anæsthesia or premedication and without remarkable discomfort to the patient

The technique used is described, it requires no special instruments and only average skill on the part of the operator

Judged from a histological standpoint, the specimens obtained provided the information required in all but 10 out of a total of 238

Biopsy of the endometrium provides exact knowledge of the functional state during any given menstrual cycle, and is particularly useful in cases of sterility and irregular uterine bleeding It also enables a check to be made on the results and dosage of hormone therapy

It allows of a great saving of time and money to patient and institution

I wish to thank my seniors at St Bartholomew's Hospital, Dr Malcolm Donaldson, Dr Wilfred Shaw and Dr John Beattie for their help, and Mr B Cambridge, for cutting and staining all the sections

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TOXICITY OF PHENOTHIAZINE

DOUGLAS HUBBLE, M D LOND
PHYSICIAN TO THE DERBYSHIRE HOSPITAL FOR SICK CHILDREN

THE use of phenothiazine (thiodiphenyl-amine) in the treatment of threadworms was first suggested by Manson Bahr (1940) He recorded successful results in 6 children and 3 adults, and advised that children under four years should be given 1 g daily for seven days, children between four and eight 2 g daily for seven days, and adults 8 g daily for at least five days de Eds, Stockton and Thomas (1939), who have investigated the pharmacology of phenothiazine, reported that out of 19 patients in whom blood-counts were made before and after medication with phenothiazine, 3 developed an anæmia These 3 patients had taken a total dosage of 22 4, 28 1 and 19 9 g respectively, in the third patient the red-cell count dropped from 4,410,000 to 1,570,000, with reticulocytes increased to 35% No toxic effect on the leucocytes was observed They discovered no undesirable effects from the drug in the gastro-intestinal tract, kidneys or liver The 11 patients on whose serum the van den Bergh test was done all showed a positive indirect reaction, this reaction was attributed to the colour of the dye in the blood-serum They recommend that, in view of its effect on the red cells, the maximum total dose of phenothiazine should not exceed 15 g used. Bacteriological surveys often revealed defects in dressing technique. Professor Miles said he had made an investigation, with Dr Joyce Wright, of the incidence of cross-infection in a ward containing both air-raid casualties and operation cases; during the first period an ordinary dressing technique was used, and during the second the team-technique was used, masking was compulsory, and there was a quiet period in the ward before dressings were begun. Results were as follows:

	Air raid casualties	Cross infection	Operations	Cross infection
1st period	32	10	46	2
2nd „	46	1	49	0

In both periods 10 heavily infected cases were admitted, so that the menace was about the same; but the revision of technique reduced cross infection from about 15% to 1%. Improved aseptic precautions did not entail an increase of medical or nursing staff, and the speed of teamwork made up for the time lost by employing several people on one dressing. More bacteriologically controlled surveys were needed to test the effect of prophylactic methods, and to establish that cross infection was important even in wards where its effects were not obvious.

Prof J Paterson Ross remarked that this "fiddle-faddle" of aseptic technique—as Clifford Allbutt had called it—must be attended to. Simple precautions could be taken against dust and droplet-infection by shutting windows and stopping bedmaking an hour before dressings were due to begin. Receptacles containing dressings should have lids to them, and the wound must be left uncovered for the minimum time. Masks must be not only impervious but large enough to cover the nose and chin and stretch a good way to the sides; they should measure 6 × 8 in at least. In order to prevent contact infection forceps should be used or gloves worn; hands and instruments should be dry, and the fingers of the dresser should never touch the wound, the skin round it, or the dressings next the skin. Palpation round the wound could be done, if necessary, with a piece of wool held in the forceps; and where it was impossible to dress a wound entirely with forceps—as might happen with an empyema wound—the patient should be taken to the theatre and dressed with full theatre technique. In the wards separate packets of dressings might be used for each patient and opened with forceps on a sterile towel spread on the top of the trolley; the dresser could then take what he needed instead of having it handed to him, and the clean trolley attendant need only hand him the sterilised instruments. All instruments should be boiled; the edge of a cutting instrument was not spoiled if it was properly wrapped while boiling. Two minutes in boiling water sufficed if instruments had been properly washed. Bowls and irrigating cans should be immersed during boiling. Antiseptic solutions should be checked to see whether they were used strong enough and long enough; spirit could not be trusted. These methods were neither new nor elaborate; they were merely a revival of aseptic technique. It was well to try to oil floors and treat blankets to prevent the spread of dust, but if these measures were not practicable surgeons must make sure that dressing drill was properly learned. The wound which failed to heal by first intention was more liable to cross-infection. It was unreasonable, he said, to use a good technique in the theatre, and a bad one in the ward. In outpatient departments, too, all the rules were broken. Surgeons must teach their students that the quick glance at a wound was dangerous, inviting droplet infection. Indeed, any removal of the dressing was dangerous. He thought that in future we must look forward to a special dressing-room opening off the ward. The tendency was to dress wounds too often, as closed-plaster technique had shown. But it must not be forgotten that organisms could get in and out of plaster, and could be disseminated when a plaster was changed. The Medical Research Council memorandum No 6 suggested that an asepsis officer should be appointed in large hospitals, but Professor Paterson Ross felt that the surgeon in charge of a unit must be responsible for the technique in that unit; he could always count on help from the bacteriologist. To achieve an aseptic conscience was better than being shadowed by an aseptic policeman.

Dr M van den Ende held that in general surgical wards cross-infection of wounds occurred mainly through contact, and a careful dressing technique would reduce the incidence. In ear, nose and throat wards, or scarlet-fever wards, the upper respiratory tract was of course more liable to be the source of infection. This region, which trapped bacteria from more than 10 cu ft of air per hour, was specially likely to harbour organisms if it had recently been the site of an operation. We were not yet clear, he said, about what constituted a danger. If one streptococcus was enough to produce a cross-infection then dust was dangerous; if 1000 streptococci were needed that danger was slight. But there was danger of dissemination by droplets even in a general surgical ward. The nurse with an upper respiratory infection should be sent on leave. Patients with such infections had been shown to deposit large numbers of organisms on the bedclothes near the head, and these were disseminated during bedmaking. Photographs of sneezers showed the distant projection of droplets, and gauze masks might not intercept these. Cellulose-acetate masks should therefore be used. Large droplets carrying infective doses had a relatively short range and fell to the ground rapidly; adequate bed spacing and masking dealt with them effectively. During dusting and bedmaking the number of organisms in the air of a ward were at their peak, and they could remain suspended for long periods. Treatment of the floors and bedclothes with dust-laying oils reduced the numbers successfully. For 1000 sq ft of floor 1 gallon of spindle oil was needed. It looked dull, but the nurses got used to it, and if the excess was removed it was not slippery. It was not bactericidal, and no suitable antiseptic had yet been found to mix with it, but efforts were being made to find one. Technical white oil could be used for bedclothes, and could be applied in the hospital laundry. He thought that tests were urgently needed of the value of dust-laying methods in reducing cross-infection, especially in scarlet fever, diphtheria and ear, nose and throat wards.

Colonel Leonard Colebrook described two cases in which a general infection had been acquired from dust. He then traced the events following admission to hospital, in January, 1941, of a patient with severe burns infected with a type 12 streptococcus which was resistant to sulphanilamide. He was nursed in a bathroom 18–19 yards away from the ward first affected, and he ultimately died. Subsequently 14 cross-infections from his organism were identified, in 6 of which skin grafts were lost or went wrong as a result, while in the remainder there was infection of healing wounds, delayed healing or cellulitis. Every effort had been made to check spread—floors had been oiled and gloves and masks worn. The fact that the organism was sulphonamide resistant might have been partly responsible, and it might have other properties which made it particularly invasive. There had been hardly any acute throats in the affected wards. He believed that cross-infection was a bacteriological problem and should be dealt with by bacteriologists, and he favoured the idea of an asepsis officer, believing he could succeed in getting the facts over to students and nurses. If it was left to the surgeons there would be spurts of enthusiasm followed by lapses. It would be better to begin by having imperfectly trained asepsis officers than none at all. They should take the nurses into the laboratory and let them make cultures and learn a little first-hand bacteriology; their interest was a revelation.

Sir James Walton reminded the meeting that in this war we had had practically no experience of gross infections, Patients with bomb lacerations were operated on as soon as they got over the shock; their wounds were treated with sulphonamide and left for ten days, when they were found to be healing with clean granulation tissue. But if war came into this country we should see gross infections. Every medical officer must learn to adapt himself to what he could get. It was possible to dress wounds entirely without touching them, and thus without washing between cases. A man could not dress 40 cases, washing between each; but he could go round with forceps, using a separate packet of dressings and freshly sterilised instruments for each patient and never touch a wound. He had been inspecting many hospitals and had found none where dressing with forceps was compulsory. Ear, nose and throat cases should not be nursed in general surgical wards.

INSULIN HYPOGLYCÆMIA

CHANGES IN NERVOUS MANIFESTATIONS

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CHANGES in the symptomatology of insulin hypoglycæmia in diabetics commonly occur as years of treatment go on and insulin reactions may differ so much from the original ones that patients are dangerously unaware of their onset. At first it is almost the rule that patients feel and easily recognise minor premonitory symptoms. These can be ascribed mainly to reactions of the *autonomic nervous system* and are akin to the effect of a dose of adrenaline; indeed they are probably due to an extra secretion of adrenaline produced in an attempt to mobilise stored glycogen into blood-sugar. Such symptoms are general weakness and faintness, tremors, sweating, hot or cold feelings and palpitation. Other early symptoms, less easily explained by hyperadrenalinæmia, are hunger pains, visual disturbances including diplopia, and tinglings, especially of the lips and tongue. Such symptoms occur, if at all, at definite times of the day or night, at the period of maximal insulin action, and are easily recognised and removed by eating 1–3 lumps of sugar. Many conscientious patients even welcome such mild attacks occasionally, regarding them as a sign that their diabetes is well controlled. Such symptoms indicate as clearly as an exact estimation that the blood-sugar is between 50–70 per mg. 100 c.cm. Should such symptoms be unrecognised or neglected, so that glycopenia persists for a long time, symptoms develop which may be classified, roughly at least, as being due to disturbed function of brain and *central nervous system*; these are mental confusion, symptoms exactly simulating alcoholic intoxication, muscular twitchings, convulsions, epileptiform seizures, transient hemiplegias and complete coma. All these effects disappear rapidly, and usually completely, on restoration of the blood-sugar; but they occasionally persist longer, especially if hypoglycæmia has lasted for one or more hours, and, very occasionally, there is permanent hemiparesis or mental impairment with definite histological changes in the nerve-cells. A few patients never feel early premonitory symptoms but experience the more serious group of symptoms from the start; yet considering the large number of stupid or careless patients on insulin treatment, serious attacks and sequelæ are exceedingly rare.

As years of insulin life go on, sometimes only after 5–10 years, I find it almost the rule that the type of insulin reaction changes, the premonitory autonomic symptoms are missed out and the patient proceeds directly to the more serious manifestations affecting the central nervous system. This applies to diabetics who have been continuously on unmodified soluble insulin as well as those who have been changed to protamine insulin, whose different, slower and more prolonged action often modifies the type of reaction. The following are typical of the changes I refer to. A patient, instead of becoming shaky, sweating, or hungry if his meal is unduly late, becomes suddenly confused and obstreperous, creates a scene and refuses sugar. Another, accustomed to drive a car and usually warned of hypoglycæmia by slight diplopia, becomes suddenly wild and unbalanced in his driving. Yet another, instead of being wakened at night by violent palpitations—his warning to take sugar—goes straight into convulsions and awakens so paralysed that he cannot reach his sugar. The same patient may at one time experience early premonitory symptoms and at another be quite unaware of an impending attack. It is obvious that these are serious dangers.

I can offer no satisfactory explanation of this change of symptomatology and the common failure of autonomic warning symptoms as time goes on. I have noticed how, at the beginning of insulin treatment, patients feel hypoglycæmia symptoms at a higher blood-sugar level—90 to 120 mg. per 100 c.cm.—than later on, when they may not experience the same feelings until the blood-sugar is 40–60 mg. per 100 c.cm. Here we may say that the tissues become attuned to a lower level of sugar concentration. But the condition I refer to occurs in patients who are often hyperglycæmic and only rarely hypoglycæmic. It is no mystery that if the blood sugar is low for long enough the central nervous system should react in some untoward way, because if sugar is, as we believe, the only fuel it can use the absence of this fuel must interfere with its vital function. It is also known that the higher cortical functions and centres suffer first and most severely, and that the function and anatomy of the basal ganglia and vital centres are rarely affected. But none of these facts explains why symptoms of upset of autonomic type fail to give warning of trouble as years go on.

I know of no way by which the original sensitivity of the autonomic nervous system can be re-established and the danger of serious hypoglycæmia entirely prevented, but certainly the urine in such diabetics should never be made continuously sugar-free throughout the 24 hours. If they are sugar-free at the time of minimal insulin activity—say after breakfast—they run an almost certain risk of hypoglycæmia at the period of maximal insulin action a few hours later. The most certain way of avoiding trouble in such cases is to give regularly a large carbohydrate buffer (20–30 g. of carbohydrate) before these times of intense insulin action, to anticipate and prevent hypoglycæmic attacks. With soluble insulin this carbohydrate should be given 3 hours after each injection; with protamine insulin it should be given at tea-time if the interval between lunch and supper is a long one, and in all cases at bed-time.

Medical Societies

ROYAL SOCIETY OF MEDICINE

AT a meeting of the Section of Surgery on Nov. 5, with Mr. E. ROCK CARLING, the president in the chair, a discussion on

Streptococcal Cross-infection in Wards

was opened by Prof. A. A. MILES. Such infection, he said, was an established phenomenon, but seldom gave rise to severe and fatal infections. The common results were cellulitis, erysipelas, extension of wound infection, delayed healing or failure of skin grafts. Of the bacteria commonly taking part *Streptococcus pyogenes* was most easily traced; and though not the commonest cross-infecting organism it was the most important because of its pathogenicity. The incidence of streptococcal cross-infection depended on sources of infection in wounds and upper respiratory passages, on the possible channels of infection, and on the state of the exposed tissues. In the surgical ward of peace-time, the streptococcal reservoir was mainly in the upper respiratory passages, and striking cases of infection were rare. In war-time, wounds infected before admission provided additional reservoirs, and hospital infection was commoner because of this and because of the greater susceptibility of the war wound compared with the operation wound. Poor accommodation and hastily trained staff also played their part. Peace-time technique might prove inadequate to meet the added risks of war. Infection could reach the wound by three main channels—dust, droplets, and transference of organisms on hands and utensils. These possible channels of infection demand separate precautions which Professor Miles divided into those associated with the actual dressing technique, and others. Among the latter were the use of impermeable masks to prevent droplet-infection, and the exclusion from the ward of anyone with an infected hand or finger. Common utensils should be disinfected every time they were used by an infected patient, and all his things should be kept separate, as far as possible, from those used by other patients. His wound should always be kept covered between dressings. There should be a quiet period in the ward before dressings were begun; bedmaking should cease so that dust could have time to settle. The dressings themselves should be carried out by a team consisting of a trolley attendant who had nothing to do with the patient but simply handed out sterile materials with forceps; a dresser, who used a “no-touch” technique; and an assistant. The dresser and assistant treated each case as a separate unit, washing their hands and having the instruments freshly sterilised between each dressing. They should, if possible, wear fresh dry gloves for each case; the wet scrubbed hand, with infection trickling down from the forearm, should not be

THE LANCET

LONDON   SATURDAY, NOVEMBER 15, 1941

WHAT'S IN THE NATIONAL WHEATMEAL LOAF ?

WHEN the Medical Research Council drew up its second memorandum[1] on national flour in the spring of 1941 it offered the nation something new Never before had knowledge been sufficient to select with confidence a loaf which would look and taste almost like white bread and yet contain such a large share of the best nourishment of the whole wheat grain The Medical Research Council s specification was definite, and if it had been adhered to and the new loaf had appeared simultaneously everywhere, uniform in character, attractive in appearance and easy to get, and if, just before and during its appearance, an earnest and urgent propaganda campaign had been undertaken, there can be no doubt that it would have found wide acceptance At least all those people who could be reached through their sense of duty to promote their own health and that of others, or to protect the lives of our merchant seamen, would have responded Many others would have tried the loaf through curiosity and if the loaf had been palatable would have continued to do a duty found not so unpleasant after all

Unfortunately, the national wheatmeal loaf was not launched in this way The millers did not produce the flour to any uniform specification, the bakers often baked it badly or not at all, and many retailers did not stock it and showed no interest when asked about it The Government propaganda was feeble Finally, on Aug 27, 1941, the final blow was struck in one of the Statutory Rules and Orders of the Ministry of Food,[2] which gave the following definition

> " National wheatmeal " means flour produced in the United Kingdom and consisting of 85% by weight of any of the products of the milling of clean wheat, provided that the remaining 15% of the products of that milling are the substances commercially known as fine wheatfeed and straight run bran , and includes any such flour to which has been added any substance authorised by the Minister to be an ingredient of national wheatmeal "

This definition makes no fine distinction as to selection of the most nutritious parts of the grain, and permits 85% national wheatmeal to consist of white flour with added bran A glance at the interior of the national wheatmeal loaf as baked in some parts of the country suggests that this is indeed the case The Medical Research Council, in making their definition of 85% national wheatmeal, chose two special safeguards the flour was to contain not less than one International Unit of vitamin B per gramme and less than 0 9% of fibre These two criteria neatly set the limits within which the composition of the flour should fall The first would prevent the flour being too white (too much refined) , the second would exclude the coarse bran and prevent the flour from being too dark and containing too much roughage This second criterion is the one which safeguards the interests of those who prefer the taste of white bread It is the bran which contributes the high fibre content, it is the bran whose taste is disliked by those who do not care for brown bread, and it is the bran which imparts the unpopular dark colour and coarse texture Investigation of the national wheatmeal loaf, as now supplied, has shown that the loaf which is disliked is the one of high fibre content This loaf is becoming more and more the rule , the national wheatmeal loaf is steadily deteriorating and consequently disappearing The flour in such national wheatmeal loaves of poor quality is said mostly to come from the few large milling concerns whose representatives claimed that the Medical Research Council's specification for 85% flour would put too great a strain on the small miller Actually, it seems, the small millers, whose voices are not heard, have made a more loyal effort in the country's interests

In this conflict between the national and individual interests the millers have thus won the day, and a golden opportunity of furthering the health of the people has been lost The situation of the national wheatmeal loaf after this defeat is now strategically bad but is it irremediable ? A good loaf, made to a strict specification and supported by wise propaganda, might still achieve victory

T N T

THE internal combustion engine and the high explosive, trinitrotoluene, belong to the category of doubtful benefits which scientific progress has given to the world, and the doubt is more than doubled when they come together in a bombing aeroplane T N T has gained great popularity as an explosive since it was first made in the laboratory by HEPP in 1880 and since its adoption by the German military authorities in 1902 As a blasting powder in peace-time it was used for its excellent properties of high stability as an explosive and low toxicity for human beings It can be hammered or turned in a lathe without exploding, and from the pharmacological point of view the toxic and lethal doses are relatively enormous Indeed PROSSER WHITE [1] in 1901 showed that dinitrobenzene was more poisonous to animals than trinitrotoluene, and he said that in some factories T N T had been substituted for D N B with great advantage to the health of the workers This was the attitude towards T N T up to the onset of the war of 1914–18, and paradoxically the " safe " properties of the explosive, because reliance was placed on them, led to a great deal of mischief in the form of poisonings and accidental explosions In the peace-time manufacture and handling of T N T little trouble is experienced but when war comes the demand for the explosive is enormous, many more workers are exposed to it, longer hours are worked, production is speeded up, new factories are built or adapted, and engineering and managerial skill becomes diluted It is then that poisoning from T N T becomes a major problem, as was well shown by our experience during the last war

The first fatality attributed to poisoning by T N T was in February, 1915, and LEGGE [2] describes how at the autopsy he was struck by the jaundice of the sclerotics and skin resembling that seen in poisoning by

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[1] *Lancet*, 1941 1, 703

[2] Emergency Powers (Defence) Order, 1941, No 1291 Food (Flour) H M Stationery Office 3*d*

[1] Prosser White R *Lancet* 1901, 2 582, 769

[2] Legge T M Annual Report of Chief Inspector of Factories for 1917, p 21

Dr W A **BRADLEY** had followed the spread of *Strep pyogenes* infections in Addenbrooke's Hospital and had found different types prevalent at different times Thus types 8 and 3 were prevalent in some wards at the beginning of the investigation, but they had then disappeared for some years At other periods he found types 6 and 22 Outbreaks of a single type would last about three months and spread slowly, often just when a general spread seemed imminent that type disappeared spontaneously After a time it became possible to tell how a strain came in type 6, for example, was introduced by a case of cellulitis He found it hard to suppose that dust or bedclothes infections played more than a minor part in spread In a public school which he had investigated spread of infection seemed to be related to the placing of beds in the dormitories, not to exposure to dust in playrooms and corridors

Lieutenant-Commander **JOHN BUNYAN** said that organisms grown from a wound had no significance unless they were causing symptoms If the wound was encouraged to heal from the start contamination by bacteria became less important The use of the Stannard oiled silk envelope made it very difficult for secondary infection to occur The envelope could be applied immediately by anyone and left in position for three weeks The wound could be treated by irrigation with electrolytic hypochlorite solution If the wound was healing well inside the envelope the type of organisms to be found outside became merely academic

Dr E T C **SPOONER** described a study carried out at Hill End Hospital from November, 1940, to April, 1941, inclusive, in a plastic surgery ward Swabs were taken from wounds and throats, and it was found that 65% of wounds were infected with hæmolytic streptococci, and that a quarter of these infections began while the patients were under observation In one epidemic due to a type 13 organism, 3 throats and 15 wounds were infected (one wounded man was seriously ill and 4 Thiersch grafts failed) A type 4 epidemic, starting from 5 burns infected with the same organism admitted together from the same hospital, spread to 18 throats and 4 wounds The type 13 organism had been found by Colonel Colebrook to be resistant to sulphanilamide whereas the type organism was susceptible to the drug All wounds were being treated with sulphanilamide powder This experience illustrated the need for continual investigation which alone could give that fresh insight likely to extend what was known about the control of infection

Mr H W **RODGERS** said that he had been attempting to reduce the smell of the closed plaster method of treatment by enclosing a sheet of gauze soaked in strong antiseptic between the layers of the plaster This, besides preventing the smell from becoming serious for three weeks, retained much of the pus seeping from the wound He asked whether it would also have an effect in preventing cross-infection Professor **MILES** replied that on general principles a layer of strong antiseptic might be expected to reduce the number of bacteria coming through the plaster

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Reviews of Books

Warwick and Tunstall's First-aid to the Injured and Sick

(18th ed) Editor **NORMAN HAMMER**, M R C S, late R A M C, county surgeon, St John Ambulance Brigade Bristol John Wright and Sons Pp 336 3*s* 6*d*

THIS is an advanced ambulance handbook Part 1, on anatomy and physiology, is well written, and gives much more information than that usually found in first-aid textbooks Part 2 has been largely rewritten, and includes notes on air-raid casualties, war gases, transport and methods of blanketing a stretcher Busy doctors faced with fallow and inquisitive first-aid classes will welcome it as a reference book Others may argue that first-aid should never be an advanced subject that its greatest value lies in its limitations The great surgeon and the St John Ambulance man are brothers by the roadside, and perhaps there is a growing tendency today to teach too much in the name of first-aid, reports by competent authorities tell of dangers too Should we not be wiser in these days of war to teach the greatest number of people the simplest facts of common sense that save life ?

The book is full of excellent suggestions and explanations, but ancient illustrations, depicting self-conscious gentlemen of bygone days, have become the depressing but inevitable trade mark of first-aid textbooks Clear illustrations are an immense help to the student May we hope in the future for clear line drawings of artistic merit, and more of the type of illustration shown on page 199 ?

Biologic Fundamentals of Radiation Therapy

FRIEDRICH ELLINGER, M D, research fellow, radiotherapy department, Montefiore Hospital, New York City, formerly privatdozent in radiology, University of Berlin. London, H K Lewis and Co Pp 360 30*s*

THIS is a comprehensive survey of the literature of all types of radiation used in medicine—ultraviolet light, X rays and gamma rays The action of radiation on the cell is considered first, followed by an important section in which the action of X rays and gamma rays on the tissues of the human body are described in detail The effect on the skin is regarded as being of special importance because it was the biological indication used in all the earlier methods of estimating dosage, and because the production of irreversible reactions in the skin limits the dose which can be given through any external portal Different organs and tissues are considered and much experimental work is quoted The chapters on the therapeutic uses of radiation are less satisfactory because the task is more difficult In the last twenty years the science and practice of radiology have been changing so quickly that opinions firmly held a few years before may be regarded as out of date even by the author who originally published the conclusions, and the selection for quotation of work based only on reliable experimental evidence is impossible at the present stage It is not in line with modern thought, however, to include Hodgkin's disease as an infectious new growth, while the closely related and sometimes indistinguishable lymphosarcoma is mentioned in a short section on sarcoma in general as if it were a neoplasm of the skin only Dr Ellinger points out that the doses mentioned are merely given for orientation purposes, but they reflect the confusion in practice, including as they do doses in S E D, r in air, r on skin with backscatter, skin doses per field and summated dose, and for radium milligramme hours

Part 2 is concerned with corpuscular radiation, and includes the absorption of emanation and some controversial therapeutic methods, with a short appendix on neutrons Part 3 deals with ultraviolet light—the changes it produces in the skin, its antirachitic effect and its use in the treatment of tuberculosis Among other matter in part 4 is a chapter on diseases caused by light, is interesting, but the possible carcinogenic effect of bright sunlight might have received more attention In the fifth part some general principles of radiation biology and therapy are considered and this provides a convenient summary of opinion on the method of action of radiation, radiosensitivity, the time factor and dosage There is an excellent bibliography and the whole book will be most useful for reference

Essentials for Final Examinations in Medicine

JOHN DE SWIET, M D Lond, M R C P, assistant physician to Staines Emergency Hospital London J and A Churchill Pp 168 7*s* 6*d*

THIS is a small volume of precis articles arranged under 93 headings in alphabetical order They are practically specimen answers to "spotted" questions, largely compiled from standard textbooks and recent monographs The style is succinct and clear, the matter, with occasional exceptions, would be acceptable to *orthodox* examiners, though some might wish for more emphasis on the relation of anginal pain to effort, and some might wonder how it comes about that "the smaller the dose of zinc protamine insulin the sooner it comes into action" But on the whole the student whose own notes are incomplete will find these useful and reliable for last-minute revision

TRAUMATIC DEAFNESS

WHEN man learnt to make noises louder than nature ntended his ears to bear traumatic deafness must have made its appearance and gunfire deafness must have ome in with guns, though the first cases reported, ccording to Goldstein,[1] seem to have been those of Solomon Alberti of Nuremburg in 1591, when guns had been in use for some 200 years The ndustrial revolution, and particularly the development of heavy industries during the present century, has added another form of traumatic deafness Long exposure to the louder industrial noises produces temporary, or sometimes permanent, deafness in certain people—so called boilermaker's deafness Between 1915 and 1930 most aircraft were of the open-cockpit type and the pilot and passengers were exposed to the noise of the engine and air-screw and also the wind-rush In this period otologists in various countries discussed a form of deafness which aviators developed as an occupational disease All agreed that temporary deafness was almost the rule and that permanent deafness was reasonably common The type of deafness was identical with that found in other noisy occupations, and in fact all forms of traumatic deafness where there is no gross demonstrable lesion of the drum, ossicles or bone are of a similar type, varying only in severity Politzer[2] described traumatic deafness as being of the nerve type, and this view is supported by Kerrison[3] The differentiation from other forms of nerve deafness was first made by Bunch[4] in an analysis of a number of audiometric tests In senile deafness there is little loss of auditory acuity for tones up to about 512 double cycles, but thereafter the acuity diminishes almost proportionately to the rise in frequency Toxic deafness follows a somewhat similar, but usually more intense, pattern Bunch found that the hearing in cases of traumatic deafness is fairly normal for frequencies up to 2048, after which there is an abrupt fall in the curve, maximal at 4096 double variations and improving at higher frequencies A similar finding was recorded by Fowler,[5] who also formulated the generalisation that the medium-high frequencies are especially sensitive to insult from trauma or toxins These observations indicate a lesion of the second half of the basal whorl of the cochlea, and confirmation came from an investigation of the microscopic anatomy by Crowe, Guild and Polvogt,[6] who discovered that there was atrophy of the organ of Corti at a level above the last 2 mm of the basal turn This region corresponds fairly exactly to the opening of the oval window and to the promontory on the inner wall of the middle ear In other words, that part of the cochlea nearest the external world and first receiving the auditory impulses suffers most damage

In attempting to avoid deafness due to noise, blocking the external meatus has been advised and used for years For the less intense and prolonged noises the method is reasonably successful Dickson and Ewing[7] have recently investigated various methods of protecting personnel engaged in flying modern aircraft or handling them on the ground The noise with which they were concerned is very loud, lasts for a considerable time and is subject to brief impulsive intensification In addition to protecting against these peculiar noise properties, the method sought had to permit the reception of intelligible speech As might be expected, the solution of so paradoxical a problem was not wholly satisfactory. Two forms of protective appliance were investigated —ear-plugs of various materials, and complete helmets The chief function of the ear-plugs was to reduce air transmission through the middle ear, and of the helmets to insulate the bones of the skull and reduce conduction through the bony capsule Combination was more effective than either method alone but proved unpractical because of the gross interference with the reception of speech With both methods there was less protection against noise in the lower than in the higher frequencies, but it has already been shown that the deafness occurs in the medium-high range where it causes the greatest handicap Both plugs and helmet successfully delayed the onset of aural fatigue but did not abolish it, and this is about as far as it is yet possible to go However, enough has been discovered to indicate that something can be done at least to mitigate one of the many disabilities resulting from war More still might be done if these cases were followed up carefully It would not be difficult to keep men deafened by aircraft noise under observation, to have audiograms done regularly, and to seize any opportunity that fatal accidents offered to secure the temporal bones A few autopsy specimens, backed by a full history and investigation, might teach us much of the pathology of traumatic deafness and show the way to complete prophylaxis

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[1] Goldstein M A Problems of the Deaf St Louis 1933
[2] Politzer A Diseases of the Ear Philadelphia 1926
[3] Kerrison, P D Diseases of the Ear Philadelphia 1930
[4] Bunch, C C *Arch Otolaryng Chicago* 1929, 9, 625, *Laryngoscope St Louis*, 1937, 47 615
[5] Fowler, E P *Trans Amer otol. Soc* 1929, 19, 182
[6] Crowe S J Guild S R and Polvogt, L M *Bull Johns Hopl Hosp* 1934 54 315
[7] Dickson, E D D and Ewing A W G *J Laryng* 1941 56 225

MORE ABOUT PHAGE

THE principle of setting a thief to catch a thief seemed likely to be applicable in therapeutics when first F W Twort and then d'Herelle found twenty-five years ago that cultures of bacteria in the test-tube could mysteriously disappear and when subsequent work showed that many bacteria, pathogenic and non-pathogenic, were the prey of the propagable lytic substance now known as bacteriophage The nature of this substance is still in dispute Most bacteriologists adhere to the view that phage belongs to the virus family, and that there is a multiplicity of phage-viruses each specific for its own bacterial host rather than one omnivorous phage as d'Herelle maintained Others follow Bordet in regarding phage as an autocatalytic enzyme derived from the bacterium itself, while others, like Lwow, believe in a gene origin of phage Whatever its nature, the therapeutist soon found that the promised panacea had once again eluded him, for in both experimental and clinical infections phage proved disappointing The main reason for its failure was its inactivation by any protein or colloid with which it came in contact, although the use of non-specific phage-lysates of weak potency was probably a contributory factor Even in the test-tube a sufficient concentration of phage is required to lyse a bacterial culture Eaton and Bayne-Jones[1] concluded in aeroplane dope or tetrachlorethane In the summer of 1915 other cases occurred and two more deaths were reported Energetic steps were taken to investigate the problem and to prevent cases of poisoning The Medical Research Committee was asked to inquire into the toxicology of T N T and in the meantime LEGGE had warned the factories, on the analogy of experience with the nitro derivatives of benzene, that T N T might be absorbed through the skin or be inhaled as dust or fume, and he recommended that precautions be taken against both these modes of entry. Towards the end of 1915 it became necessary to obtain more information about the prevalence of T N T poisoning and toxic jaundice became notifiable under section 73 of the Factory and Workshop Act, 1901, although T N T also sets up dermatitis, gastric symptoms, cyanosis (methæmoglobinæmia) and aplastic anæmia LEGGE explained that the jaundice of T N T poisoning was chosen because when a statutory notification of an industrial disease has to be made the doctor and the factory occupier usually need a definite symptom or sign to guide them An attempt to notify all the forms of T N T. poisoning would mean that the figures would include nearly every T N T worker seeking medical treatment for any complaint The order for notification came into force on Jan 1, 1916, and 181 cases of toxic jaundice with 52 deaths were notified in that year, whereas in 1917 there were 189 cases with 44 deaths The greatest number of cases were observed towards the end of 1916 and the beginning of 1917, after which the incidence of toxic jaundice and deaths fell rapidly although many more workers were engaged in the manufacture of T N T and in the shell-filling factories Writing in war-time LEGGE could not give the precise numbers of workers exposed to the risk of poisoning but he indicated that there were well over 50,000 so employed In the meantime MOORE,[3] with his colleagues WEBSTER and WYON, had been carrying out in the laboratory and the field a brilliant series of researches which established the fact that T N T made its way into the body more often through the skin than by way of the lung passages or the alimentary tract Early in the inquiry WEBSTER[4] evolved a chemical method of determining the excretion of altered T N T in the urine (a modification of the test by INGHAM[5] was published in our columns last week), and armed with this the investigators were able to test the efficacy of the preventive measures which were put into force They also showed that the skins of different individuals had varying capacities for absorbing T N T and letting it through into the blood-stream, and that workers who developed dermatitis rarely showed constitutional symptoms The colour reaction obtained by Webster's urine test is due not to T N T itself but to a reduction product (2 6 dinitro 4 hydroxylamino-toluene), on excretion in the urine this is conjugated with glycuronic acid, which shares with the sulphonic esters the task of removing from the body in innocuous form a large number of poisonous substances which are either formed autogenously in the body or are introduced from without Herbivorous animals show a greater tolerance than carnivora for T N T and man with his mixed diet stands in an intermediate position Some diets yield more glycuronates or glycuronic esters than others and it seemed i ant to provide for all workers on toxic nitro comp a diet with a high yield of these substances—for example, fresh vegetables and fruit Some resemblance was noted between certain manifestations of T N T. poisoning, such as purpura hæmorrhagica, and those of scurvy It may be noted that in war time supplies of fresh fruit are restricted

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[1] Eaton, M D and Bayne Jones, S *J Amer med Ass* 1934, 103, 1769, 1847 1934

It would be interesting to know how many case of T N T poisoning there have been during the present war but no figures were given in the report of the Chief Inspector of Factories for 1940[6] Last week we published a description by R M EVANS[7] of seven cases of toxic jaundice due to T N T in a shell filling factory Two of the cases ended fatally and in one of these the patient, who died from acute liver atrophy had been in contact with explosives for only 3 weeks before the onset of the illness The second death was from aplastic, anæmia which came on 9 weeks after an attack of toxic jaundice had abated HILTON and SWANSTON[8] in an article on the general aspects of poisoning by tetryl and trinitrotoluene mentioned that they have seen 3 (presumably recent) fatal cases of aplastic anæmia in workers exposed to T N T But we do not know whether the position as regards T N T poisoning is better or worse than it was during the last war Many are asking, as EDWARD VII asked about tuberculosis—"If preventable, why not prevented?" But the principles of prevention of poisoning by T N T are well known and there can be little doubt that as far as is humanly possible they are being applied In T N T factories all workers are under close medical supervision and the engineers cooperate to control the dust and fume But as BRIDGE[9] points out there is still no explanation why some people after a short period of exposure are poisoned by T N T while others working under the same conditions escape ROBERTS,[10] in urging the need for selection of workers, says that those who are susceptible to T N T may not be protected by even the most satisfactory working conditions and most careful supervision He suggests that no one under the age of 19 and no woman weighing less than 105 lb should be allowed to come in contact with T N T, and that anyone with sweaty hands, a history of jaundice or the yellow sclerotics often seen in constipated people should be rejected He also urges attention to the workers' habits of personal cleanliness—whether they sleep in underclothing that they wear at work, whether they bite their nails, or have long tapering ones MOORE made some suggestions about the part played in determining susceptibility by both diet and permeability of the skin, which can be tested by rubbing in a measured quantity of T N T and assessing by Webster's test the amount absorbed and excreted in the urine But, until a really reliable method of pre-employment selection is found whereby susceptible individuals can be kept away from T N T, cases of poisoning are to be expected in small numbers even if all other methods of prevention are rigorously applied Meanwhile workers must not be sacrificed to the exigencies of output by being kept in the workrooms longer than is reasonable

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[3] Moore, B *Spec Rep Ser med Res Comm* 1917, No 11
[4] Webster, T A *Lancet*, 1916, 2, 1029
[5] Ingham, J *Ibid*, 1941, 2, 554
[6] H M Stationery Office Pp 24 4*d*
[7] Evans, R M *Lancet* 1941 2, 532
[8] Hilton, J and Swanston C N *Brit med J* 1941 2 509
[9] Bridge, J C Annual Report of Chief Inspector of Factories for 1940 p 23
[10] Roberts, H M *Brit med J* 1941, 2, 647

Annotations

TOWN ⇄ COUNTRY

The evacuation of London school children is now two years old, and in the balance-sheet presented to the education committee of the London County Council on Nov 5 the chairman was able to show a reasonable profit and loss account What the children have missed in the way of formal education they have gained in mental and physical vigour and a new breadth of outlook The constant ebb and flow of children and teachers necessitates the frequent reorganisation of classes, and the scarcity of new entrants makes it difficult to maintain separate departments for juniors, seniors and infants But if classes have a wider range, they are smaller than in London and there is more scope for individual study At school the children may find their quarters cramped and the sanitary arrangements inadequate according to London standards, but good food, early bedtime and fresh air have improved their health and the town children have a better attendance record than the local children and show more resistance to epidemics If there is a shortage of school books and equipment, nature study and practical geography are attractive new lessons, if the gym, playground and swimming baths are small or non existent, and if equipment for domestic science, art and crafts is lacking, the children have found new ploys such as milking, bee keeping, poultry-keeping and, above all, gardening To many it was news that peas, beans and cabbages have a history that goes beyond the greengrocer in Deptford High Street, but now the boy from Bermondsey brags about his "sprarts" and makes his plot an economic as well as a horticultural success

No one can read the report without feeling admiration for the London teachers, who now often look after their young charges in and out of school hours and during the holidays The closer relationship between teachers and children has been one of the gains of evacuation The teachers are often leading rather lonely lives, isolated from books, professional contacts and home ties, yet it is due to their enterprise that the children have sometimes been able to contribute to the life of the community, and school concerts and displays of handiwork have been warmly welcomed by the country dwellers But the country does not seem to have made many lasting converts When the rest of their family remains in town, it is only natural that the children should return when they leave school, and in an inquiry among 1500 "leavers" less than a quarter remained in the reception area, and of these very few were taking up farming or agricultural work

THE STICKINESS OF PLATELETS

It is a classical observation that blood-platelets and white cells collect at the point of injury of a blood-vessel and there form a thrombus, Osler remarked on the way platelets stick to foreign particles But although methods have been described for estimating the adhesiveness of white cells, no-one has tried to measure this property in platelets Payling Wright[1] has devised an ingenious method of following the changes in the stickiness of blood-platelets that are caused by the use of various anticoagulants, and incidentally she has suggested an explanation of the disappearance of platelets in stored blood Specially shaped glass bulbs were used which had carefully ground apertures at either side, these apertures were sealed with coverslips held in place with soft paraffin Blood was collected in an oiled syringe, mixed with dry anticoagulant in a waxed beaker, and then transferred to the glass bulbs which were steadily rotated by a motor For control, some of the blood was put into a bulb coated on the inside with soft paraffin The platelets were counted by a standard method before the blood was put into the bulbs and then at regular intervals afterwards Finally the coverslips were detached, stained by Leishman's method and examined It was found that after 80 minutes the platelet count had fallen to between 60 and 20% of the original count, the final figure depended on the anticoagulant used, but still more on the concentration of the anticoagulant Oxalate, heparin, chlorazol pink, and chlorazol blue were tried With a concentration that would just prevent clotting the platelet count after 80 minutes' rotation fell to 20–25% of the initial count with all these anticoagulants, but when concentrations of eight or more times minimal were used the final count in oxalated blood was about 60% of original and about 45% with the other anticoagulants In the control bulbs there was only a slight fall in the platelet count When the stained coverslips were examined, the missing platelets were found sticking to the glass, and it was noticed that at the higher anticoagulant concentrations the platelets tended to adhere only to the glass and not to each other Payling Wright concludes that anticoagulants reduce the stickiness of platelets, possibly by reducing fibrin formation on their surfaces The disappearance of platelets in stored blood is due to their adherence to the walls of the storage bottles and not to disintegration, for had this happened clotting might well have been expected when the anticoagulant concentration was minimal and the fall of the platelet count large, but no clotting occurred This technique can clearly be extended to pathological problems Are the blood-platelets less sticky in purpuras ? Can "thrombasthenia" be demonstrated ? Will the answers help us to decide between the orthodox school who think that the stickiness of blood-platelets assists the actual plugging of injured blood-vessels and those who hold that they only help to initiate clotting in the shed blood[2] This method might also be used to seek materials, possibly plastics like Perspex, that platelets will not stick to and could be used for the collection of platelet containing blood

TOO MUCH OF A GOOD THING

Nature has been none too bountiful with her supplies of the vitamins, as the widespread incidence of deficiency diseases shows The possibility of overdosage, therefore, hardly arose before the interference of man led to the detection, isolation and finally synthesis of several of their number After the synthesis of calciferol by the irradiation of ergosterol, the too energetic exhibition of this substance to infants and children led to several instances of undue calcification and occasional death[3 4] Hypervitaminosis A has not yet been described in humans, although it can be produced experimentally in rats[5] Overdosage is more readily to be expected with these fat soluble vitamins, which are not easily eliminated by the body, than with the water-soluble factors, excess of which is readily excreted in the urine Nevertheless, a large dose of a water-soluble vitamin might cause for a short time a high concentration in the blood and so possibly lead to untoward symptoms This, for example, is true of nicotinic acid Doses of more than 50 mg by mouth or 10 mg intravenously may produce flushing and irritation of the skin, and occasionally gastrointestinal symptoms[6] These effects are transitory, the concentration of the vitamin in the blood rapidly falls as the excess, which is not metabolised or stored, is excreted by the kidneys Whether large doses of the other water-soluble factors produce undesirable reactions is not certain It has been suggested that intense treatment with vitamin B_1 may give rise to symptoms akin to those of herpes zoster—intense irritation of the skin and a burning pain in peripheral nerve areas[7]

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[1] Payling Wright H *J Path Bact* 1941 53 255

[2] See *Lancet* May 3 1941 p 574

[3] Hess A F Lewis J M, and Rivkin H *J Amer med Ass* 1930, 94 1885

[4] Harris L J *Lancet* 1932 1, 1031

[5] Takahashi Nakamiya, Kawakami and Kitasato, *Sci Pap Inst phys chem Res* 1925 3 81

[6] E g Spies T D, Bean, W B and Stone, R E *J Amer med A* 1938 111 584

[7] Steinberg C L *Amer J digest Dis* 1938, 5 680

1934 that the field of phage-therapy was limited to surface infections, whether of skin or mucous membrane, such as pyodermias, urinary and intestinal infections, and both in America and on the Continent phage still enjoys a certain popularity in the treatment of such conditions as boils, cystitis and dysentery The work done since 1934 has been critically reviewed by KRUEGER and SCRIBNER,[2] who point out that there may be a variety of reasons other than direct lytic action on the pathogen for the apparently beneficial action of phage in both local and systemic infections For example, intravenous injections of phage-lysates may, in virtue of their content of broken-down protein, stimulate a leucocytosis or produce the condition of protein shock which often helps to overcome a subacute infection Phage-lysate certainly stimulates the formation of specific antibody to the infecting organism, as GREENWOOD, TOPLEY and their co-workers[3] demonstrated in mouse-typhoid Sometimes, as in the case of the staphylococcus, the phage denatures the bacterial protein, but any preformed toxin would still be present More specifically, phage might attack the more susceptible infecting organisms, leaving a less susceptible but also less virulent variant to be overcome by the host's tissue, but GREENWOOD and TOPLEY found when using phage in attempts to control epidemics of mouse-typhoid that a natural variation of this kind hardly ever occurred Applied locally, as in the treatment of boils, the beneficial effect of phage may again be due to a non-specific stimulus of the host's defensive mechanism, for local applications of bacteria-free nutrient broth have been found to be equally effective

When these collateral effects are discounted, bacteriophage is still found to act specifically on certain bacterial infections, provided it can be applied in sufficient concentration The diseases which hold out most promise of success are the local bowel infections—dysentery and cholera—and it is particularly important just now to know what phage can do for these A great deal of work on the prevention and treatment of cholera with phage has been done in India MORISON[4] has treated wells in certain districts of Assam with anticholera phage while other districts served as controls, and his results seem promising In treatment MORISON's fatality-rates in two large series were 22 6 and 21% for treated cases and 55 6 and 70% for controls, with a greatly diminished secondary case-rate in the families of treated cases PASRICHA and his colleagues,[5] in a carefully controlled series of hospital cases, recorded only a slight difference in the fatality of phage-treated and untreated cholera, but among bacteriologically positive patients the fatality in the treated group was only 8 3% compared with 20 6% for the untreated Thus, the evidence is favourable to the continued use of phage both in the prevention and treatment of cholera In dysentery the position is more controversial Enthusiasts like COMPTON[6] recommend phage-therapy without reservation and claim dramatic results From Germany[7] comes a report of the treatment of 32 soldiers suffering from a mild Flexner infection with disappearance of symptoms in 2–4 days 10 c cm of a dysentery polyphage was given in coffee after a preliminary dose of 0 5–1 g of soda bicarbonate to protect the phage against the destructive action of the gastric juice Others have claimed that dysentery phage can be used as a prophylactic in local outbreaks of the infection, and the war in the Middle East should provide an opportunity for testing the value of phage in dysentery under controlled conditions But potent and specific lysates must be used if any success is to be obtained

Phage has been used extensively in America for the treatment of local suppuration, and indeed ALBEE believed that the healing of chronic osteomyelitis by the Winnett Orr technique is largely due to spontaneous or implanted phage-activity Phage seems to have yielded good results in peritonitis and intestinal perforation but there it is likely to be superseded by the local application of sulphonamides In systemic infections it has been applied principally to the treatment of staphylococcal septicæmia In a recent series LONGACRE, ZAYTZEFF-JERN and MELENEY[8] divided their cases into those treated with phage before and after 1936, when a more potent phage was introduced In the first group of 15 cases the fatality was 73 3%, in the second group of 21 cases it was 28 5% They gave frequent and increasing doses intravenously until the patient was getting 50 c cm per day, and claimed that phage of high potency, given early and in adequate dosage, offers a good prognosis in this serious infection KRUEGER and SCRIBNER are doubtful if the benefit reported in septicæmic conditions can be due to a direct lytic action on the organisms in the blood stream or tissues, yet the experimental work of ASHESHOV, WILSON and TOPLEY[9] showed that antityphoid phage injected intravenously could inhibit infection in mice given a lethal dose of the organism intraperitoneally, though it did not cure an established infection Other workers have confirmed these experimental results, which demonstrate that phage injected parenterally is not wholly inactivated by the host's tissues Thus, although phage-therapy is for the time being overshadowed by chemotherapy, it may yet prove a useful weapon

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[2] Krueger, A P and Scribner, E J *Ibid* 1941 116, 2160, 2269
[3] Greenwood, M, Hill A B, Topley, W W C and Wilson, J *Spec Rep Ser med Res Coun, Lond* 1936, no 109
[4] Morison, J *Trans R Soc trop Med Hyg* 1935 28 563
[5] Pasricha, C L, de Monte, A J H and O Flynn, E G *Indian med Gaz* 1936, 71, 61
[6] Compton A *Brit med J* Aug 23 1941 p 280
[7] Guthof, O *Dtsch med Wschr* April 4, 1941, p 375
[8] Longacre, A B, Zaytzeff Jern, H and Meleney, F L *Surg Gynec Obstet* 1940 70, 1
[9] Asheshov, I N, Wilson, J and Topley, W W C *Lancet*, 1937, 1, 319

GERMAN VITAL STATISTICS —An official bulletin gives the number of marriages in Germany in 1940 as 715,400 against 944,331 in 1939 The number of live births in 1940 was 1,644,752 and the birth-rate per 1000 inhabitants 20 4 In the territory of the old Reich the birth rate dropped to 20, the balance being made up by Austria, Sudetenland, Memel and Danzig It is estimated that as a result of the war 150,000 fewer children were born in 1940 The number of deaths for 1940 was 36,450 more than in 1939 The death-rate increased by 0 4 per thousand to 15 This increase is attributed to the cold spell in 1940 The most important causes of death were cardiac diseases 19 6%, cancer 16%, cerebral apoplexy 10 2%, pneumonia 9%, tuberculosis 6 8% The increase in deaths from tuberculosis—2000 more than in 1939—is also ascribed to the cold spell Infantile deaths were roughly 7500 more than in 1939 The death rate per 1000 live births was 65 The net increase in population amounted to roughly 600,000 Some figures for the first quarter of the year 1941 have already been cited (*Lancet*, Aug 23, p 235)

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a result of the decreased masking effect Thus
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murmur will stand out better When the
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third heart sounds and gallop rhythms may be
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find the length and calibre of the rubber
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ear, produced by the motion of the skin or
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ume of the stethoscope It follows, there-
he tubing should be as short as possible and
is small as possible The wall of the tubing
ufficiently rigid to prevent any wall motion,
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to the observer's ear Here they differ
on and Kline,[17] but the latter reached their
as a result of experiments on the human
a mechanical ear

WEAT-GLANDS IN THE DOG

illusion has been shattered though not
for the first time Speed,[18] of Edinburgh,
ken the trouble to fix pieces of dog skin in
make microscopic sections, has found sweat-
them He makes no claim to a special
, he has simply followed the biblical injunction
From his fairly comprehensive summary of
literature it appears that others have done the
d have *not* always been rewarded Nevertheless
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at various times during the last 75 years They
in their estimates of incidence and distribution and
way the glands communicate with the surface
says that in the hairy parts the glands open into
ons of the hair follicles between the opening of the
s glands and the skin surface They are numer-
he skin of the lips, head, back, thorax, shoulders
hs, but few over the abdomen and groin They
ent on the hairless skin of the muzzle on the
and on the perinæum The sweat-glands of the
the feet are easily seen because of the absence of
follicles, and, unlike the others, are coiled Thus
s the fallacy that the dog pants because he cannot
over the general surface of his body Neverthe-
does *pant*, and no microtome can strip him of this
own singularity Perhaps he keeps a large part
' evaporation reserve ' in the surface of his tongue
pper respiratory tract, in which case his equipment
king use of the latent heat of evaporation of water seems to be more varied than that of man No doubt other investigators will pursue the matter further to see whether this advantage is shared by breeds other than the half dozen tested by Speed It would be interesting to know how effective the sweating is The fact that no visible moisture appears argues efficient vaporisation The probability that a relatively stagnant atmosphere saturated with water vapour is enmeshed in the hairs suggests the reverse

REPAIR OF THE PERINÆUM UNDER LOCAL ANÆSTHESIA

ATTENTION was drawn last week (p 569) to the use of local anæsthesia in normal pelvic delivery, and in minor obstetric procedures such as episiotomy and the application of low forceps Local anæsthesia should also have a place in domiciliary midwifery in the suture of perineal lacerations Williams[1] points out, very rightly that all perineal tears however trifling, should be sutured immediately after delivery In the patient s home this means that a second doctor has to be summoned to give an anæsthetic, otherwise the tear is neglected or inadequately united, either without anæsthesia or under anæsthesia administered by the accoucheur himself—a procedure which leads to carelessness in asepsis and lack of proper supervision of the anæsthetic Local anæsthesia overcomes these difficulties and the technique is simple No special instruments are necessary and the only requisite is some form of support to control the patient in the lithotomy position The left lateral position is unsuitable in that it tends to approximate the torn edges of the wound and so mask the extent and complexity of the area of operation To ensure an optimum position, the patient's coöperation must be obtained and the nervous patient is unsuitable for this type of anæsthesia An ordinary 10 c cm record syringe is used with fine hypodermic and long serum needles The solution Williams recommends is 1% procaine without the addition of adrenaline The skin edges of the tear deeper structures and muscles are infiltrated generously, but not so as to balloon them unnecessarily No 2 non chromicised or chromicised catgut and a sharp curved cutting needle are recommended a needle holder is a useful accessory, but not essential The area of operation is properly isolated with towels and gently swabbed over with an antiseptic solution such as Dettol The tear is carefully explored to ascertain its extent, but no matter how severe it may be it will be suitable for suture under local anæsthesia It must not be forgotten that a small skin tear may indicate serious deep vaginal lacerations running high up towards the vaginal vault hence the importance of a preliminary survey before starting suturing For inspection a portable headlamp allows the operator to move about freely and does away with the need for an assistant to illuminate the site of operation When the repair is complete a finger is inserted into the rectum to assess the power of the anal sphincter and the anatomy of the perineal body; this will also exclude the unlikely possibility of a suture having transfixed the mucous membrane of the rectum Should this last disaster be found the whole wound must be taken down and resutured, as such a stitch may actually lead to infection and might predispose to a subsequent fistula Neal Smith[2] has reported on the successful suture of 17 unselected cases of perineal laceration, ranging from a small first degree to a serious perineal tear Some were hospital and some district cases and all healed by first intention without any complication The technique used was exactly similar to that of Williams except that 2% procaine was used instead of 1% It is probably always an advantage to use more of a weak solution in local infiltration anæsthesia than less of a strong solution, the ideal

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nston F D and Kline E C *Arch intern Med* 1940, 65 328,
ee *Lancet* 1940 1 557
ed, J G *Vet J* 1941 97, 252

[1] Williams B *Post-grad med J* July 1941 p 117
[2] Smith, D J N J *Obstet Gynæc* 1941, 48, 610

In all these instances excessive intake produces—or is said to produce—changes which are related to the known action of the factor concerned as indicated by the effects seen in deficiency This was first shown with hypervitaminosis D, which gave rise to an increase in the blood level of phosphate and calcium with consequent calcification [4] Excess of nicotinic acid affects the skin and occasionally the gastrointestinal tract, and excess of vitamin B_1 is reported to affect the nerves A novel aspect of hypervitaminosis, however, has recently been studied by Loewenthal of Basle [8] He suggests that large amounts of ascorbic acid, which are excreted by the kidney, might produce changes in the urine conducive the formation of urinary calculi Loewenthal or 2 g of the vitamin daily for five weeks and t several types of investigation—some rather on the urine before and during this period t of the vitamin was to produce an increase in atable acidity of the urine, an increase in the ty and a change in the gold-sol reaction (a test y applied to the C S F). He does not pro the ble to explain the exact nature of these last two nges but interprets them simply as indicating an teration in the "protective colloids" of the urine This, together with the increased acidity, are assumed to imply a greater tendency to the formation of urinary calculi These tentative conclusions will require a great deal of confirmation and elaboration But even if true, they will certainly not deter us from the appropriate and adequate treatment of suspected deficiency of vitamin C The daily requirements of the vitamin are probably about 50 mg and even a case of severe scurvy will be cured by the administration of 1 g daily for a week or two Doses such as those taken by Loewenthal are thus rarely if ever required Moreover, the fact that unnecessarily large overdoses of vitamin D produce toxic symptoms has not interfered with the cure or prevention of rickets by the intelligent use of this substance

The danger of hypervitaminosis in ordinary conditions of therapy or prophylaxis is often exaggerated, but its existence may at least serve the useful purpose of directing attention to the quantitative aspect of vitamin dosage There is a tendency to order a convenient preparation without thinking of the amount of the vitamin really desired The possibility of overdosage, and incidentally a great deal of waste of precious nutritional material, will be avoided when vitamins are prescribed in units or milligrammes or in human "daily shares" and not as so many capsules or tablets

MANIFESTATIONS OF ENDEMIC FLUOROSIS

SURVEYS in America [9] and in England [10] have shown that in children the mottled enamel of mild endemic fluorosis is associated with a greater than average resistance to dental caries, and that the toxic action of fluorine tends to affect those whose general nutrition is poor In other parts of the body fluorine may exert an indirect action Young and his colleagues [11] pointed out that in the ætiology of endemic goitre the absolute iodine content of the water and soil is not the only factor and that something else determines the availability of the iodine to meet human and animal needs In at least one area of this country, among people living under conditions of low iodine intake Wilson [10] has established relationship between the distribution of goitre, of luorine in rock and of mottled enamel In the locomotor ystem fluorosis especially attacks tissues rich in calcium Roholm [12] described the pathological calcification of endons, ligaments and fasciæ, and the formation of steophytes among cryolite workers absorbing large amounts of fluorine In endemic human fluo changes were first detected by Shortt and others [13] communities in South India, and subsequently and his colleagues,[14] by comparative dietary among these same people, showed that the incid bone deformity bore a definite relation to the and nutritional state of the communities con indicating again that the toxicity of fluorine is made evident by a "poor" diet Recently Ockerse [15] in Africa has described bone changes among villagers in Pretoria district using borehole water containing 11 parts per million of fluorine Clinical sym include stiffness of the spine in the lumbar, thoracic cervical regions, and pain and stiffness around the of the arms and legs and lumbar regions The grams of an advanced case show ossification with ing density of bone and calcification of the lumbar thoracic vertebræ and attachments, osteophytic growths and periosteal deposits are also present along radius and ulna and around the elbow-joint and of the ribs The clinical picture is similar to that of most severe cases in South India Fluorine, then, has the claim to be one of the trace elements necessary for infection but its intake must be carefully limited tion, of ed with adequate iodine and the other balanc LONG ng ossification Unfortunately we have a long influence their c before we can decide what the optimum way to go after 1, and can ensure that everyone gets it of fluorine is In ti

STETHOSCOPES OLD AND NEW

3% , in 1816 when Laennec took a quire of

SINCE that day They to form a tube and applied it to the paper, rolled it up ly unoung woman, the art of auscultation chest of a corpulent y and cla fine degree. Although has been developed to and in ms to have been practised by diate " auscultation sees seriou medical men were slow Hippocrates and Harvey tful if of the heart sounds Indeed appreciate the significance in be of Venice, rejected Harvey's Parisanus (1663), a physicians in " Nor we, poor deafs, nor observations with the words ental on " The great Corvisart, any other doctor in Venice c ved tha er, referring to the heart he who can hear them in Lond d inhib had an opportunity, I nearly two hundred years lat rganism uestionably rare observa sounds wrote "I have never n estat strokes by applying my repeat it, of ascertaining the unq ned thes Both statements tions, I have barely heard these Mackenzie's words ear close to the patient's chest " that p n "Indeed I am their obtuseness, recall Sir James M tivated ay examination another aspect of cardiac examinati therapy ht on any cardi doubtful," he wrote in 1920, "if an X-r mothera the perforat the heart has ever thrown the slightest lig while Piorry condition " From the roll of paper to eleney, F e and che wooden cylinder was Laennec's next step, W C monau modifications and his addition of ear piec Lamb piece in 1828 resulted in what is essentially the stethoscope of recent times Williams probably desig the first binaural model about 1843 while Camm replaced the lead tubes by flexible ones in 1855 Th briefly, was evolved the modern binaural stethoscope

The chest piece in all these models was funnel trumpet shaped In the phonendoscope, invented Bianchi in 1894, a diaphragm chest piece with a rig membrane was first used The combined bell a diaphragm chest piece of the latest models seem sat factorily to cover the acoustic ranges necessary clinical examination of the heart and lungs In a rec study of the laws governing auscultation Rappaport Sprague [16] of Boston point out that the bell chest p when applied to the patient's chest functions in rea as a diaphragm chest piece The skin enclosed by lip of the bell acts as a diaphragm, while the subcutan

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Loewenthal, M *Schweiz med Wschr* 1941, 71, 761

Dean, H T, Jay, P, Arnold, F A Jun and Elvove, E *Publ Hlth Rep Wash* 1941, 56, 761

Wilson D C *Lancet* 1941, 1, 211, 375

Spec Rep Ser med Res Coun Lond No 217 1936

Roholm, K Fluorine Intoxication, London, 1937

[13] Shortt, H E, McRobert, G R, Barnard, T W and N A S M *Ind J med Res* 1937, 25 553

[14] Pundit, C G, Raghavachari, T N S, Subba Rao, D Krishnamurti, V *Ibid*, 1940 28 559

[15] Ockerse, T *S Afr med J* 1941, 15, 261

[16] Rappaport, M B and Sprague, H B

ssue becomes a damping medium The larger the iameter of the bell chest piece the better its response) low-pitched sounds This is accomplished at the xpense of high frequency components By increasing ie pressure of the bell chest piece on the patient s chest ne is able to increase the natural period of the skin iaphragm and thereby attentuate the lower-pitched omponents Higher-pitched sounds are then accen-uated as a result of the decreased masking effect Thus oud first and second sounds, and a loud systolic murmur f fairly low pitch are damped down, while a high-pitched iastolic murmur will stand out better When the ressure on the chest piece is reduced, low-pitched murmurs, third heart sounds and gallop rhythms may be licited more readily The diaphragm type of chest iece is especially useful in detecting faint, high-pitched ounds, such as the diastolic murmur of aortic incom-etence and the ' bronchial " respiratory sounds If ie diaphragm is too thick, however, there is a general eduction of sound intensity Rappaport and Sprague ound that the optimum diameter of the bell chest piece 1 in and that of a bakelite diaphragm 1½ in , the ickness of the latter should be about 0 015 in The maller the diameter of the bell the higher the pitch of ie sounds They think that the bell should not be con-dered primarily as an accumulator but rather as a icrophone or telephone receiver Finally, as many udents may have suspected when they began clinical ork, they find the length and calibre of the rubber ibing important They show that the pressure variaons at the ear, produced by the motion of the skin or akelite diaphragm, are inversely proportional to the ternal volume of the stethoscope It follows, there-re, that the tubing should be as short as possible and ie calibre as small as possible The wall of the tubing iould be sufficiently rigid to prevent any wall motion, r that would reduce the effective pressure variations ansmitted to the observer's ear Here they differ om Johnston and Kline,[17] but the latter reached their nclusions as a result of experiments on the human aver with a mechanical ear

SWEAT-GLANDS IN THE DOG

ANOTHER illusion has been shattered, though not parently for the first time Speed,[18] of Edinburgh, o has taken the trouble to fix pieces of dog skin in mol and make microscopic sections, has found sweat-nds in them He makes no claim to a special hnique, he has simply followed the biblical injunction seek From his fairly comprehensive summary of rious literature it appears that others have done the ie and have not always been rewarded Nevertheless, t investigators are quoted who have described the ds at various times during the last 75 years They their estimates of incidence and distribution and ay the glands communicate with the surface ys that in the hairy parts the glands open into ns of the hair follicles between the opening of the is glands and the skin surface They are numer-he skin of the lips, head, back, thorax, shoulders hs, but few over the abdomen and groin They nt on the hairless skin of the muzzle, on the and on the perinæum The sweat-glands of the the feet are easily seen because of the absence of follicles, and, unlike the others, are coiled Thus the fallacy that the dog pants because he cannot ver the general surface of his body Neverthe-does pant, and no microtome can strip him of this own singularity Perhaps he keeps a large part evaporation reserve " in the surface of his tongue per respiratory tract, in which case his equipment king use of the latent heat of evaporation of water seems to be more varied than that of man No doubt other investigators will pursue the matter further to see whether this advantage is shared by breeds other than the half dozen tested by Speed It would be interesting to know how effective the sweating is The fact that no visible moisture appears argues efficient vaporisation The probability that a relatively stagnant atmosphere saturated with water vapour is enmeshed in the hairs suggests the reverse

REPAIR OF THE PERINÆUM UNDER LOCAL ANÆSTHESIA

ATTENTION was drawn last week (p 569) to the use of local anæsthesia in normal pelvic delivery, and in minor obstetric procedures such as episiotomy and the application of low forceps Local anæsthesia should also have a place in domiciliary midwifery in the suture of perinæal lacerations Williams[1] points out, very rightly that all perinæal tears, however trifling, should be sutured immediately after delivery In the patient s home this means that a second doctor has to be summoned to give an anæsthetic , otherwise the tear is neglected or inadequately united, either without anæsthesia or under anæsthesia administered by the accoucheur himself—a procedure which leads to carelessness in asepsis and lack of proper supervision of the anæsthetic Local anæsthesia overcomes these difficulties and the technique is simple No special instruments are necessary and the only requisite is some form of support to control the patient in the lithotomy position The left lateral position is unsuitable in that it tends to approximate the torn edges of the wound and so mask the extent and complexity of the area of operation To ensure an optimum position, the patient's coöperation must be obtained and the nervous patient is unsuitable for this type of anæsthesia An ordinary 10 c cm record syringe is used with fine hypodermic and long serum needles The solution Williams recommends is 1% procaine without the addition of adrenaline The skin edges of the tear deeper structures and muscles are infiltrated generously, but not so as to balloon them unnecessarily No 2 non-chromicised or chromicised catgut and a sharp curved cutting needle are recommended a needle holder is a useful accessory, but not essential The area of operation is properly isolated with towels and gently swabbed over with an antiseptic solution such as Dettol The tear is carefully explored to ascertain its extent, but no matter how severe it may be it will be suitable for suture under local anæsthesia It must not be forgotten that a small skin tear may indicate serious deep vaginal lacerations running high up towards the vaginal vault hence the importance of a preliminary survey before starting suturing For inspection a portable headlamp allows the operator to move about freely and does away with the need for an assistant to illuminate the site of operation When the repair is complete a finger is inserted into the rectum to assess the power of the anal sphincter and the anatomy of the perinæal body , this will also exclude the unlikely possibility of a suture having transfixed the mucous membrane of the rectum Should this last disaster be found the whole wound must be taken down and resutured, as such a stitch may actually lead to infection and might predispose to a subsequent fistula Neal Smith[2] has reported on the successful suture of 17 unselected cases of perinæal laceration, ranging from a small first-degree to a serious perinæal tear Some were hospital and some district cases and all healed by first intention without any complication The technique used was exactly similar to that of Williams, except that 2% procaine was used instead of 1% It is probably always an advantage to use more of a weak solution in local infiltration anæsthesia than less of a strong solution, the ideal

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ston F D and Kline E C *Arch intern Med* 1940, 65 328, e *Lancet*, 1940 1 557
d, J G *Vet J* 1941, 97 252

[1] Williams, B *Post grad med. J* July 1941 p 117
[2] Smith, D J *N J Obstet Gynæc* 1941, 48, 610

being ½ or 1% procaine Smith like Williams urges the importance of early operation and notes that expedition enhances the efficacy of the anæsthesia The advantages of local anæsthesia for suture of perinæal tears have long been recognised by a few obstetricians, but for some reasons any operation performed under a local or regional anæsthetic tends to be unpopular in this country both in the minds of the lay and the pro- [illegible] concerned This is an unfortunate attitude [illegible]ould if possible be overcome Inhalation [illegible] in the mother at or after delivery is always [illegible] with some small risk and this especially in [illegible] [illegible]ated by cardiac, pulmonary or other [illegible]nt diseases, notably toxæmia In these cases [illegible] ch to be recommended that the small extra [illegible] of using a local anæsthesia be cheerfully under [illegible] by the operator, who after all is more con- [illegible]ed with the patient's safety than his own time [illegible]d convenience

SIR ARTHUR HILL, F R S

THE tragic death from a riding accident on Nov 3 of Sir Arthur Hill has removed at the age of 66 years one who was still full of vigour and the zest of life He had been director of the Royal Botanic Gardens at Kew for the past nineteen years where he had succeeded Sir David Prain He had a keen artistic appreciation of the beauties of the gardens which he did much to preserve and enhance During his directorship the extensive addition to the herbarium was erected and the north gallery was restored to its original condition Hill's scientific interests centred chiefly in plant morphology and he took an especial interest in modes of germination and specialised types of seedling structure His contributions to systematic botany included publications of the taxonomy of various genera of which the extensive and medicinally important genus strychnos was one He also edited the supplements to the "Index Kewensis," the *Kew Bulletin*, the *Botanical Magazine* and the "Icones Plantarum" Hill had travelled widely both in connexion with his work and for pleasure and he was a genial and sympathetic companion He was endued with a strong sense of esprit de corps and cherished a deep affection for Marlborough and King's College, Cambridge, where he was educated, while he regularly attended meetings of such bodies as the Royal Society Dining Club of which he was a member He will be remembered by many for his kindly acts—he was of those who delighted to do good by stealth

DARK LANTERN ON RHEUMATISM

THE typical picture of rheumatic fever is sufficiently distinct from that of rheumatoid arthritis for there to be little confusion, but every clinician can remember cases where only the passage of time and the development of the characteristic sequelæ enabled him to make a certain diagnosis In the age groups where they overlap the two diseases come to resemble each other more closely, the disease process, too, is of similar type, and thus the nature of the relationship between the two has always excited speculation and conjecture There are three main theories first the characteristically English view that the diseases are ætiologically distinct and that the occasional occurrence of destructive joint changes and heart damage in the same patient is merely coincidental, secondly, as authorities in New York[1] maintain, that the two diseases are ætiologically related and may be manifestations of the same agent in differently reacting types, thirdly, a German view, that there are two types of rheumatoid arthritis one primary and the other secondary to rheumatic fever A recent study from the Mayo Clinic might be expected to throw new light on this problem Autopsies were made on 25 cases of infectious arthritis whose clinical records had been adequately reviewed by a member of the arthritis unit under the able leadership of Dr Phil Hench[2] The disease had been present for an average of 7 years, the periods ranging from 3½ months to 30 years The new light has, however, as so often happens, merely shown up several dark corners Of these 25 hearts, 14 (56%) showed lesions indistinguishable from those of rheumatic fever, a result on which Hench wisely refuses to comment except in a non-committal way He believes that these cases represent the presence of two coincidental diseases, but it is a curious distribution since only about 5% of routine post-mortem studies at that centre show evidence of rheumatic fever As Hench says, additional observations, both clinical and pathological, must be made on many other cases before final appraisal can be attempted Too often the problems of chronic disease are shelved, like the sufferers themselves, as "lacking clinical interest

INSULIN IN THE TREATMENT OF G P I

A M San Martin describes what he claims to be a new treatment for general paralysis of the insane by means of insulin in addition to antisyphilitics[3] A woman was referred to him in whom antisyphilitic treatment and malaria had failed to bring about any improvement It was decided to try pyretic treatment by means of vaccine, but first, because the patient was in wretched general condition, to give her a high carbohydrate diet and insulin to improve her nutrition After she had been treated in this way for a few days it was observed that not only her physical but her mental state also was improved The treatment was continued and in addition acetarsol was given, in three months' time the patient was able to leave hospital apparently cured Encouraged by this unexpected success, San Martin has tried a similar method in 9 mo[illegible] cases, combining insulin with bismuth or an arsphenamine preparation All were patients in whom malarial therapy had failed In 7 there was striking improvement, 4 being clinically cured, the remaining 2 patients di[illegible] In the first case small doses of insulin were given with care to avoid hypoglycæmia, in the remaining 9 hypoglycæmic doses were given, as for schizophrenia, daily for about 10 days Antisyphilitics were then begun, and the insulin continued except on the days when the patient received an injection of bismuth or arsphenamine It is not stated how long treatment went on Other workers have been using leptazol convulsions or electric shock therapy in G P I[4] In these convulsive therapy was adopted because mental improvement had not resulted from the usual forms of antisyphilitic treatment A distinction must therefore be made between treatment aimed at [illegible] syphilitic infection (and thus preventing furt[illegible] of the disease) and treatment aimed at amelior[illegible] symptoms which persist after the infection has [illegible] eliminated It has long been recognised that sc[illegible]phrenic and other psychotic syndromes sometimes c[illegible] in the course of G P I Some of these may be [illegible] associated psychoses, others have probably b[illegible] produced by the syphilitic lesions themselves The mental improvement obtained in some schizophrenic patients by prefrontal leucotomy suggests that the frontal lobes may play an important part in the symptomatology of schizophrenia Since the lesions produced by neurosyphilis often affect the frontal lobes, it is possible that schizophrenic changes may be induced by these lesions Thus, once the syphilitic infection has been arrested, forms of therapy which have been successful in schizophrenia might be expected to succeed in t[illegible] organically produced schizophrenics But it must [illegible] therefore be assumed that any such new forms of tr[illegible]ment can be a substitute for antisyphilitic remedies

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[1] Baggenstoss, A M and Rosenberg, E F [illegible] 67, 241

[illegible] P S 1941, *Proc Mayo Clin* 16, 237

[illegible] Chile 1941, 69, 380

[illegible] B [illegible] Rao, [illegible] and [illegible] 1941,

[illegible]ort, D *J ment nerv Dis* [illegible]

Special Articles

THOUGHTS ON A STATE MEDICAL SERVICE

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MEDICAL planning for the postwar era cannot avoid grave mistakes if the broad conditions of life likely to obtain then are not faced at the outset Two main assumptions are made here which while sweeping in character may not in the time to come be so far fetched as they now appear

First, it can be safely assumed that the more even distribution of the national wealth which is rapidly taking place will after the war eliminate the richest classes in the community To have a net income to spend of £10,000 a year under the present taxation means the possession of a gross income approaching the quarter of a million For a long time to come taxation is not likely to be reduced and to maintain the purchasing value of the saving certificates and war bonds now accumulating will need hard work and hard living for all There will be too little money available for much to reach *voluntary organisations, and the income from charitable* sources which has in the past supported the great voluntary hospitals may be reduced to vanishing point There will also be much less money for the non-panel general practitioners and still less for the consultant These will no doubt remember the lean years from 1930

Next, there seems every chance that the income of the wage-earner will depend not only on the trade-union or other rate of pay applicable to his job but also on some system of family allowances At present only the wage-earner is entitled to the benefits of national health insurance but the net is ever being cast wider and the logical outcome is for the entire family of the wage-earner to be covered by insurance If the head of the family receives allowances from the state it is no more than common sense that the state should make sure that the family gets the benefit, and how better than by compulsory health insurance ?

With these two assumptions in mind the outlook of the medical service serving the postwar community will have to be far different from what it was in pre-war days Willy nilly we must expect the voluntary hospital as well as other voluntary health organisations to disappear or at any rate to undergo a revolutionary change from their present position, and must also expect the bulk of the patients who now attend the voluntary hospital or call in the general practitioner to be covered by compulsory health insurance The future is likely therefore to hold re a state medical service which will embrace a great rity of the community if not almost the whole of it

A REAL FAMILY DOCTOR

aring in mind—what is sometimes overlooked—that edical service is for the benefit of the citizen and not e benefit of the medical profession, is it too optimis- think of the future insurance practitioner being in ge of say not more than 1000 families instead of not than 3000 individuals ? Instead of the wage-earner to his "insurance doctor," his wife calling in some medical man, and his children seeing a welfare- doctor, the school doctor or a doctor at the local itary hospital, the entire family as one unit may well nder the care of one medical man. It would ad- edly be a big job for that man, but behind him in this ined state service there would be consultants from tate hospitals with all ancillary services The state ital for the district would be surrounded by the ite special institutions for infectious disease, tuber- is, maternity and mental cases, and among them d be the "aftercare" and convalescent home, where iod of real convalescence free from all fear of want he dependent family would put the wage-earner y on his feet before he was discharged to face again truggle of life

is "family doctor" would be a real one, not one in only, and he would have to assist him an almoner, lth visitor and a public-assistance officer, working eam to decide the help needed by all or any members amily to regain and maintain health A consulting-room for each family doctor would be provided in the local health centre, where special clinics would be installed such as dentist, oculist, chiropodist, antenatal tuberculosis and so on The qualifying curriculum of the medical student would need drastic revision, with far greater training in the maintenance of health and a corresponding reduction in the vast amount of scientific and clinical information which he is now asked to memorise largely for examination purposes There must of course be compulsory postgraduate training for all, with facilities for research work and training in particular subjects for the future consultants and specialists

ORGANISATION

The state medical service must be decentralised to the highest possible degree, to ensure that its life is not crushed out by the administration. One can picture a ministry of health of moderate dimensions to implement the policy of the state and exercise a general but not a detailed control over a number of regions These regions in turn would supervise the individual districts and coordinate the activities of each with others within the region Some of the special hospitals, for example, might well serve more than one district Holiday camps and convalescent or aftercare homes also seem to fit into the province of the regional staff The districts should be as far as possible autonomous within their broad boundaries Their size must be governed by considerations of geography as well as population but they would be of an extent compatible with efficiency and economy, each including not more say than 250 000 people or an area greater than a hundred square miles, but depending more on travel-time than distance The pay and service conditions of the medical staff would be graduated with increments for years of service and higher pay for the more responsible positions, promotion to which would be gained by combined examination and reports of superiors Pensions, allowances and so on might be based on the conditions of medical service in the Forces Russia has evolved a national medical service and no doubt we could learn from her experience and profit from her mistakes

The position of the local authorities in such a national service would require careful consideration, but if districts were of the size suggested the present local authorities would be superseded The maternity and child-welfare and school medical services would disappear together with much of the activity of public assistance, district nursing and voluntary organisations such as the COS, ICAA, CCHF, and many others The outpatient departments of hospitals would be almost entirely emptied, and with the increasing supervision of the family by the "family doctor" and the support given by convalescent homes and aftercare, many chronic cases would be prevented and the number of hospital beds for all but acute cases might in time be greatly reduced In fact the success of the family doctors in a district could be readily gauged from the number of hospital beds which had to be maintained The opportunities for research would be immensely enlarged, and if doctors could be persuaded to keep a careful history of each member of every insured family light would be thrown on the earliest stage of disease of all kinds

* * *

A state medical service such as here outlined would unify many efforts at present overlapping and conflicting but could the many interests concerned be persuaded that it would be for the benefit of the community ?

COST OF LIVING IN GERMANY —According to the official index for the cost of living in Germany (*Dtsch med Wschr* Sept 26, 1941, p 1074) during July the prices of goods in daily demand were 1 5% higher than in June This increase is attributed to seasonal influences The figure for the total cost of living in July was 136 1 (taking the cost in 1913–14 as 100) as against 134 1 for June The figure for food rose from 130 6 in June to 134 2 in July—an increase of 2 8% This was ascribed to the more general use of new potatoes which were of course dearer than the old ones The price of other fresh vegetables also increased The cost of clothing rose from 158 1 in June to 158 7 in July—an increase of 0 4%

In England Now

A Running Commentary by Peripatetic Correspondents

THOSE charged with the duty of bestowing names have a responsibility which they do not always take seriously enough How otherwise are we to account for the extraordinary names that dog defenceless infants through manhood to old age? War tends to add new terrors to these trials of nomenclature when the unprotesting infant is named after a general, a politician, or even a supply dump Recently our hospital has been involved in a series of exercises involving casualty reception, and it appears that even such exercises must have names Who chooses the names is not a question for ordinary mortals, but their range is almost as catholic as the pass-words of other days The psychology of the chooser seems to run in cycles, for after a series of colourless inanimate efforts like axle, truck or station, he will suddenly dart into the very animate—rabbit, hound, ant or bee It is customary to preface messages about these exercises with the label of the event, and we have from time to time been somewhat staggered to receive an exhortation beginning "Exercise Rabbit," or "Exercise Bee" One's first reaction is to a word of command, and it does seem a little strange, even in these days, to encounter an exhortation to "Exercise Rabbit" "Exercise Bee" is worse, for while the exercise of rabbit can make the exercisor look ridiculous the exercise of bee is not without its dangers But it is surprising how quickly one drops into the vernacular and comes to receive a whole sheaf of messages all beginning and ending with "Exercise Bee" without the quiver of an eyelid These messages touch us in two ways They may send to the hospital a number of "casualties" in flesh or on paper, or they may require us to send some of our surgical pillars out into the wilderness to render assistance elsewhere We do not complain about these things, though their novelty has worn off It may be that we are instructed to stand by for the reception of "casualties" from 2 P M one day (or from 14 00 hours, as the official word has it) until 8 P M next day Since these performances nearly always embrace Sundays they necessarily cancel week-end leave for everyone, and all that commonly happens by way of compensation is that we solemnly make "nil" returns at two-hourly intervals to a whole host of functionaries, seen and unseen, known and unknown Usually at some time or other in the course of the performance one batch of "casualties" does arrive on our door-step, sometimes a mere scrap of paper to the effect that it represents x patients transferred from another hospital, sometimes a collection of warriors said to be more broken in body than they appear to be in spirit These visitations usually descend on us in the early hours of the morning, and they inevitably involve the feeding and watering of the convoy attendants, if not of their burdens Sometimes these burdens announce that they have come to stay for an indefinite period ("until transport can be arranged to take them away"), and, as can well be imagined, this latter development is apt to be coldly received, for the fitter a patient the more nuisance is he likely to be

When we are instructed to send surgical personnel and equipment into a far country there is much beating of wings Ultimately two chariots are laden, one bearing the cream of our personnel, the other the miscellaneous collection of equipment that constitutes the stock-in-trade of a mobile surgical unit, and with a triumphant blast they disappear in search of new worlds to conquer Sometimes these expeditions last only for a few hours, sometimes they extend over night I have never been privileged to see any of these field operations at close quarters, but I am credibly informed that they can be very entertaining Sometimes they include a spirited discourse (flippantly referred to as "pep talk") from some military dignitary, the effect of whose oratory may be dimmed by some such untoward and untimely incident as the fainting of a nurse, or the hiccough of a surgeon, both events outwith the pharmacopœia of the performance Occasionally fate sends our wanderers to spend the night in a country house, where they are treated right royally, to return to us with picturesque tal[illegible] only serve to depress their colleagues, who have been condemned throughou to the everyday The activities of the peripateti surgeons, like these of the stay-at-homes, never seem to assume formidable proportions, they solemnly set up shop and stand like tradesmen awaiting customers in market square, but customers are scarce One of crowning penalties of these exercises is that they for the submission of a report on them, and report we do, usually with brevity, occasionally with vigour, but always in our story adhering to the prescribed ritual, beginning as we end, "Exercise Bee Exercise Bee."

* * *

In this country when a public servant fails in foresight, performance or energy we often take away his responsibilities and elevate him socially Poor old Jones who made such a mess of the Ministry of Tics starts a new life of comparative harmlessness as Lord Neuralgia This admirable method seems to reach almost a Chinese pinnacle of civilisation, but curiously enough the lone, disregarded prophets in the wilderness who suddenly are shown to be right, or at any rate less wrong than the popular prophets, are not rewarded and made ministers There is a grudging, insular feeling in the mass of us who have been mistaken or misled which prevents their immediate acclamation, otherwise we might have recently seen Mr Pritt as Lord Chancellor and Prof J B S Haldane in some very high post indeed For years he has been a strong supporter of Russia, has preached the essential soundness of the Soviet system, and is a confirmed Marxist and Leninist His wonderful little Pelican, "Science and Everyday Life," consists of seventy articles he wrote in the *Daily Worker*, and they deal with a glorious variety of subjects in a terse, witty and fearless way—Why bananas have no pips, Do continents move?, Atom smashing, Colliery explosions, Genetics They who have the restraint might read one a day as a tonic Personally I read the lot at a sitting, and am hungry for more What admirable broadcasts they would make, but it is more than doubtful whether the B B C would allow them Yet any one of these little articles would make a most stimulating "go to" talk at 7 55

* * *

Transfusion centres are apt to grow into monsters and as an itinerant progenitor of these war children one at times feels a little concerned Is it all being overdone? Have we not already got enough plasma and serum to see us into the twenty-first century, and will not many decades of war have by that time reduced us to such a simple standard of living that our plasma-proteins will have been reduced totalitarian-wise into a standard amino-acid capable of synthesis in the laboratory? With the continuous call for scrap will our hæmoglobin molecule not think it best, in the national interest, to come off the iron standard and use chlorophyll as ersatz? Perhaps before such drastic changes are demanded the liver may be able to achieve a greater economy of iron, salvage of the erythrocytes being effected by the reticul endothelial cells to the slogan "use this envelope ten times before discarding it"

* * *

Mention of cucumber seeds with their copper-protein enzyme in THE LANCET of Nov 8 (p 5[illegible]1), sugge that I ought to set out my great copper conserving scheme I suppose it is the result of all these anti waste slogans, but I find myself developing an anti waste or salvage mind I am concerned, in the Quaker sense, with Fehling's solution All biochemists unite to tell us that Fehling's solution is unreliable and only Benedict's solution should be employed in the clinical laboratory test for sugar Despite this warning, or perhaps I may now say ukase, the twin bottles for Fehling's test still live side by side in thousands of test rooms I cannot boast that I have visited all these thousands, but random sampling, so to speak, has shown that Fehling is never absent Now my great scheme to conduct a Fehling's collection campaign Let us ta this chance of a biochemical advance by e ourselves universally to use Benedict and Benedict only Let us save copper by collecting all the misused bottles Fehling's (blue) solution A simple process will copper If all the Fehling's (blue) solutions mistakenly displayed in hospitals and consulting-r were collected, we should have enough copper to make whatever is made from copper I am sure it would sa several shiploads (vide M O I film passim) Details of collection can be worked out locally The great thing is to sacrifice Fehling in a twin campaign of biochemical efficiency and copper economy Who was he, anyway ?

* * *

The great day had arrived at last, and the A D M S was due within the next two hours He was to inspect, of course, the main cook-house of the battalion, and that of a small outlying post, after the good lunch we had arranged to give him had taken its accustomed place in the day's routine As messing officer I had dealt with assistant directors of medical services before, and knew just what they liked the spotless roller towel hanging up, the hand wash-basin with the soap laid out conspicuously *and* the nail brush To the cook-house of the small outlying detachment I sent a young subaltern, with instructions to get the place clean , cleanliness, I explained, was the keynote with any A D M S , and it did not matter so much how the food was cooked, what was being cooked, the qualifications of whoever was cooking it, so long as everything connected with the cooking of it was hygienic Nor was it vital to see that the contents of the swill-tubs had the correct swills in them, so long as they were clean outside and had the lids on them I went to my own cook-house for a final look round with a feeling of confidence , everything was completely A D M S -shape—tables clean, rims of the mustard pot covers shining (a point they are very hot on) and the cooks' faces washed Those men who seem to be incapable of keeping themselves clean had been liquidated for the morning by the staff sergeant cook This was going to be a much easier visit ~~to~~ get through than one from one of those expert-on-food generals who may ask awkward questions about the menu, or demand an exhibition in pastry-making from some poor cook When the victim gets all his quantities wrong from nervousness, the general usually suggests kindly that perhaps he has not done any pastry-making but has always cooked the vegetables , and the cook will eagerly clutch the straw and agree, whereas he has really been making beautiful apple tarts for the past year Oh yes, I thought, this would be much easier than that sort of visit

I went into the back-yard to wait , I should be warned when the party arrived by the main road That potato must be moved I bet I can putt it behind the dustbin with my stick in three One—that was a useful shot Two—I do wish these A D M S s would come the normal way and not arrive suddenly by the back entrance "Good-morning, Sir," I exclaim with a hollow laugh "Yes, sir, quite a good putt I was just going to put it in the swill tub " What ? Have all my cooks been on a cook's course ? This isn't fair, you're supposed to look at my beautifully scrubbed tables Look at this drain, sir , is it clean ? It is ! "Well, sir, I am not quite sure if all the cooks have been on courses or not I shall have to refer to my files I beg your pardon, sir ? How do we make a baked rice pudding ? " This is an outrage What about looking at the cook's spotlessly clean hands, the absence of flies in the larder Hi ! you can't pass that meat-store We've spent hours cleaning it and chasing the blue-bottles out . Besides there's the new piece of butter muslin over the bacon, specially arranged for you That's the last straw, passing the mustard pots without picking up one lid to see if it was clean Not one ! And then, to cap all, asking one of the cooks how to make a jam tart He's only there to look clean It's not fair, I say ; this Army's getting too modern

* * *

I travelled back from an aunt's funeral the other day with the family solicitor, a judicious, nutty, glass-of-sherry-on the-sideboard little man We fell naturally to discussing the old lady and the indomitable pessimism which was her characteristic Ninety years old in the first week of September, 1939, she philosophically remarked, "Well, I'm afraid this is the last war I shall see " And so it was The lawyer quoted to me Sam Weller's words to his father—"Well, ve must all come to it, one day or another , there's a Providence in it " And the father's rejoinder—'Of course there is , wot'd become of the undertakers without it, Sammy ? " This led us on to his experiences (copious, it seemed) of morticians He spoke of their tact and their fees The latter, he thought, were stepped up pretty high, but then the relatives felt it would be disrespectful towards the departed to dispute the bill "And they always get paid first," he added feelingly, " before the doctors and long before the lawyers " Then he asked if I'd seen that recent prosecution at Liverpool assizes of the two undertakers' men who filled the coffins with sand In the confusion after an air-raid they had been unable to find the bodies in time , the funerals were overdue, the relatives were waiting and something had to be done It looked an unsocial and unsettling kind of deception, but, instead of being tried for a public mischief, they were just charged with the offence of making a false entry contrary to the burial laws They pleaded guilty and their counsel claimed that they were really public benefactors , they had done a charitable act , they thought the corpses must have been interred in a communal grave and they carried on with the funeral ceremony so as not to disappoint the mourners who had assembled to mourn I asked the man of law how the deception came to be detected He said the bodies were discovered afterwards What happened to them ? Was there another funeral ? He didn't know Continuing in this macabre vein he offered me another bit of gossip floating round the undertakers' world A patient died of some rare disease His widow acceded to a request from the hospital authorities that they should be allowed to make an autopsy of such an interesting case The body, with some of the organs removed and rather roughly sewn up, was eventually deposited at the mortuary Meanwhile a woman in the neighbourhood had given birth to a stillborn child, and, not wanting the fuss of a funeral, asked a member of the mortuary staff if he could do anything about it As another of these " charitable acts," he said he would see what could be done The sequel was a surprise for a most respectable firm of morticians when its representatives came to prepare the corpse of the hospital patient for decent interment They found the fœtus inside his empty abdomen What criminal offence had been committed and what disciplinary action followed I never learnt, for at this moment, rather to my relief, the railway carriage filled up with young men and maidens whose chatter was of livelier things

* * *

It was the memory that fried tench with mushrooms (or at a pinch sliced young puffballs) is no mean dish that made Uncle take the boy to a pond which he had not fished for thirty-five years Everything seemed just the same as of old—the smell of the water mint, the reflecting and expectant stillness of the water, even the same old clumps of *Potamogeton natans* How proud Uncle had been when he learnt that name from an elder brother forty years ago The white quill float pointed like an uplifted finger, commanding silence , on the other side of the pond the boy's red and green cork one stood perkily, almost aggressively, upright, the moorhen's lovely yodel came from the rushes at the shallow end, everything seemed exactly the same " Anything doing ? " asked Uncle after a while, lowering his voice for the tranquil carrying water. " I thought I had a nibble just now," said the boy, louder Probably a lie, a lie in the best tradition, full of hope and optimism How like that other boy, even the voice " I've got one, hurrah ! By Crumps, it's a wizard Come and look, Uncle ! " " All right, all right, you needn't make all that noise about it You'll frighten the others " Uncle didn't really mind a hoot about the noise, but he was repressing emotion and was therefore a bit irritable, for that other boy has been dead twenty-four years now, waiting in some Mesopotamian sand for the tide of battle to flood again " Qui procul hinc " Uncle admires the fat pounder, lying in the grass, the fine mosaic of his tiny scales, the gold-green sheen, the ruby eye turned down as though to watch the pouting mouth Uncle remembers there was a French master who used to make the same sort of lip movements when pronouncing " ou," and they called him The Tench, which degenerated unjustly into Stinker Uncle relates this trivial incident to the boy who receives it politely as some Chaucerian, or at any rate Edwardian, coarseness Uncle was about to show him how to distinguish the sex by the pelvic fins , better not He tiptoes back to his rod resting on the rushes Thirty-five years ! Tench will probably be the same in thirty-five thousand, gobble up brandling, hook, and all, then look surprised when they gasp on the bank Poor fish Few come back to teach them, few come back But what of us ? What was the boy talking about coming along here ? Hurricanes and Tomahawks, canon or machine guns What was that other boy always reading ? "Famous Battles," "The Green Curve" We are all poor fishes The white quill bobs twice and glides under the water

Letters to the Editor

THE DERELICT SWAB

SIR,—I have read with great interest the annotation on surgery and the common law in THE LANCET of June 7 (p 729) You very much doubt whether the courts of common law will agree with the surgeon's view expressed by Mr Zachary Cope, that, if he receives an assurance from the theatre sister that all the swabs and instruments have been accounted for, the surgeon may sew up the abdomen and be relieved of responsibility if one remains inside I agree with your view that the precautions the surgeon must take to ensure that the swabs are all removed must remain a question of fact in each particular case The theatre sister's assurance is not a sufficient protection even when supported by that of another member of the theatre team

May I relate an illuminating experience ? Many years ago, in the course of an emergency operation late at night for appendicitis in a child, I inserted a protective swab into the abdomen The appendix was removed and the incision closed While driving home in my motor-car the thought suddenly struck me that I had left the swab in the abdomen I returned to the hospital and questioned the theatre sister, who assured me that the swab had been removed I then turned to my house-surgeon, who gave me the same assurance I replied that I was not satisfied and asked the theatre sister to count the swabs before me She did so and one was missing I had the patient returned to the operating theatre and removed the swab

This experience led me to adopt the view that it is the surgeon's duty to accept the responsibility for a derelict swab If he makes an invariable practice of never putting a "loose" swab into the abdomen, he will never leave one there

Adelaide H S NEWLAND

ENURESIS

SIR,—Dr Raymond Greene wonders why I should think it relevant to mention cases of exanthemata occurring after the onset of enuresis The answer is that enuresis often takes a turn for the worse after one of these infections, this was so in a large proportion of my cases The difference between cases showing much dilatation of the upper urinary tract and cases showing little was that the greater the dilatation the more constant the evidence of infection in the urine So well does this rule apply that in the lesser degrees of dilatation, so commonly seen among enuresis cases, it is unusual to find evidence of infection in the urine at all, but where infection does exist it is relatively easy to get rid of it In cases where there is much dilatation, however, it may be impossible to achieve sterile urine, modern urinary antiseptics often reduced the degree of infection, but failed to clear it up completely The difficulty in attaining this end usually seemed to have a direct relationship to the amount of dilatation present The involvement of the urethra in the inflammatory process in all the cases of vulvitis was a personal observation Usually it could be detected by merely inspecting the external urinary meatus I duly acknowledge the correction concerning the sites at which the ducts of the glands of Bartholin open

My studies on the calibre of children's urethras were always made under general anæsthesia at the termination of an endoscopy, on patients whose urinary tracts required such investigation It would be difficult to find an objection to such a procedure on psychological grounds The question whether there might be any relationship between benefit from treatment and a threat of a further instrumentation can be answered finally now and in the negative Since the treatments were carried out under a general anæsthetic the patients had no knowledge of what was done or of what might be done on a future occasion

I can assure Dr Arnold Heymann that in my experience spina bifida occulta, epilepsy or idiocy have no relationship to the great majority of cases of enuresis I carefully into the question of spina bifida occulta in number of patients Every case of enuresis threadworms was admitted to hospital and given t ment to get rid of the parasites I was never able satisfy myself that they were a causal factor enuresis is more common among the under-nou than the well-nourished it would be surprising if improvement in the diet of the former did not reduce incidence of the complaint The signs of inflammation the neck of the bladder in cases of enuresis are not to be seen by the cystoscopist unless the child is in the lithotomy position, because they are usually present on at and adjacent to the internal urinary meatus would be unreasonable to assume that they are ca by the instrument when an inspection of the poster urethra shows more important inflammatory changes the immediate vicinity The question of how many leucocytes in the urine are to be regarded as evidence of infection is one I am not prepared to debate

Harley Street, W 1 H P WINSBURY-WHITE

SIR,—Dr MacLeod's voluntary and diurnal attack from the heights has damped but not drowned me I am sorry that he found "turbid" a letter which some have found lucid to the verge of the brutal, and surprised that he should have bothered about a criticism which he a little rudely dubs "senseless" and unworthy of a serious reply My question about the relation between dilatation and infection, which seems to have caused him so much annoyance, may be clearer to him if I put it this way if patients have both upper urinary tract dilatation and infection below, how does one know which is primary with enough certainty to divide the cases into two groups ? As to Bartholin's glands, Dr MacLeod will, I hope, forgive me if I refuse to embark on a lecture on elementary anatomy It will save us both a lot of time if he will refer to Gray's "Anatomy"

Whitchurch, Aylesbury RAYMOND GREENE

CARLOS FINLAY AND YELLOW FEVER

SIR,—I am fully satisfied with the general trend of your criticism of my book on my father's work on yellow fever (Aug 9, p 167), but must clear up some misunderstandings in connexion with his experimental cases Owing to their lack of severity and their small number in comparison with the inoculated cases you are right in sustaining that they cannot, by themselves be considered as proof of his theory—this required the later sanction of the more convincing experiments of the U S Army Yellow Fever Commission—but what I consider unjust is the supplementary statement, made in most Anglo-American writings, that he did not produce any positive experimental cases This statement is based solely on the ground that his positive results did not comply with the narrow time-limits fixed by the commission, limits which later investigations have proved not to be as exact as at first supposed As regards the incubation period in man my father's views have always coincided with those of the commission in that yellow fever is only infective in the first days of the disease, protracting the infective period up to the sixth day N P Hudson and C B Philip however, proved in 1929 (*J exp Med* 50, 583) that yellow-fever monkeys are "mosquito-infective" before the appearance of fever, all through the febrile period and even after death As regards the duration of the extrinsic incubation period, J H Bauer and Hudson in 1928 (*Ibid*, 48, 147) showed that the yellow-fever virus can be transmitted through the bite of the mosquito on or after the 9th day Aragão noted in 1929 (*Brazil med* 43, 1481) that one lot of mosquitoes became infective as early as 4 days after ingestion of the virus, and in 1932 N C Davis (*Amer J Hyg* 46, 163) showed that

"1 The extrinsic incubation period of yellow fever in *Aëdes ægypti* was shortened at high temperatures and prolonged at low temperatures

2 The ability to infect was acquired after 4 days at an average temperature of 37° C, after 5 days at 36° C, and 6 days at 31° C

3 When stored at room temperatures averaging 25 1° C *Culex stegomyia* mosquitoes became infective at the end of 8 days, when the room temperature was 23 4° C they were infective when tested at the end of 11 days but not at the end of 9 days

4 Infectivity appeared after 18 days at 21° C

5 Mosquitoes were not infective after 30 days at 18° C "

This shows that the basis of a too short mosquito incubation is wholly insufficient to lead us to discard my father s positive cases in the presence of other data such as proper preliminary isolation clinical symptoms of mild yellow fever (sudden onset, followed by a febrile course with a remission on the second or third day and a final defervescence, accompanied by slowing of the pulse, bleeding of the gums, albuminuria and jaundice), followed by immunity through a span of years of living in a country where yellow fever was endemic It would have been more satisfactory if my father had allowed his infected mosquitoes to incubate longer, but although he realised this possibility as far back as 1891 (p 78 of my book) conscientious scruples held him back, limiting his objective to the immunising of his inoculated subjects by mild attacks of yellow fever, even if this meant that his findings were not always convincing to others

Havana C E FINLAY

GRADUATION AT AN EARLIER AGE

SIR,—Dr Paterson's article leaves me a trifle perplexed Surely the bright boy can still matriculate at 16 take his first M B examination from school or from technical college and enter his medical school at 17 Is it true that he is now *compelled* to wait until 18 or 19 before starting his medical training at all ? There are some for whom it is financially necessary to complete their training as soon as possible Such was my own position and I would therefore think it a pity to force those in like case to turn to other fields But I would not argue from this that qualification at or about 21 is a good thing For one thing it involves some sacrifice in general education, and for another it forces the individual to assume even during his student years responsibilities for which he may not be sufficiently matured

Dr Paterson states that it is a " psychological fact " that the intellect of a boy of 16 has already been mature for two years I am sorry but I do not believe him unless he is using the word in a sense all his own The term is a hard one to define, intelligence, it has been said, is what a psychologist measures when he measures intelligence but even adopting this pragmatic definition there is evidence to suggest progressive maturation until at least 16 If other aspects of mental life be brought into consideration (and they cannot be left out) the process of maturation continues far longer Indeed, there are matters which one can " learn " at 30 which would be beyond one's scope at 20

In general, therefore, it would surely be better to encourage, though not to compel, the medical student to carry his general education a little further and to qualify a little later Apart from Latin and Greek, I should think that he would benefit from some knowledge of philosophy and statistics which he now sadly lacks ! I agree that this raises the whole question of late marriage, which would surely be better solved by state scholarships on an adequate scale If we are to have in the medical profession those who are really suited to it and not just those whose finances will stay the course, some such subsidy will be necessary anyway

The Cassel Hospital C H ROGERSON

ACUTE POLYRADICULONEURITIS

SIR,—The advancement of medicine must necessarily be associated with the appearance of new terminology, yet today there seems to be a facile tendency for the adoption of nomenclature and phraseology, particularly if highly sounding or of continental origin, without sufficient regard for their soundness or suitability In some instances, this may be due to the inherent inferiority substratum in the British character which permits the belief that native enterprise is of a lesser quality than that of the foreigner One sees this feeling prevalent in most intellectual spheres whether music, art, science or medicine, and one wonders why It was probably this self-effacement rather than the desire for progress which led to the eager adoption in this country of the Basle anatomical nomenclature, a scheme sponsored mainly by a collection of German booksellers to whom such expressions as Astley Cooper's ligament, or Hunter's canal were anathema

The term radiculoneuritis came into prominence about 1916 and may have originated in France Recently, it has been used to refer to a condition generally known as acute polyneuritis Those who employ the new edition do so no doubt because they consider it to be an improvement, thereby indicating indirectly that involvement of the nerve roots is of sufficient importance to warrant its inclusion in the title of the disease whereas in fact it is known that the most evident lesion is found in the extraspinal portion of the nerve tract Thus, Holmes in his series of cases declared that examination of the nerve roots disclosed no abnormality whatsoever and this finding seems to be general It should also be remembered that anatomically the term radicular nerve is often applied to the conjoined portion of the nerve roots formed by the junction of the anterior and posterior roots An inflammatory lesion affecting this portion of the nerve tract could quite properly be called radiculoneuritis Thus the term itself can hardly be considered an improvement on anatomical or pathological grounds, nor does the clinical side furnish any additional support The picture of an acute spreading paralysis may be produced by some half-dozen conditions all of which show certain changes in the spinal cord This finding applies also to acute polyneuritis in which the toxic process shows a selective affinity for the neurone as a whole, so that the term polyneuronitis as suggested by Russell Brain is in this respect more suitable But in the absence of a more exact knowledge concerning the nature of the malady there seems little point in substituting one inadequate designation for another even though it may sound more modern

London, S W 3 J H MULVANY

LIGATION OF PATENT DUCTUS ARTERIOSUS

SIR —To those cardiologists whose enthusiasm has been fired by the brilliant exploits of some of our thoracic surgeons, I commend the perusal of a thoughtful and temperate address on the Newer Surgery of the Heart and Large Vessels by H M Marvin (*Bull N Y Acad Med* October, 1941) The operation mortality of ductus ligation in these American cases is astonishingly low—only 4 operation deaths out of 42 cases Nevertheless, like Mr Mulvany, I wonder if this operation is often justified Surely the predisposing factor towards bacterial endocarditis in these, as in other cases is the presence of an avascular bed, on which bacteria and fibrin are deposited from the blood-stream Ligation of the ductus can only modify the conformation of this avascular bed, and in any case by the time the diagnosis is made bacteria and clot have probably already been implanted in the pulmonary artery opposite the entrance of the ductus I agree again with Mr Mulvany in the possibility of an arrest and perhaps of cure of bacterial endocarditis in these patients without surgical treatment I have at present under my observation a lady who has been symptomless and working since September, 1940, after treatment in February, 1940, with heparin and a sulphonamide of a bacterial endocarditis implanted on a patent ductus

With regard to the non-infected case, it will be interesting to see what is the expectation of life where ligation has been performed during infancy or childhood But we may have to wait for many years before evidence is convincing that life is prolonged by this somewhat hazardous operation

London, W 1 MAURICE CASSIDY

VITAMIN E

SIR —In your leading article of Aug 23 you reviewed the literature on vitamin E in the treatment of muscular dystrophy and motor-neurone degenerations Your conclusions were that vitamin E is of little practical value, though " that there is something behind this no-one can doubt " The leading article in the *British Medical Journal* this week states " We find nothing yet to persuade us that any human disease or any disturbance of childbearing or locomotion in man is due to a deficiency of vitamin E, or is alleviated by treatment with it " I have read again the papers on which these two leading articles were chiefly based, and I cannot agree that they justify any statement that vitamin E is of little or no value To avoid repetition I shall only examine in detail those papers dealing with muscular dystrophy since the same criticisms are applicable in part to the papers on nervous degenerations and, indeed, to the treatment of all deficiency diseases

In muscular dystrophy some muscle-fibres are normal, some are completely replaced by fibrous tissue, and some are degenerating but are still present It is only the function of these latter fibres which can be improved by any form of treatment In children getting worse rapidly there are many such fibres, and so a great improvement is possible In adults, in whom the disease has been slowly progressive for many years, there are only a few degenerating fibres present at any one time The muscular weakness is essentially due not to these fibres but to the loss of those which have completely degenerated during the long course of the illness In adults, therefore, little or no improvement is ever possible, though the disease can be arrested ' Bearing these facts in mind the negative results of vitamin-E therapy reported from the Mayo Clinic (Eaton, L M , Woltman, H W and Butt, H R *Proc Mayo Clin* 1941, **16**, 523), by M M Doyle and H H Merritt (*Arch Neurol Psychiat* 1941, **45**, 672), and by G Fitzgerald and B McArdle (*Brain*, 1941, **64**, 19) lose much of their significance, since in a total of 20 cases treated only 5 were children J W Ferrebee, W O Klingman, A M Frantz (*J Amer med Ass* 1941, **116**, 1895), however, have also reported negative results in a series of 13 children, so that there are 18 cases in all which have not responded to treatment These, numerically, are more than balanced by the children who have improved, according to S Stone (*J Amer med Ass* 1940, **114**, 2187 , *J Pediat* 1941, **18**, 310), G E Donovan (*Lancet*, 1940, **2**, 162) myself, and various personal communications from England and abroad There are several explanations of these contradictory reports

importance of not giving too much vitamin E—All the children who have improved have been given vitamin E either as whole wheat germ or as wheat germ oil and yeast, the amounts not greatly exceeding those which could be taken in food The children who have not improved have all had synthetic vitamin E as well as, or instead of, the natural forms, and the total amount taken has been very large Most of the children, indeed, received so much vitamin E that they could only have obtained the same amount from their diet had they eaten each day three times their own weight of bread from which the wheat germ had not been removed It seems most unlikely that these amounts of vitamin E can ever be required, while it does seem likely that they are harmful For the muscles themselves probably destroy any surplus of vitamin E, and therefore their degeneration is likely to be hastened when they are confronted with the strain of destroying amounts of vitamin E many times as large as could ever be provided by any diet

importance of giving other vitamins and zinc and manganese in their correct proportions—There should be some relationship between the amounts of the various vitamins, and also minerals, in the diet For instance the storage of vitamin A is affected by vitamin E, vitamin D needs a certain calcium phosphorus ratio to develop fully its antirachitic activity, and there is an optimum ratio between manganese and vitamin B for preventing the toxic effects which occur when large amounts of either are taken It seems that those minerals and vitamins which are especially necessary to each other for their mutual metabolism by the animal body generally occur together in vegetable foods So though we do not know enough to give the correct balance of vitamins and minerals by synthetic preparations, we can solve the problem when treating deficiency diseases by giving foods very rich in the particular vitamin the deficiency of which is causing the symptoms In this way we shall automatically keep the correct proportions of the related vitamins and minerals and avoid the risk of excessive doses In the case of vitamin E whole wheat germ is the best preparation, containing not only the B complex but also zinc and manganese, the distribution of the last two in foods being the same as that of vitamin E Looked at from another point of view, once one postulates a deficiency of vitamin E one must also postulate a deficiency of all those substances chiefly found with vitamin E, and so one must give them as well

importance of treating sepsis—Any mild chronic or recurrent sepsis, such as carious teeth or frequent colds, completely prevents any response to vitamin E therapy Probably the absence of any sepsis would have been emphasised in the negative reports on the value of vitamin E had its importance been realised As sepsis is not mentioned in these reports it seems possible some children failed to respond because of some mild infective focus

The disordered creatine metabolism of muscular dystrophy has been investigated by Fitzgerald and McArdle in 2 children for periods of 26 and 36 days respectively, and by Ferrebee, Klingman and Frantz in 2 children for 10 days Vitamin E given throughout the investigations did not improve the metabolism of creatine This was to be expected, partly because clinical improvement seldom occurs in under eight weeks and partly because the children were receiving excessive amounts of synthetic vitamin E

Wimpole Street, W 1 FRANKLIN BICKNELL

DAY NURSERIES

SIR,—Your report in last week's issue of the conference on day nurseries shows that a point was raised there which has usually been ignored in the past, and which in my opinion is not being stressed sufficiently even now Most child psychiatrists would agree with me that the child's greatest need during its earliest years is for a mother's affection and attention This is essentially a strongly *personal* relationship and cannot be adequately replaced by any nursery school however well run Marguerite Dobbing's experience, as given in her letter to the *New Statesman*, is another discovery (however belated) of a truth that has been preached by child-guidance workers for some years Miss Anna Freud hit the mark when she said, "Nursery schools had never been meant as a substitute for the home any more than welfare clinics did away with the need for the mother's care or child guidance clinics with the need for education by the parents" The nursery school is not a home, and even a bad home is better than no home at all The intuitive understanding on the part of mothers of this relationship with their children has a great deal more to do with the slow progress of the nursery-school movement than is generally appreciated Just as many a mother, quite rightly in my opinion, clung to her child when the evacuation scheme was launched, so today she will only use the nursery school as a last, often desperate, resort The care of an aunt or granny, as your report implies, is preferred as being more satisfactory (With regard to evacuation, many a mother has told me "I just couldn't send him away, he would never get over it")

We must recognise that the break-up of family life occasioned by the war is a serious evil and not the least serious outcome of war conditions I agree with Anna Freud that the nursery schools are trying to fill a serious gap, but we must admit it is only a second best (There is a real danger that they may be used to blanket those essential social and economic reforms which are so seriously needed to maintain an adequate family life) With her, I would plead for some place to be found in the security scheme for the mother herself For only in the security of the intimately personal relationship between mother and child can the child develop a real and stable character

If further confirmation of these views were needed it is to be found in the experiences of the Jewish communal colonies in Palestine There both mother and father work (on the land) and the children are cared for communally by skilled nurses None the less, it has been found necessary, in order to get the best results, to allot definite times each day when the parents can take charge of their children I recommend a study of the development of these communal nurseries to all interested in child welfare

Leeds H EDELSTON

TOWARDS A NATIONAL SERVICE IN CLINICAL PATHOLOGY

SIR,—Dr Ponder's statement that the "comprehensive pathological service" now functioning in the county of Kent is "very much on the lines indicated" is hardly correct The view expressed and reiterated by myself was that by its very nature clinical pathology can only properly be practised "in laboratories forming an integral part of a large and active hospital", that it can only function properly "in a laboratory which is part of an institution for the treatment of the sick", and further that it can only properly be practised by those in close and continuing touch with clinical work On his showing the service described by Dr Ponder meets neither of these fundamental requirements

Wolverhampton S C DYKE.

Public Health

Health of New Zealand

THE annual report for 1940–41 of Dr M H Watt, director general of health records an exceptionally healthy year in an exceptionally healthy part of the world where public medicine has reached a high level of efficiency and is extending towards a complete national medical service The European population of New Zealand in mid 1940 was 1,546 312, its birth-rate was 21 2, the highest rate since 1925 and its death-rate 9 25 against 9 2 in 1939 Infantile mortality, for which New Zealand has long held the blue riband of the world sank to the record low level of 30 2 Of the 990 infants who died in the year, 521 failed to survive a week and 630 failed to survive a month The neonatal mortality has remained almost unaltered at about 22 5 per 1000 live births for many years Rather more than half of the deaths within the first month are certified as due to prematurity alone, but since prematurity is not per se a cause of death this means that about half of the neonatal mortality is unexplained and in the present state of our knowledge is inexplicable Tuberculosis mortality was 388 per million, which is a low record for New Zealand, and we believe for any community exceeding a million Cancer mortality, at 1202 per million, would on standardisation for age and sex work out to be not much different from our rate of 1600

The statistics of the Maori population tell a different story Their birth-rate was 48 9, infantile mortality 87 2, crude death-rate 17 5 and tuberculosis mortality 4132 per million Excluding tuberculosis, the death-rate among Europeans would be 8 86 and amongst Maoris 13 37 so tuberculosis alone accounts for not quite half of the higher death-rate among the Maoris Until recently, the native population of New Zealand unlike those of the African dominion colonies and protectorates was little infected with syphilis but this has changed for the worse in some districts The health department is fully alive to this and is taking active steps to combat the spread of syphilis among the Maoris

Among the many interesting sections in the report is that dealing with hydatid disease, which is probably more common in the islands—especially in the South—than in any other part of the world There are about 120 new cases with 16 deaths each year, and the incidence does not decrease When we hear that about half the sheep and cattle in New Zealand have livers or lungs infected with hydatid cysts and more than a third of the country dogs harbour the adult *Tænia echinococcus*, we do not wonder at the frequency of the human disease, or why it does not diminish Measles, which three years ago spread over New Zealand in epidemic form of exceptional severity for modern times, caused but one death in 1940

Infectious Disease in England and Wales

WEEK ENDED NOV 1

Notifications —The following cases of infectious disease were notified during the week smallpox 0, scarlet fever, 1204, whooping-cough 1955, diphtheria 915, paratyphoid, 35, typhoid 20, measles (excluding rubella) 624, pneumonia (primary or influenzal), 553, puerperal pyrexia, 118, cerebrospinal fever, 102, poliomyelitis 23, polio-encephalitis, 1, encephalitis lethargica 2, dysentery, 123, ophthalmia neonatorum, 79 No case of cholera plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Oct 29 was 1296 including scarlet fever 165 diphtheria, 297 measles 22, whooping cough 492, enteritis 21 chicken pox 31 erysipelas 25, mumps 5 poliomyelitis 6 dysentery, 27 cerebrospinal fever 10 puerperal sepsis 12, enteric fevers, 36 german measles 1 other diseases (non infectious), 81 not yet diagnosed, 65

Deaths —In 126 great towns there were no deaths from scarlet fever, 2 (0) from enteric fevers 2 (0) from measles 9 (3) from whooping-cough 22 (1) from diphtheria, 59 (3) from diarrhœa and enteritis under 2 years and 11 (1) from influenza The figures in parentheses are those for London itself

There were 7 deaths from diarrhœa at Manchester, 5 at Liverpool and 5 at Birmingham

The number of stillbirths notified during the week was 157 (corresponding to a rate of 32 per thousand total births), including 17 in London

MEDICINE AND THE LAW

The Diabetic Motorist

THE Belfast magistrate has dismissed an application by the police that a diabetic doctor should be deprived of his driving licence The police contended that the reactions to medical treatment rendered the patient unfit to have proper control of a car The physician to the biochemical department of the Royal Victoria Hospital giving evidence for the motorist expressed the view that provided diabetes was properly controlled by insulin, there was no reason why the patient should suffer incapacity from insulin coma, he himself had some 3000 patients under treatment including, along with many private motorists, bus drivers and engine drivers, and had no reason to suppose them a danger to traffic The magistrate, observing that this was the first case of the kind in his experience, was not prepared to give effect to the application of the police and in effect disqualify possibly thousands of drivers who use the roads today with as much safety as persons who do do not suffer from diabetes

The law in Northern Ireland is much the same as in Great Britain According to section 5 of our Road Traffic Act of 1930 an applicant for a driving licence must “ make a declaration in the prescribed form as to whether or not he is suffering from any such disease or physical disability as may be specified in the form or any other disease or physical disability which would be likely to cause the driving by him of a vehicle to be a source of danger to the public ” If from the declaration it appears that the applicant does suffer from any such disease or disability the licensing authority must refuse the licence The form as last prescribed in 1937, asks the applicant specifically to declare epilepsy or sudden attacks of disabling giddiness or fainting, any defect in movement, control or muscular power of either arm or leg or any other disease which would be likely to cause his driving to be a source of danger to the public While the police are quite entitled to prove if they can, that a particular diabetic is unfit to drive, it would not seem proper to allow them to insert (in effect) the word “ diabetes ” in the prescribed form along with the word “ epilepsy ” if the Minister of Transport (or his equivalent in Northern Ireland) has not done so

Obituary

FRANCIS CHARLES MARTLEY

M D CAMB F R C P I D P H

DR Martley, who died on Nov 2 at the age of 76, will be best remembered for the part he played in the welfare of the Medical Sickness Annuity and Life Assurance Society He was vice-chairman of the society in 1908 before it became a mutual assurance company and in 1930 was elected chairman of the board of directors holding this office until his death He had a quite unusual ability for figures and correlation of facts and though the small amount of Irish in his make up was occasionally evidenced by a provocative remark, it meant nothing for behind it one could see a kindly pair of eyes and a hidden smile No-one could have laboured longer or more faithfully than he did for the society, the success of which was a source of great satisfaction to him, and his wise counsel will be greatly missed

Francis Charles Martley was born in Dublin and was educated at Rugby and Cambridge, where he took the natural sciences tripos in 1887 He entered St Mary’s Hospital with a science exhibition, qualifying in 1890 and later taking many higher diplomas After being house-physician at St Mary’s and practising for a while at Buckhurst Hill, he went back to Dublin as demonstrator of chemistry at the R C S I and anæsthetist to St Stephen’s Hospital In 1908, however, he returned to London as assistant in the inoculation department at St Mary’s where he remained on the active staff for thirty years At first he was largely engaged in teaching workers from all parts of the world, who came to learn about the opsonic index In later years he was chiefly interested in blood grouping and carried out some research bearing on its value in paternity cases in the course of which he made the interesting observation that group two (Moss) corpuscles phagocytose some 25% more bacteria than do group four corpuscles

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THE CASE HISTORY IN DIAGNOSIS

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DIAGNOSTIC methods employed in medicine have advanced but insufficient attention has been paid to the importance of the case-history. If we do not discuss his case with the patient we bring medicine to the level of veterinary medicine. In giving a history the patient finds or loses his confidence and discovers whether he is dealing with merely a man who has studied medicine or with a real doctor. We are led towards a diagnosis by the history of the patient and his illness, by the first impression we get of him and by every fact which our senses are capable of observing. these put us on the right track for deeper exploration of his illness. Diagnosis depends on association of ideas. Neglect of history-taking springs from the rapid development of factual knowledge and of objective methods of examination by physical chemical bacteriological and microscopic means. We have lost confidence in our intuitive abilities and do not use or rely on our five senses sufficiently. this is regrettable because medicine must always remain an art to which science is only the servant. In medicine we try to judge the relations of the various functions to each other, it is impossible to reach a diagnosis according to a mechanical scheme. Our judgment must depend partly on imaginative intuition and we can only pass on to the student the method of making the bricks from which he must build the diagnosis.

Even in many teaching hospitals case-histories consist only of notes on age and sex diseases of childhood a few remarks on the family the symptoms of the onset of the present illness and a brief account of a superficial examination. Recent work on constitution and heredity and on significant psychological findings is ignored. Usually there is a description of the patient's height, physical development and colouring—in these days of photography. Even the passport office has replaced written descriptions by photographs. Simple photography, coloured photography and the cinematograph can tell more about family likeness constitution complexion temperament and anomalies than any words. They also make it possible to record changes over a period.

History taking must be accompanied by inspection because the first impression directs investigation. We must also note any constitutional and psychological anomalies. The conditions of the extremities may disclose the duration of the illness. a soft sole of the foot indicates long illness tough palms hard work · the wrinkles of the face betray whether the temperament is gay meditative choleric or depressed. clothing jewellery, or a tattoo mark all give something away. A small telangiectatic mole in the occipital region a third nipple like a wart but erectile hypospadias cryptorchism, relics of gillclefts polydactyly and birthmarks all have their psychological projections. Illnesses take a different course in patients with such embryological anomalies. A woman with masculine traits recognisable by hairs of the pudenda reaching up to the navel has an entirely different psychical make-up from a woman whose dermatographia shows her extreme femininity. The family history must not be confined to parents and brothers sisters and children. Mendel's law demands that we should inquire further. It is not so easy to get at the truth about relations since patients generally dislike disclosing other people's secrets. or the information may be inaccurate because the patient takes a flattering view of his family. Illegitimacy is seldom admitted. It is more difficult still to get at the truth about the patient himself. Exaggeration, understatement, distortion are not always intentional, they often occur because the patient is usually not at all clear about himself, inquiry then becomes a psychoanalytical examination. If we suspect insincerity, or that the patient is trying to disguise the facts, we must get at the truth by clever cross-examination. When the patient becomes aware of his tactical inferiority he will quickly change his attitude and become more confiding. We must, however, make use not only of the facts he tells us but of the lies, for they betray his weaknesses and are sometimes more revealing than the facts themselves.

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We must of course be cautious in accepting the patient's estimates of size or quantity. The appetite is always measured by comparison with the appetite of those about him the state of the bowels by the number. not the size, of the actions. sweating is reckoned in changes of nightwear. it is difficult to get any estimate of the daily urine. hæmorrhage will be counted by the size of the vessel in which it is emptied, sputum is always a cupful. menstruation is estimated by the number of changed towels.

Few events are more significant in physical and psychical development than adolescence. The less disturbance there is during this transitional phase the more likely is the later sexual life to be normal and vice versa. An otherwise incomprehensible illness may be explained by hormonal imbalance in those whose adolescence was disturbed. Delicacy and skill are needed to get truthful information about the sexual life but a full inquiry will often evoke surprisingly rapid improvement in neurotic cases.

Have we perhaps overrated the value of objective methods of examination? Examination of organs or systems will enable us to localise the change in them but it is merely a form of diagnostic sport to be able to assert that somebody died from cirrhosis of the liver, from pulmonary tuberculosis or from valvular disease. What we ought to find out is how it was possible for the patient to go on living at all before his cirrhosis, his tuberculosis or his incompetent valves killed him. This will teach us what adjustments the body makes to its diseased organs and may point the way to compensatory treatment. We are turning nowadays from the study of dead pathology to that of living function from the organs to the organism.

Physiology is only concerned with conditions in the normal body and experiments often deal with such extreme states as starvation or of utter repletion—of intense activity of functions or of almost complete arrest. Experiments on organs and tissues in vitro are still too often taken to represent the actual processes in vivo. Such investigations cannot mimic the coördinated automatic and compensatory mechanisms which operate in the living organism, they are only the separate stones in the mosaic. They do not show what made life possible when an organ was grossly damaged. Restitutio ad integrum is a rare thing in pathology, our treatment must aim at supporting the body's natural compensating mechanisms.

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Collectively men can be regarded as statistics, but in practice the doctor must know the idiosyncrasies of each patient so that for example he can tell whether in an epidemic of typhoid that patient will be one of the 15% of fatal cases or not. In the relationship between the individual and the disease it is the individual who varies. For instance two cases of stomach ulcer of similar size and location will not as a rule, justify the same prognosis or treatment. A full case-history may indicate how and why the patient fell ill, or incurred an accident. There about the opsonic index In later years he was chiefly interested in blood grouping and carried out some research bearing on its value in paternity cases, in the course of which he made the interesting observation that group two (Moss) corpuscles phagocytose some 25% more bacteria than do group four corpuscles

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Collectively men can be regarded as statistics, but in practice the doctor must know the idiosyncrasies of each patient so that, for example, he can tell whether in an epidemic of typhoid that patient will be one of the 15% of fatal cases or not. In the relationship between the individual and the disease it is the individual who varies. For instance, two cases of stomach ulcer of similar size and location will not, as a rule, justify the same prognosis or treatment. A full case-history may indicate how and why the patient fell ill, or incurred an accident. There may be some incipient nervous disorder which delayed reaction time, or impaired coordination, or accident may be coupled with early signs of tabes or cerebral tumour, syringomyelia, arteriosclerosis, arthritis, or ocular or aural diseases. The case-history may throw light on such integrative functions as complexion, respiration, pulse, appetite, sweating, temperature, sleep, posture, gait, and weight.

The best way to assess the state of a function is to suggest to the patient an exercise which calls on that function and to watch his reaction to the suggestion. Thus one asks a man with cardiac insufficiency (even though he shows hardly any sign of it when at rest) whether he could run up five flights of stairs—the look of astonishment on his face will indicate plainly enough the presence of cardiac damage. The mere thought of the effort makes him profoundly anxious. The information derived from a test-meal is meagre compared to that which we may gather by talking to the patient about his favourite dishes. Offered a glass of melted butter, a man with high gastric acidity would accept it, whereas a man with hypo-acidity would register disgust at the mere thought. The psychophysical reflex is so graded that one might almost speak of "psychological titration" of the stomach juice.

But we must realise that our relation to the patient is reciprocal; we analyse him by his answers, he analyses us by our questions. It is this psychoanalysis of the psychoanalyst which creates mutual confidence and, alas, also disappointments. The task of history-taking is too important to be left to the younger members of the staff. A broad view, readiness to understand and sympathise, kindliness, ability to judge without severity, to encourage, instruct, advise and attract—all these are needed in the taking of a case-history, and in no phase of medical activity are experience and knowledge more necessary.

POLISH FACULTY OF MEDICINE AT EDINBURGH UNIVERSITY

AT the Royal Society of Medicine on Nov. 5 Prof. A. T. Jurasz, dean of the Polish Faculty of Medicine within the University of Edinburgh, addressed the history section on the foundation and achievements of the faculty. He described the events which led up to the creation of this university within a university. The occupation of Poland lost the Poles their academic institutions, research centres and libraries, and exterminated the cultural life of Poland as a whole. The Polish Medical Faculty was to a certain extent symbolic of the need for all countries to maintain the standards of Western culture in the face of the destructive power of Nazi Germany. The faculty was formed by the unanimous resolution of the Medical Faculty of Edinburgh, followed by the acceptance of the scheme by the senate; the inaugural ceremony, in the presence of the President of the Polish Republic, took place on March 22, 1941. The first academic year was rather concentrated because there were no holidays. It was carried through without a break, and the second year has now started. The enrolments in the first year were 77 and in the second year 120 students. The first person to graduate was a Polish officer-pilot in the R.A.F.; he took part in many flights over Germany, but nevertheless found time to prepare for his final examination. During the last academic year 640 hours of lectures were given for the first-year students, and 1160 hours for the fourth and fifth years. The laboratories, the lecture-theatres and the wards of the various institutions of the university are open to the Poles. Professor Jurasz suggested that something more than mere chance had determined that Edinburgh should become the seat of the faculty. There were old cultural links between the two countries. In the 18th and 19th centuries Scots came to Poland. Later Edinburgh University became a cultural centre for many prominent Poles, and they used the experience gained in Scotland in founding clinics and scientific institutions in Poland, and even in reforming the teaching of medical science in the University of Cracow. The foundation of the faculty was symbolic of the collaboration which would exist after the war.

Dr. J. F. Halls Dally, president of the section, pointed out that however much help had been given by others, Professor Jurasz was essentially responsible for the success of the enterprise. Dr. E. Ashworth Underwood suggested that after the war it might be possible to establish a small British faculty of medicine in various continental universities thus permitting certain students to finish their studies abroad—and acquire a practical knowledge of the language and culture of the people among whom they resided. Sir Alfred Webb-Johnson expressed his great interest in the unique Edinburgh experiment, and Dr. W. Clarke Trotter discussed the historic relations between Poland and the University of Edinburgh.

The address was preceded by a small luncheon in honour of Professor Jurasz, and after the meeting a reception was given by the Polish Ambassador at the Embassy.

FAREWELL, CHOCOLATE SOLDIER

THE American Army has exchanged the chocolate ration of the soldier in the field for five pieces of hard candy, individually wrapped and in assorted flavours (*J. Amer. med. Ass.* 1941, **117**, 941). Recent fatigue tests at Minnesota University have shown that men have a greater energy output if they take sugar periodically through the day rather than in large quantities at meal times.

Sugar for the Services,
Candy for the troops—
A soldier shorn of sugar
Invariably droops.

If you want your soldiers
Stiffened at the waist
Give them sugar candy,
Flavouring to taste.

Forget Papa's instructions,
Forget Mamma's appeals—
The energetic soldier
Must eat between his meals.

MIDDLE INCOMES AT BRISTOL

THEIR honorary staffs have lately asked the Bristol voluntary hospitals if they will in future rigidly observe the B.M.A. scale. This means that except in emergencies nobody above the following income limits will be admitted to the general wards or outpatient departments of the hospitals:

£312 married with dependants
£260 married without children
£208 single without dependants

The Bristol Hospitals Fund recognises the doctors' right to fix the line of income-demarcation above which they cannot afford to treat patients for nothing, and it also recognises the difficulties of those with incomes just above the scale, who can afford to pay for most of their medical treatment but cannot find the fees of specialist and surgeon. Anticipating the Nuffield provident scheme the fund has devised what it calls an intermediate contributory scheme. The name is dictated by ambition for it is hoped soon to start yet another scheme for those with still larger incomes. The intermediate scheme was launched by Mr. Egbert Cadbury at a meeting of the fund last July. The fund has made an arrangement with the Bristol voluntary hospitals, by which intermediate members for the payment of 6d. a week can provide for consultation, operations and treatment for themselves and their dependants. People within the following income limits are eligible:

£416 married with dependants
£364 married without children
£260 single without dependants

The only exception to this arrangement is the Bristol Eye Hospital, and even here a modified scale of fees has been arranged for members of the scheme. The scheme can only be operated through the fund.

The fund, as a contributory scheme, has no legal power to make grants to medical staffs, and the board of each hospital is therefore recommended to make a grant to their medical staff fund equivalent to a third of the amount they receive from the fund for treating the intermediate contributory scheme patients. The staff will also receive a quarter of any surplus that may accrue.

ORIGINAL ARTICLES

THE COMMON SULPHONAMIDES

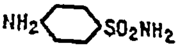
NOMENCLATURE, STRUCTURE AND USES

DENNIS G ARDLEY, M P S

WITH the inevitable increase in the number of compounds introduced into clinical practice for the chemotherapy of bacterial infections the need of an accurate and uniform nomenclature becomes urgent Few modern British books on general medicine or the specialties make any attempt to achieve accuracy in the names used for these compounds, and the medical journals and encyclopædias tend to pander to the whims of their contributors instead of exerting strict control over the names employed As a consequence, for example, all the names which happen to have been employed for the same chemical compound by various contributors to a textbook may appear in different parts of the index Abstracts of articles from foreign journals often use for drugs names which are unfamiliar to readers in this country and in this way the chief point of the abstract may be lost Conversely, proprietary names and erroneous nomenclature in English articles duly find their way into foreign abstracts to the mystification of readers The practitioner who writes a prescription for "sulphonamide," ½ gramme tablets, or the surgeon who orders a wound to be dressed with sulphonamide powder does not realise that what he has ordered is meaningless The writer of an article who describes the treatment of a patient with "Prontosil" given by mouth in such and such a dosage overlooks the fact that there are three distinct chemical compounds to which this name is applied, and that all are given by mouth The limit appears to have been reached by the author of an article on the use of various sulphonamide compounds who calmly announced at the outset that a particular brand name for sulphanilamide would be used to describe all the different compounds employed ! It therefore seems opportune to suggest a few rules for general guidance First, about dosage The common practice of describing oral dosage in terms of number of tablets or volume of a suspension is inadvisable A discussion once arose concerning an article on the treatment of gonorrhœa in which the dosage of sulphanilamide employed was in dispute until it was realised that the author was expressing dosage in drachms of a proprietary suspension Dosage should always be expressed in terms of the active ingredient

Most of the sulphonamides in common use have three kinds of name—a chemical name often occupying a line of print, a scientific synonym or pet-name, being the chemical name in a shortened form, and a various number of trade names The synonym is the one intended for use in scientific articles, but unfortunately not all the compounds have one, and in some cases the trade name is at present unavoidable Whenever possible only the full chemical name or its shortened form should be used, though it may sometimes be convenient to indicate once in an article which particular brand was employed

SULPHANILAMIDE AND ITS EARLIER DERIVATIVES



Sulphanilamide

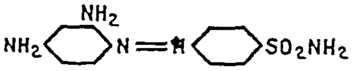
Para-aminobenzenesulphonamide or para-aminophenylsulphonamide is the simplest and most widely used of these drugs, and being the amide of sulphanilic acid the name now commonly adopted of sulphanilamide is at once both accurate and brief, and the employment of proprietary names for this compound in medical literature is inexcusable Of the forty or so trade names indicating proprietary brands of this compound the commonest ones in this country are Colsulanyde, Prontosil album and Streptocide, and sometimes the non-proprietary designations sulphonamide-P or P A B S are used A proprietary brand much used in America is known as Prontylin Some clinicians still do not realise that these names all stand for the same substance, and it is not unusual to hear of a patient's treatment being changed from one make of sulphanilamide to another, because he did not respond to the brand first ordered Many other proprietary names for sulphanilamide, less commonly used than the four already given, are encountered, chiefly in foreign medical literature In table I will be found 42 trade names for sulphanilamide, among which collectors may find choice and rare specimens In the case of a few trade names encountered in foreign medical journals there has been no clue to the composition of the drug, or the composition has been variously described in different articles so that it has been impossible to be certain what the compound was Sulphanilamide was included in the Fourth Addendum to the B P 1932

TABLE I—PROPRIETARY NAMES FOR SULPHANILAMIDE

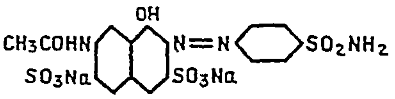
Albosal	Gombardol	Septamide album	Streptocom
Ambesid	Lysococcine	Septanilam	Strepton
Antistrept	Neococcyl	Septinal	Streptozone
Astreptine	Orgaseptine	Septoplix	Sulfamidyl
Bacteramide	Prontosil album	Stopton album	Sulfana
Bactesid	Prontylin	Stramid	Sulfanil
Cepticide	Pronzin album	Strepamide	Sulphanalone
Colsulanyde	Proseptine	Streptamid	Supron
Deseptyl	Proseptol	Streptazol	Therapol
Ergaseptine	Pysoccine	Streptocide	
Erysipan	Rubiazol-A	Streptoclase	

The simplest and most convenient classification of other sulphonamide drugs is to regard them as derivatives of sulphanilamide and as falling into two groups according to whether substitution takes place in the amino (NH_2) or in the amide (SO_2NH_2) portion of the molecule (table II) All the earlier compounds belong to the first class and are split up with release of sulphanilamide in the body. The more active substances introduced subsequently, such as sulphapyridine and sulphathiazole, fall into the second category, and these compounds do not depend for their action on the production of sulphanilamide

The first compound to be employed was sulphonamidochrysoïdin, which is 4′-sulphonamido-2 4-diaminoazobenzene, introduced into commerce under the name prontosil after having been called Streptozon The name prontosil strictly refers therefore to this azo dyestuff but most English clinicians use it to designate sulphanilamide If the word is used at all it should never be employed without qualification, so that there is no doubt as to meaning Sulphonamido-crysoïdin is also known as Prontosil flavum or Prontosil rubrum A less common trade name is Pronzin rubrum A more soluble compound was later introduced for parenteral administration, which consists of a solution of the disodium salt of 4′-sulphonamidobenzene-2-azo-1-hydroxy-7-acetylaminonaphthalene-3 6-disulphonic acid, usually known in this country as Prontosil soluble and sometimes as Prontosil-S or Prontosil II Occasionally the name prontosil is applied to this compound instead of to sulphonamido-chrysoïdin, and in America, where it is given by mouth in place of the latter, it is known under the proprietary name of Neoprontosil, the "descriptive non-proprietary name" proposed for this substance by the Council on Pharmacy and Chemistry of the American Medical Association being azosulfamide The name streptozon has been given to both prontosil rubrum and prontosil soluble, the latter having sometimes been distinguished as Streptozon II or S, and curiously enough the designation Prontosil red is sometimes used for prontosil soluble rather than prontosil rubrum The Rubiazols include the French equivalents of the German azo sulphonamides and rival them in confused terminology It is, however, sufficient to remember that in this country the name rubiazol is applied to a compound which differs from sulphonamido-chrysoïdin in containing a carboxyl (COOH) grouping and hence is conveniently described as carboxysulphonamido-chrysoïdin



Sulphonamido chrysoïdin



Azosulphamide (Prontosil soluble)

In common with most other compounds of the first group in which substitution takes place in the amino

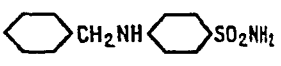
TABLE II

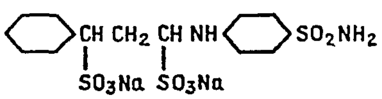
SULPHANILAMIDE DERIVATIVES, AND SULPHONES

Synonym or abbreviated chemical name	Full chemical name	Proprietary names
SULPHANILAMIDE DERIVATIVES, FIRST CLASS		
Sulphonamido chrysoïdin	4 -sulphonamido 2 4 diaminoazo benzene	Prontosil (flavum or rubrum), Streptozon Pronzin rubrum
Azosulphamide	Disodium 4′ sulphonamidobenzene 2 azo 1 hydroxy 7 acetyl amino-naphthalene 3 6 disulphonate	Prontosil soluble Neoprontosil
Carboxysulphonamido-chrysoïdin	4′ sulphonamido 2 4 diamino-6 carboxyazobenzene	Rubiazol
Benzylsulphanilamide	*p* benzylaminobenzenesulphonamide	Proseptasine (M & B 125) Septazine, 46 R P
Sodium succinyl sulphanilamide	Sodium *p* succinylamino-*benzenesulphonamide*	Ambesid soluble Septinal soluble
None	Disodium *p* (γ phenyl propylamino) benzene sulphonamide α γ disulphonate	Soluseptasine (M & B 137) Soluseptazine, 40 R P
,,	Sulphanilamide lactoside sodium formaldehydesulphoxylate	Sulphanilamide L S F
,,	Sodium 4 sulphonamido-phenylaminoethane α sulphonate	Sulphonamide E O S
SULPHANILAMIDE DERIVATIVES, SECOND CLASS		
Sulphanilyl-dimethyl-sulphanilamide	*p* aminobenzenesulphonamido-benzenesulphondimethylamide	Uleron, Uliron, Ulirone D B 90, D B 373, Diseptal A
Sulphanilyl-monomethyl-sulphanilamide	*p* aminobenzenesulphonamido-benzenesulphonmonomethylamide	Neo uliron, Diseptal B
Sulphanilyl-sulphanil-amide	*p* aminobenzenesulphonamido-benzenesulphonamide	Diseptal C, Disulon
Sulphapyridine	2 (*p* aminobenzenesulphonamido) pyridine or 2 sulphanilylamino pyridine	Dagenan M & B 693, Eubasinium, Septipulmon, Pyriamid
Sodium sulphapyridine	Sodium 2 (*p* aminobenzenesulphonamido) pyridine	Dagenan sodium, M & B 693 soluble
Sulphathiazole	2 (*p* aminobenzenesulphonamido) thiazole or 2 sulphanilylamino-thiazole	Thiazamide M & B 760
Sodium sulpha-thiazole	Sodium 2 (*p* aminobenzenesulphonamido) thiazole	Thiazamide sodium, M & B 760 soluble
Sulphamethyl-thiazole	2 (*p* aminobenzenesulphonamido) 4 methylthiazole or 2 sulphanilyl-amino 4 methylthiazole	M & B 838
Sulphadiazine	2 (*p* aminobenzenesulphonamido) pyrimidine or 2 sulphanilyl-aminopyrimidine	
Sulphacet-amide	*p* aminobenzenesulphonacetamide	Albucid Sulamyd
Sodium sulphacet-amide	Sodium *p* aminobenzenesulphon acetamide	Albucid soluble, Sulamyd soluble
Sulpha-guanidine	*p* amino N guanylbenzenesulphonamide or sulphanilylguanidine	
SULPHONES		
None	Diacetyl 4 4 diamino diphenyl sulphone	Rodilone (1399 F)
,,	4 4 diaminodiphenylglucoside	
,,	Sodium *p p* diamino diphenyl-sulphone N N[1] di dextrose sulphonate	Promin

radical of sulphanilamide, these substances owe activity mainly to the release of sulphanilamide in the body tissues, the coloured compounds being split at the azo linkage Endeavours have been made to show that the azo linkage per se may play a rôle in their action, but all the important recent advances concern colourless compounds, and the dye-stuffs cannot but be regarded as being chiefly of historic interest

Of the sulphanilamide derivatives belonging to the first group which are not dye-stuffs, the most commonly used in England is that formed by substituting one of the hydrogen atoms in the amino group by a benzyl group This compound is para-benzylaminobenzene sulphonamide or benzyl sulphanilamide It is known in England as Proseptasine or M & B 125, and in France as Septazine or 46 R P The drug is soluble in water only to the extent of about 1 in 25,000, compared to sulphanilamide which has a solubility of about 1 in 100 The sodium salt of the corresponding succinyl derivative of sulphanilamide—sodium para-succinylaminobenzenesulpho amide or sodium succinyl sulphanilamide—has bee issued for parenteral administration under the nam Ambesid soluble There is also a product Ambesid, an *it might reasonably be expected that this would* succinylaminobenzenesulphonamide itself, but in fac this is another proprietary name fo sulphanilamide


Benzylsulphanilamide

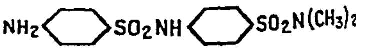

Soluseptasine

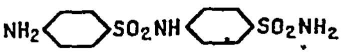
A widely used compound which is much more soluble than sulphanilamide and consequently more suitable for parenteral administration is Soluseptasine or M & B 137, known in France as Soluseptazine or 40 R P I is disodium-*p*-(γ-phenyl-propylamino)-benzene sulphonamide-α-γ-disulphonate, the sodium sulphonate par of the molecule being the solubilising groups No convenient non-proprietary designation for soluseptasine ha come into use

A soluble sulphanilamide derivative for parenter administration, and one having a high *sulphanilamid* content, has recently been placed on the *market* unde the name sulphanilamide L S F It is *described* as sulphanilamide lactoside sodium formaldehydesulphoxylate Reference has also been made to a compound calle Sulphonamide E O S and described as the sodium sal of the ethylsulphonic acid of sulphanilamide I therefore appears to be sodium 4-sulphonamidophenyl aminoethane α sulphonate It has been tried clinicall in cattle and man Mutch (1941) has described som investigations on its pharmacology and activity an has given details of its use in 34 cases of cerebrospina fever

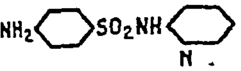
LATER DERIVATIVES

The first drugs of the second class were three disulphanilamide compounds, known originally as Diseptal A B and C, and introduced from Germany Of these the first, and the only one to come into use in England, is known as Diseptal or Uleron It is also calle Uliron, Ulirone, D B 90 or D B 373, and is para amino benzene sulphonamido-benzenesulphondimethylamide o sulphanilyldimethylsulphanilamide Diseptal B is the corresponding monomethyl derivative, and is now referre to in German medical literature as Neo-Uliron Disept C contains no methyl groups, being sulphanilylsulphanilamide Sulphanilyl sulphanilamide is available in Americ and on the Continen under the name Disulon, where it is used in the treatment of gonorrhœa It i also known as “ disulphanilamide,” a name which, unfortunately, has also been used for the dimethyl derivativ (uleron) Claims that uleron is valuable for the treatment of gonococcal, staphylococcal and anaerobi infections have not been substantiated, and the subsequent use of sulphapyridine for the treatment of gonorrhœa and the activity of sulphathiazole in staphylococcal infections have led to its falling into disuse I

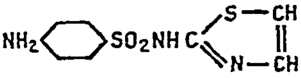

Sulphanilyldimethylsulphanilamide (Uleron)


Sulphanilylsulphanilamide

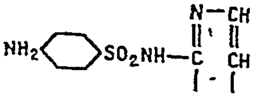
ommon with most other derivatives of the second class leron is not broken down with the release of sulphanil-mide but is eliminated partly unchanged and partly in a conjugated form


Sulphapyridine

An event of outstanding importance in chemotherapy was the introduction of the compound derived from sulphanilamide by substitution of one hydrogen atom in the amide portion of the molecule by a basic pyridine group, giving 2-(p-aminobenzenesulphonamido) pyridine This was first known as T 693, later introduced as M & B 693 and subsequently called Dagenan, a mutation on an Essex place name To a non-chemist sulphanilylaminopyridine should not be too long to remember but the Americans christened the compound sulphapyridine, which name although not accurately descriptive chemically, has been generally accepted Sulphapyridine proved to have a much higher degree of activity than sulphanilamide, thereby extending the range of chemotherapy far beyond infections by sulphonamide-susceptible strains of streptococci Pneumococcal infections were brought under control, a more potent weapon against gonococcal, meningococcal and gas-gangrene infections provided and the effective chemotherapy of plague and staphylococcal infections brought nearer A calcium compound of sulphapyridine has been placed on the market in Germany under the trade name Orsulon It is issued in tablets for oral administration in the treatment of pneumococcal and other infections In Stockholm a compound of sulphapyridine and salicylic acid, known as salicylazosulphapyridin, and marketed as Salazopyrin, has been used with success in rheumatoid arthritis and ulcerative colitis

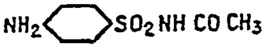

Sulphathiazole

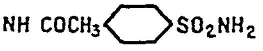
An even more active compound than sulphapyridine is the corresponding thiazole derivative 2-(p-aminobenzenesulphonamido) thiazole or 2-sulphanilylaminothiazole, usually called sulphathiazole, and also known in England as Thiazamide or M & B 760, in Switzerland as Cibazol or Ciba 3714, and in France as R P 2090 It has proved its value in the treatment of infections with *Staphylococcus aureus*, some of the clostridia, *Pasteurella pestis*, and various organisms found in urinary-tract infections, including *Streptococcus fæcalis* Various compounds obtained by replacing one of the hydrogen atoms in the thiazole ring have been tried in therapeutics, and of these the name sulphamethylthiazole indicates the 4-methyl derivative—namely, 2-(p-aminobenzenesulphonamido)-4-methylthiazole, or 2-sulphanilyl-amino-4-methylthiazole (M & B 838) Owing to the danger of peripheral neuropathy from the use of these derivatives (cf uleron which also contains methyl groups), and their greater liability to deposit crystals in the urinary tract compared to sulphathiazole itself, little more is likely to be heard of them


Sulphadiazine

Another heterocyclic derivative of sulphanilamide, the pyrimidine analogue of sulphapyridine, has recently been introduced in America, this is 2-(p-aminobenzenesulphonamido) pyrimidine or 2-sulphanilyl-*amino*-pyrimidine Sulphadiazine, as it is called, appears from the preliminary studies of American workers such as those of Finland, Strauss, and Peterson (1941) and of Long (1941) and his associates at Johns Hopkins Hospital to have about the same degree of activity as sulphathiazole and sulphapyridine on pneumococci and meningococci, to have an activity on *Staph aureus*, and to have a high degree of activity on *Klebsiella pneumoniæ* (Friedländer s pneumobacillus) It has been tried in pneumococcal pneumonia, cerebrospinal fever, staphylococcal, streptococcal, gonococcal and other infections but the data at present available concerning its activity, toxicity, absorption, distribution and elimination are inadequate to predict its ultimate place in chemotherapy

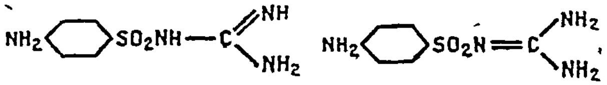
Sulphapyridine and sulphathiazole being of low solubility in water are unsuitable for parenteral administration in solution, for which purpose their sodium salts are employed The latter being compounds of weak acids with a strong base yield solutions which are highly alkaline If one of the amide hydrogen atoms of sulphanilamide is replaced by an acetyl radical the compound p-aminobenzenesulphonacetamide is formed, which is known as sulphacetamide and was introduced under the proprietary name Albucid It has been advocated for use in gonorrhœa, for which purpose it is less effective than sulphapyridine but rather strikingly free from toxic effects, owing probably to its low solubility and consequent poor absorption from the alimentary tract Its sodium salt differs from the sodium salts of sulphathiazole and sulphapyridine in not yielding a highly alkaline solution Sodium sulphacetamide is issued as Albucid soluble or Sulphacetamide soluble It is employed intramuscularly and as a 30% solution for intravenous injection, and a 2 5% solution has been advocated for application to the eyes in the prophylaxis of bacterial infection following injury by vesicant war gases Albucid and albucid soluble have been placed on the market in Canada under the names Sulamyd and Sulamyd soluble Sulphacetamide differs from the acetyl derivative of sulphanilamide, into which the latter is partly converted in the body, since in sulphacetamide it is a hydrogen of the amide group which is replaced by the acetyl radical, whereas with acetyl sulphanilamide substitution takes place in the amino group Analogous conjugation takes place with sulphapyridine, sulphathiazole, sulphadiazine and a number of other sulphonamide drugs Unlike these compounds sulphacetamide appears to be partly broken down in the body to sulphanilamide


Sulphacetamide


Acetyl sulphanilamide

CHEMOTHERAPY INSIDE THE BOWEL

The absorption of a sulphonamide from the alimentary tract or from a wound chiefly depends on its solubility in water at body temperature Thus the solubility and absorbability of sulphanilamide, sulphathiazole and sulphapyridine decrease in that order Other factors, however, have an influence on degree and rate of absorption and some compounds, much more soluble than sulphapyridine or sulphathiazole, have a low degree of gastro-intestinal absorption The idea arose, therefore, of using a sulphonamide which is bacteriostatically active, fairly water-soluble and of low absorbability to combat infections which are largely confined to the alimentary canal Marshall, Bratton, White and Litchfield (1940), who studied various compounds from this point of view, found that sodium sulphanilyl sulphanilate, N^1-(2-hydroxyethyl) sulphapyridine, N^1-diglycosulphapyridine and sulphanilylguanidine fulfilled the requirements of water-solubility and limited absorption from the intestine Since sulphanilylguanidine appeared to be the most active of these compounds against a number of pathogens it was selected for pharmacological and therapeutic investigation (It may be recalled that sodium sulphanilyl sulphanilate once achieved a short-lived but world-wide interest for a supposed activity in virus infections) Sulphanilylguanidine is p-amino-N-guanylbenzenesulphonamide Marshall and his colleagues suggest that the formulæ may both be considered correct for the compound as they are probably resonance isomers, easily transformed one into the other


α sulphanilylguanidine   β sulphanilylguanidine

Sulphaguanidine

The blood levels reached after the administration of sulphanilylguanidine are low as a consequence of its limited absorption, and the concentration in the gastro-intestinal tract is correspondingly high. It is suggested for trial in bacterial infections which are chiefly localised in the intestines, such as bacillary dysentery, cholera and the early stages of the enteric fevers, and for reducing the hazards of intestinal surgery In acute bacillary dysentery it will have to be established that sulphanilylguanidine has advantages over sulphathiazole and sulphapyridine, those " veritable Excaliburs, with which dysentery apparently may be vanquished without fail "

(Ravenel and Smith (1941)) Other sulphonamides have proved inactive on *Vibrion choleræ* at ordinary therapeutic concentrations but Marshall and others have found sulphanilylguanidine bactericidal in vitro in a concentration of 200 mg per 100 c cm , so that at the high levels reached in the gastro-intestinal tract it is possible that the administration of this compound may be of benefit in cholera Its use in intestinal infections bears some analogy with the use of sulphonamides in infections of the urinary tract, where the concentration in the urine is, of course, enormously greater than in the blood and tissues

Various sulphonamides have given unquestionable benefit in cases of ulcerative colitis, although the mechanism of the effect must necessarily remain obscure while the ætiology of this condition is unknown, and a few experiences in the use of sulphanilylguanidine in ulcerative colitis are encouraging The drug is being known as sulphaguanidine, by analogy with sulphapyridine and sulphathiazole

OTHER SULPHUR COMPOUNDS

Not all the sulphur compounds which are active antibacterial agents are sulphonamides , a number are sulphones, sulphoxides and sulphides The sulphones (table II), which have been investigated experimentally as well as clinically, may be regarded as derivatives of 4 4′-diaminodiphenylsulphone This substance has proved excessively toxic to mice but not to some other laboratory animals, and its toxicity probably precludes its clinical employment in man McEwen, Pizer and Paterson (1941) have reported the rather unexpected finding that the compound is of relatively low toxicity for cattle, producing no toxic effects in therapeutic doses The di-acetyl derivative of 4 4′-diamino-diphenylsulphone is of low toxicity and has been used in France for the treatment of gonorrhœa under the proprietary name Rodilone (1399 F) The glucoside of 4 4′-diamino-diphenylsulphone has been studied for its activity in experimental bacterial and virus infections, and has been used clinically in the treatment of cerebrospinal fever, trachoma and lymphogranuloma inguinale A compound known as Promin and described as the sodium salt of *p p′*-diamino-diphenyl-sulphone-N,-N^1-di-dextrose sulphonate has been tried in artificially induced animal infections with various coccal and bacillary organisms, and used clinically by mouth and intravenously This drug has been found to possess a retarding influence in experimental tuberculous infections of guineapigs apparently greater than that conferred by sulphonamides At present, however, the effective chemotherapy of clinical tuberculous infections remains, with that of brucellosis, and the introduction of virucidal agents, probable achievements of the future Despite the number of compounds in clinical use and the far greater number which have been studied experimentally, the tremendous strides made during the past few years constitute but the beginning, howbeit a highly successful one, of a new era in therapeutics

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Note for those who think that curative medicine began with the discovery of sulphanilamide N B —Prior to 1936 more than half of the patients suffering from hæmolytic streptococcal septicæmia in the puerperium did, in fact, recover

Note for those who believe in the maxim "when in doubt give sulphanilamide" N B —One of the deaths in the 1936–39 group occurred in a patient whose infection was proved at post-mortem examination to have been confined entirely to the birth canal She died from agranulocytosis, not from hæmolytic streptococcal infection She died from sulphanilamide She died from treatment

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ACTIVE IMMUNISATION AGAINST TETA

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Ramon and Zoeller (1927) originally advocated the use of tetanus toxoid for the active immunisation of man against tetanus infection, and since then immunisation has been practised extensively in many countries, especially since the outbreak of the present war The type of antigen to be used, the dose to be administered the number of doses to be given and the interval between the doses have been the subject of much discussion and research The methods by which active immunisation with toxoid is effected vary in different countries On the Continent it is usual to administer three doses of toxoid at relatively short intervals, but Boyd (193 showed that equally good results were obtained by giving two doses, each of 1 c cm at an interval of not less than 6 weeks, and this practice is followed in England, Canada and several other countries Boyd pointed out that 6 weeks may not be the optimum interval and suggested that wider spacing of the doses might achieve better results His main observations have been confirmed by many workers, and Marvell and Parish (1940) have shown that when the doses are injected at an interval greater than 6 weeks a larger quantity of antitoxin is produced Maclean and Holt (1940) have recently shown that a good response follows the injection of two doses of toxoid given at an interval of 4 weeks, and that when the toxoid is combined with T A B vaccine the response, as judged by the antitoxin formed, is even better They consider that it is unnecessary to prolong the interval from 4 to 6 weeks when the toxoid is combined with T A B vaccine From the administrative point of view there appears to be an advantage in employing two rather than three doses and there is a large amount of evidence and experience in support of the efficacy of two widely spaced doses On the other hand, the administration of three doses of toxoid, each of 1 c cm , at an interval of 3 weeks between the doses i recommended for the immunisation of the military personnel of the United States of America (*Bain 1941*)

The procedure finally adopted will, no doubt, be based on the results of trials made in different ways In July, 1940, active immunisation was offered to members of the staff of the National Institute for Medical Research, Hampstead The method of immunisation was similar to that of Boyd, but the opportunity was taken (*a*) of investigating the effect of increasing the interval between the doses of toxoid to 9 weeks, (*b*) of determining the antitoxin content after a single injection of toxoid, as well as 4 and 10 months after the second injection, and (*c*) of investigating the effect of giving a third dose of toxoid 10 months after the second dose

IMMUNISATION WITH TWO DOSES OF TOXOID

Two doses of tetanus toxoid each of 1 c cm were injected at an interval of 9 weeks into 81 subjects The toxoid was given subcutaneously into the left arm and blood samples taken on three occasions (1) immediately before the first injection, (2) immediately before the second injection, and (3) 17 weeks after the second injection A small group of 16 persons were bled for a fourth time 10 months after the second injection The sera were tested for tetanus antitoxin and the result are given in table I

Of the 81 sera tested before inoculation, no sample showed as much as 0 01 international unit per c cm Nine weeks after the first injection, 22 of the 53 person whose sera were tested still had less than 0 01 unit of antitoxin, while the remainder had developed more than 0 01 unit and almost a fifth of the persons more than 0 1 unit

These results suggest that some persons had some basal immunity, a condition which may exist without evidence for it always being shown by the presence of detectable amounts of circulating antitoxin Even if a person has not developed any basal immunity previously, this is very effectively provided by the first injection of toxoid, since after the second injection all the 70 persons tested had developed more than 0 01 unit, all but 2 showed more than 0 02 unit and as many as 59 more than 0 1 unit. It is to be noted that the values were recorded 17 weeks after the second injection indicating that a high and what is usually regarded as adequate, concentration of antitoxin had been maintained during this period Moreover, the examination of the sera of 16 persons 10 months after the second injection showed that the level of the antitoxin had been substantially maintained Comparing the values in table II at 4 and 10 months after the second injection it is seen that while those persons who had developed more than 1 unit of antitoxin showed some reduction in titre, in 9 of the cases the antitoxin content of the serum had remained unchanged

TABLE I—TETANUS ANTITOXIN TITRES OF SERA FROM PERSONS BEFORE AND AFTER INOCULATION WITH TETANUS TOXOID

Blood sample taken	No of samples	No of sera showing titre (I U per c.cm) of					
		less than 0 01	more than 0 01	more than 0 02	more than 0 1	more than 1	more than 5
Before first inoculation	81	81	0	0	0	0	0
9 weeks after first inoculation	53	22	31	22	10	0	0
17 weeks after second inoculation	70	0	70	68	59	19	0
10 months after second inoculation	16	0	16	16	14	0	0

It may be mentioned that 39 of the 81 subjects received in the interval between the injections of the two doses of toxoid, two doses of T A.B vaccine, and 12 of these 39 also received an injection of influenza virus A vaccine within the same period It cannot be assumed that these additional injections of other antigens were entirely without effect on the production of tetanus antitoxin, but the conclusion may safely be drawn that they did not interfere with the active immunisation against tetanus

EFFECT OF A THIRD DOSE

It is the practice in certain countries, particularly in the armed forces, to give a further injection of tetanus toxoid a year after the first immunisation has been completed (Ramon 1939 Bain 1940) In this series, the opportunity occurred of investigating the effect of a third injection of toxoid on the antitoxin content of 16 of the persons who had been successfully immunised by two injections 10 months previously The effect of the third injection was studied by determining the antitoxin content (1) immediately before, (2) 5 days, (3) 12 days and (4) 30 days after the third inoculation

TABLE II—TETANUS ANTITOXIN TITRES OF SERA FROM 16 PERSONS BEFORE AND AFTER A THIRD INOCULATION OF TETANUS TOXOID

No of serum	Antitoxin titre (I U per c cm)				
	After 2nd inoculation		After 3rd inoculation		
	4 months	10 months	5 days	12 days	30 days
1	0 02–0 1	0 02–0 1	0 02–0 1	2–5	2–5
27	0 1–1	0 1–1	2–5	10–20	10–20
31	0 02–0 1	0 02–0 1	0 1–1	2–5	2–5
35	0 1–1	0 1–1	1–2	10–20	5–10
40	1–2	0 1–1	2–5	20–50	20–50
44	1–2	0 1–1	2–5	20–50	20–50
48	1–2	0 1–1	5–10	20–50	20–50
52	1–2	0 1–1	2–5	20–50	20–50
58	0 1–1	0 1–1	1–2	10–20	5–10
59	1–2	0 1–1	10–20	20–50	20–50
64	0 1–1	0 1–1	5–10	20–50	20–50
65	0 1–1	0 1–1	2–5	20–50	10–20
66	0 1–1	0 1–1	2–5	10–20	5–10
68	1–2	0 1–1	2–5	10–20	10–20
93	1–2	0 1–1	2–5	20–50	10–20
105	0 1–1	0 1–1	1–2	5–10	2–5

The results of these tests are given in tables II and III, and the values found 6 months earlier (that is 4 months after the second injection) are also included

The response to the third injection, given 10 months after the second injection was well marked In every case but one there was an increase in the antitoxin produced 5 days after the injection, and this increase continued to the 12th day, when 8 samples contained more than twenty units, 5 more than ten units, 1 more than five units and 2 more than two units This large increase was maintained, unchanged in 10 cases, for 30 days

DISCUSSION

The concentration of antitoxin in the circulating blood necessary to afford protection against tetanus is not precisely known It may be that, as in the case of diphtheria, the actual concentration of antitoxin at the time of infection is not the sole factor in determining whether tetanus will develop when an actively immunised person is exposed to infection The responsiveness of the immunising mechanism established by the injection of toxoid is considered by many authorities to be a factor of possibly equal importance However, from the experience gained in the last war, there are good grounds for believing that a concentration of antitoxin of as little as 0 01 unit per c cm is adequate for preventing the onset of tetanus in wounded persons, and if this is so the results show, in agreement with those of others, that this concentration is produced and maintained for many months in persons who have received two spaced injections of toxoid

The results also suggest a point which may be of practical administrative importance Boyd showed that the interval between the two doses should not be less than 6 weeks and these experiments have shown that the interval may be extended to 9 weeks To extend the interval may sometimes be convenient, but in any case it is clear that the second dose may be deferred for several weeks at least without endangering the efficacy of the active immunisation

TABLE III—SUMMARY OF FINDINGS IN TABLE II

Blood sample taken	No of sera showing titre (I U per c cm) of						
	0 02–0 1	0 1–1	1–2	2–5	5–10	10–20	20–50
4 months after second inoculation	2	7	7	0	0	0	0
10 months after second inoculation	2	14	0	0	0	0	0
5 days after third inoculation	1	1	3	8	2	1	0
12 days after third inoculation	0	0	0	2	1	5	8
30 days after third inoculation	0	0	0	3	3	4	6

A striking feature of a further injection of toxoid into actively immunised persons is the rapidity with which antitoxin is produced There seems to be no record of the effect produced by absorption of the toxin in an actively immunised person infected with tetanus organisms, but, in so far as such a condition may be regarded as providing a secondary stimulus to the established immunising mechanism, these results suggest that the actively immunised person is provided in his capacity to produce antitoxin rapidly in response to a specific stimulus, with an additional safeguard against the onset of tetanus The administration of a further injection of toxoid a year or more after the first immunisation has much to recommend it Although tetanus toxoid is remarkably certain in its action there are as judged by the antitoxin produced some persons who respond better than others and it is possible that in a larger series there might be some cases in which immunisation had apparently failed In the case of tetanus there is, as yet, no simply applied test like the Schick test in diphtheria, by which these failures can be discovered If the procedure of giving a third injection after a year were generally applied those persons who did not become effectively immunised by the two earlier injections as well as those in whom the antitoxin level had fallen would be more certainly provided for, and the chance of an actively immunised person developing tetanus which recent experience suggests to be very small (Perry 1940), would be still further reduced The question whether the extra protection thus afforded would be offset by the additional trouble is one for administrative decision

In view of the fact that actively immunised persons respond rapidly to a third injection by the production of antitoxin in large amounts, it has been suggested that persons wounded many months after immunisation need only be given toxoid and not antitoxin Recent advocates of such a procedure are Kestermann and Vogt (1940), and the U S War Department, in recently issued instructions governing the administration of tetanus toxoid and antitoxin to military personnel (Bain 1941), state that wounded persons who have been immunised are to be given tetanus toxoid, and those who have not been immunised are to be given antitoxin There is, however, not sufficient evidence to support an assumption that the same dramatic increase in antitoxin would necessarily occur in persons in whom infection by other organisms had become established, or, as pointed out by Marvell and Parish (1940), in seriously wounded persons suffering from shock

SUMMARY

Examination of the sera of 81 persons (age 15–60 years), before active immunisation against tetanus, showed that none contained as much as 0 01 international unit of tetanus antitoxin per c cm

Nine weeks after the first injection of tetanus toxoid, examination of the sera of 53 persons showed that in 31 cases the antitoxin content was more than 0 01 unit, but that 22 still contained less than 0 01 unit

Seventeen weeks after the second injection of toxoid, given nine weeks after the first, all the 70 persons examined had more than 0 01 unit, 68 more than 0 02 unit, 59 more than 0 1 unit and 19 more than 1 unit

The antitoxin level was substantially maintained for ten months after the second injection

The administration of a third dose of tetanus toxoid ten months after the second injection to 16 of these persons was followed by a large and rapid increase in the antitoxin content of the serum, and the high level was maintained substantially unchanged for a month

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PLACENTAL BLOOD IN THE TREATMENT OF AMENORRHŒA

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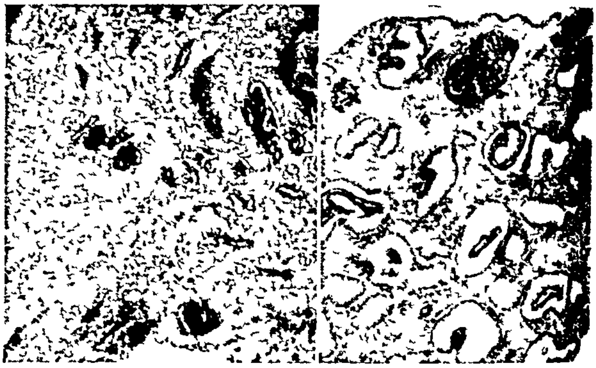
THE treatment of amenorrhœa and sterility with various gonadotropic hormones has been unsatisfactory up to now, owing to the fact that these hormones, though showing some effect on the ovaries of rodents, have none on the ovaries of women and monkeys Recently positive results have been reported from the use of the serum of pregnant mares, but it is too early to give a conclusive verdict on its value

It seems possible that gonadotropic preparations might fail because they contain an incomplete hormonal complex they lack an activator which is present in the blood This would explain the better results obtained with the serum of pregnant mares I therefore decided to investigate the effect of placental blood Vaginal bleeding and lactation in the newborn seem to indicate that placental blood is rich in hormones, though no exact laboratory estimate has yet been made of its hormonal content If correctly obtained it causes no graver reactions than ordinary blood, and by using plasma I eliminated the danger of hæmolytic crises

In order to determine whether placental blood really was active I gave injections of it to 34 amenorrhœic women, with the result that 18 menstruated within 5–35 days after the end of the course of treatment, in most of them menstruation began between the 15th and the 20th days A further 3 patients menstruated on or after the 35th day Of those I was able to follow up, 5 menstruated once only, 8 twice or more, the others were not traced In the light of subsequent experience it seems likely that those who failed to menstruate may have received too little blood At first I gave only three or four injections of blood A few patients menstruated after receiving small q —a few drops—but others required larger amounts

In 11 cases the effect of placental blood, or plasma, on the uterine mucosa was determined by histological examination before and after treatment

Method—Before treatment I dilated the cervix up to Hegar 5–6, curetted lightly with the finest curette, and examined the endometrium histologically Treatment by placental blood or plasma was begun immediately afterwards Each patient received 5–6 injections of 150–200 c cm—in some cases all plasma, in others at least half plasma—given intravenously Treatment was ambulatory and the patient received a total of 800–1000 c cm Sometimes they developed fever, but as a rule there was no reaction of this kind After every injection the patient was given Pyramidon, 0 3 g, which I think prevents the milder reactions The intervals between injections depended on how the patient felt, but I usually gave one every second day


(a) (b)

Patient aged 29 years with amenorrhœa for 10 months (a) Endometrium before treatment, completely atrophic (b) Endometrium 14 days after treatment, showing normal appearance

Curettage before treatment produced more or less atrophic endometrium After 3 injections of placental blood of 150 c cm each, and 3 injections of plasma in similar dosage, 5 patients showed a complete change in the endometrial structure from atrophy to the proliferative or secretory state All 5 menstruated shortly after treatment, though they had been amenorrhœic for periods ranging from 5 months to 2 years Another patient menstruated 20 days after the beginning of treatment but the mucosa remained atrophic The remaining 5 patients did not react at all, one had not menstruated for 15 years and examination of the uterine mucosa showed tuberculous endometritis I had removed the one remaining ovary of another woman a year before She had developed menopausal symptoms which were not affected by placental blood, and no change was seen in the uterine mucosa This case suggests that the action of placental blood does not depend on its folliculin content but on gonadotropic substances present in it The remaining 3 unresponsive cases had not menstruated for periods ranging from 2 to 5 years, and were suffering from climacterium præcox In all cases which menstruated or showed changes in the endometrium the size of the uterine cavity increased from 1 to 2 5 cm

SUMMARY

A series of 34 patients who had had amenorrhœa fo periods ranging from 4 months to 15 years received placental blood or plasma intravenously, 18 of them menstruated within 5–35 days of the end of treatment

Of 11 patients showing atrophy of the endometrium before treatment, 6 had a normal endometrium after 5-6 intravenous injections of 150–200 c cm of placental blood or plasma

These results indicate that placental blood is rich in gonadotropic substances

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"If colds and their coughs hadn't made a habit of coming and going in precisely the same way regardless of what we did for them, man would long since have coughed himself off the face of the earth"—THEODORE G KLUMPP, *Science*, Aug 1, 1941, p 99

MENINGOCOCCAL INFECTION

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SINCE the identification of the meningococcus by Weichselbaum in 1887, the clinical concept of meningococcal infection has been dominated by its most serious manifestation—meningitis. As early as 1899 Gwyn recovered meningococci from the blood of patients suffering from meningococcal meningitis and in 1902 Salomon described meningococcal septicæmia without meningitis. Although of recent years reports (Applebaum 1937, Heinle 1939, Stott and Copeman 1940) of similar cases of meningococcal blood-stream infection have become more numerous the disease is still regarded by most physicians as a clinical rarity.

A series of 26 patients suffering from meningococcal infection were admitted to No. 15 Canadian General Hospital in the period July 1940, to June 1941, inclusive. Of these 11 did not have meningitis on admission (though one, case 10, subsequently developed it) but had meningococcal septicæmia. We thus had an opportunity to observe the course of infection in these patients and to compare their histories with those of meningitic cases seen in the same body of troops at the same time. The cases were sporadic, occurring in every month of the year. They came from Canadian troops stationed in England, but were not otherwise related to each other or to other recognised cases of meningococcal infection. For presentation the series is divided into two groups: an amenimgitic and a meningitic.

THE AMENINGITIC GROUP

The 11 patients without meningitis came to hospital under a variety of diagnoses including influenza, arthritis, erythema nodosum and rheumatism. The diagnosis in 10 of the 11 cases was proven by growing *Neisseria meningitidis* from the patient's blood (table I). The clinical manifestations, however, were such as to render a diagnosis possible in most cases.

The onset was sufficiently definite to enable the patient to fix its date with fair precision. Thereafter the course was marked by striking remissions, varying greatly in length, and by even more striking relapses. The early symptoms of fatigue, malaise, feverishness, chilliness, occasional true rigor, aching pains in the limbs and back, and sometimes moderate intermittent headache, were those which characterise the onset of many acute infections. Other symptoms and signs of more particular diagnostic value were superimposed on this general picture of infection. These were localised muscle pain, localised joint pain and skin lesions.

The localised muscle pain, present in 10 of the 11 patients, differed sharply from the aching pain common in acute infection. Its onset was abrupt, associated with fever and general symptoms of infection, and often with localised joint pains and with crops of the skin lesions described below. While in some it was little more than stiffness, it was of sufficient severity to form the chief complaint of 5 of the patients. It was increased by movement. Its site could be localised accurately by the patient and was tender. The calf muscles were most commonly affected, less often those of the back, thighs and arms.

Localised joint pain, aggravated by movement, occurred in 8 of the patients and was a chief complaint in 3. Its onset too, was abrupt and associated with symptoms of infection and frequently with a crop of skin lesions. In 3 cases the pain was associated with redness, swelling and increased heat: in 1 of these there was increased joint fluid. These 3 patients came to hospital with a diagnosis of arthritis. In some patients the joint pain seemed to be related to a tender skin lesion overlying the joint, while in others it was not associated with any demonstrable abnormality. The pain usually disappeared in a few days, only to recur in the same or in other joints. One or more joints were involved at one time, more commonly the large joints, but sometimes the small joints of the hands and feet.

Skin lesions appeared at some time during their illness in all the patients except one, case 8, whose illness was only of two days' duration before treatment. The spots appeared suddenly, in crops of a few or dozens, at any place on the body surface, but most commonly on the limbs and trunk. Their occurrence coincided with or closely followed the onset or recurrence of fever and general symptoms of infection. The patient's attention was drawn to them not only by their appearance but also because many were painful and tender. The spots varied in colour, size, palpability and tenderness. Most of them were clearly demarcated bright pink circular areas, 5–35 mm. in diameter, the smaller sizes predominating. They were regular in outline; some had a central dark purplish red spot or streak, and a few of the larger spots were darker and resembled somewhat the lesions of erythema nodosum. On pressure the pink zones faded, but the purplish red centres persisted, indicating hæmorrhage. Most of the larger lesions and all those with hæmorrhagic centres, were palpable. Some were elevated slightly above the skin surface, others were deeper. Many of the lesions, particularly the larger ones, were moderately painful and tender. Often such spots marked the site of localised muscle or joint pain. Subsequent examination revealed changes in the lesions. After a few hours or next day, some which had appeared at first as red macules had developed hæmorrhagic centres and become palpable. In two to four days the redness faded and the tenderness disappeared. Slight staining from the central hæmorrhage and sometimes a small lump, persisted for a week or more. The lesions were in no way similar to the blotchy purpuric eruption commonly observed in cases of cerebrospinal fever and occurring in some of the meningitic cases in this series (table II).

The appearance of a crop, or crops, of the skin lesions, associated with fever, general symptoms of infection and localised muscle and joint pain, usually accompanied by leucocytosis, provided a clinical picture which strongly suggested meningococcal septicæmia.

Enlargement of the spleen was not observed in any of the cases. The only evidence of endocarditis found was that of a pre-existing aortic insufficiency due to rheumatic fever in childhood in case 8. No change in the character of the murmur was observed during his stay in hospital, and the course of the disease in this patient did not differ from the others. Under treatment he made a complete recovery from the meningococcal infection.

The cerebrospinal fluid was examined in 6 of the 11 cases, although none presented any clinical evidence of meningitis. In all the fluid was normal in cell and protein content and was sterile on culture.

In this group, 9 patients were treated with sulphapyridine during the ameningitic phase; 8 made a complete recovery after the administration of 34 g. of the drug in seven days, 12 g. being given in the first twenty-four hours. In case 3 the diagnosis was not made, and consequently treatment was not instituted until the disease had been present for three months. Although the infection was then cured by chemotherapy and did not recur this soldier was left with residual joint pain, which necessitated lowering his medical category. Case 1 was not given chemotherapy and case 10 was not given sulphapyridine until meningitis developed. The case-histories of these 2 patients well illustrate features presented by most of the patients in the group. They also show certain features of special interest and serve to stress the importance of recognition and treatment of meningococcal septicæmia.

CASE 1.—A gunner, aged 39. He had been well until May 23, when he had developed malaise, chilliness, feverishness and aching pain in the back and limbs. He was evacuated to a military hospital. Temperature was 103° F., leucocyte count 17,000 with 77% neutrophils. Meningitis was suspected, but the C.S.F. was normal and sterile on culture. On May 25 he developed pain in the knees, ankles and shoulders. He was transferred to an E.M.S. hospital and treated for rheumatism during the next five weeks. During this time he noted repeated crops of spots in the skin, many of them tender, appearing in association with recrudescence of fever, muscle pain and joint pain. On July 6 he was admitted to this hospital. At that time the right knee and ankle were painful and swollen, movement was restricted by pain Many red, palpable, tender spots about the size of a sixpence were scattered over the limbs and trunk Some of these had hæmorrhagic centres From July 6 to 28 he had repeated remissions and relapses Thereafter he remained free of symptoms and was sent to a convalescent depot on Aug 12 A diagnosis of arthritis was recorded

In retrospect it appears certain that this patient suffered from meningococcal septicæmia, and that the diagnosis was missed both by ourselves and at the two other hospitals The two blood samples taken while in this hospital did not show any growth, but such evidence is quite inadequate (see table I) to exclude the diagnosis of meningococcal septicæmia in a patient presenting the above clinical findings This patient was still free from recurrence about three months later, having made, apparently, a spontaneous recovery, but he was invalided home to Canada on account of residual joint pain

TABLE I—THE AMENINGITIC GROUP

Case	Admitted	Duration (days)	Muscle pain	Joint pain	Skin lesions	Leucocyte count	No of blood samples	Positive
1	July 6, 1940	45	+	+	+	17,000	2	0
3	July 31	90	+	+	+	18,000	2	1
6	Aug 30	17	+	−	+	18,000	1	1
8	Oct 25	2	−	−	−	23,000	1	1
10	Nov 23	12	+	+	+	11,000	2	1
12	Jan 1, 1941	60	+	+	+	9000	4	2
15	Feb 18	15	+	+	+	14,000	10	4
17	Feb 25	27	+	+	+	10,000	4	1
20	March 15	7	+	+	+	22,000	6	4
21	March 24	28	+	+	+	17,000	21	2
26	June 14	33	+	+	+	10,000	14	12

CASE 10 —A sapper, aged 19 He had been in good health until Nov 16, 1940, when he became suddenly ill with fatigue, malaise, feverishness, chilliness, headache and localised pain in the right calf He felt better for the next two days, during which he remained on duty On Nov 19 he became more ill, temperature 104° F, a crop of red tender spots appeared in the skin, he was evacuated to a dressing station where he again had a short remission On the 21st he had recurrence of fever and more spots, and on the 23rd, when there was fever again and more spots, he was transferred to this hospital Temperature 103° F, many skin lesions present, some tender and many palpable with hæmorrhagic centres Leucocyte count 11,000 with 88% neutrophils Next day his temperature was normal and the spots fading On the 25th he had a rigor, temperature rose to 104 6° F He complained of malaise, moderate headache and general aching pain with more severe and localised pain in the left elbow There were many new skin lesions, one of which, very tender, was situated over the left elbow Lumbar puncture revealed clear fluid under normal pressure, 3 lymphocytes per c mm, Pandy test negative, fluid sterile A blood sample taken on this day yielded *N meningitidis* group I on Nov 28 By this time, however, the patient was afebrile and symptom-free No specific treatment was instituted He felt well and was up and about the ward until Dec 16 (18 days intermission) On that day he again had a rigor and his temperature rose to 103° F He complained of *malaise and aching pains in limbs and back A new crop of* spots appeared He developed headache, which rapidly became severe, slight neck pain and stiffness Blood taken at this time was sterile C S F 100 neutrophils per c mm, protein 40 mg per 100 c cm, no organisms seen on direct smear, but culture yielded *N meningitidis* group I Under treatment with sulphapyridine the patient made a complete recovery, although the C S F cell count rose to 1200 during the first 12 hours of treatment

This case was thus observed first in the ameningitic phase of the disease Then, after a period of freedom from symptoms, the infection again became manifest, but this time meningitis developed The case serves to stress the close association between the type of meningococcal infection and the meningitic a relationship that is further demonstrated on [illegible] tion of the meningitic group

THE MENINGITIC GROUP

The clinical histories of the patients comprising this group indicated the presence of infection for periods varying from a few hours to several weeks before the onset of meningitis While it is impossible to identify precisely the beginning of meningeal inflammation, there are grounds for assuming that it approximates in time to the onset of severe persistent headache Although such headache was the chief complaint of all the patients who were conscious at the time of admission, in no case was it the first symptom of the illness That headache of this type may accompany very early meningeal involvement is apparent from case 10, where lumbar puncture was done within four hours of the onset of persistent headache, the Pandy test was negative, the C S F cell count was only 100 neutrophils, and culture yielded N *meningitidis* group I The premeningitic period shown in table II refers therefore to the time between the onset of symptoms and signs of infection, and the onset of severe persistent headache This premeningitic period lasted from one to seven weeks in 5 cases, from one to six days in 4 cases, and from three to sixteen hours in 6 cases In one case the information was not recorded The early symptoms were, as in the ameningitic group, those commonly characteristic of the onset of acute infection However, in an appreciable number of the patients there were additional features which indicated a more specific diagnosis

In 8 of the 9 cases in which the premeningitic period lasted longer than one day, the signs and symptoms occurring in this phase of the disease were clearly defined These 8 patients gave a history of localised joint pain, associated with localised muscle pain in 6, and with skin lesions of the type described above in 5 Further, all 5 patients in whom this period exceeded a week gave a *history of remissions and relapses* In short, the illness of these patients before the onset of meningitis was essentially similar to those of the patients in the ameningitic group In 3 of the 6 cases in which the premeningitic period was less than one day the symptoms were essentially similar to those of the ameningitic group —muscle pain, joint or skin lesions either singly or in combination In 2 cases the information was not

TABLE II—THE MENINGITIC GROUP

Case	Admitted	Duration of ameningitic phase	Muscle pain	Joint pain	Skin lesions	Purpura	Leucocyte count	Blood culture	C S F			Duration of meningitis before treatment (hr)
									Cells	Film	Culture	
2	1940 July 17	?	?	?	−	−			1200	−		12
4	Sept 11	3 hr	?	?	−	−	31,000	+	3600	+	+	12
5	Sept 29	16 hr	−	+	−	+	23,000	+	40,000	+	+	36
7	Oct 24	15 days	+	+	−	−	14,000	−	2500	−	+	10
9	Nov 7	4 days	−	−	−	−	17,000	−	20,000	+	+	24
10	Nov 23	30 days	+	+	+	−	12,000	−	100	−	+	5
11	Dec 10	6 days	?	+	−	−	18,000	−	12,000	−	+	24
13	1941 Jan 2	30 hr	−	+	−	−	19,000	−	6500	+	+	36
14	Jan 13	6 hr	−	−	−	+	17,000	−	16,000	−	−	1
16	Feb 21	12 hr	−	−	+	+	26 000	−	37,000	+	+	1
18	Feb 27	3 hr	−	−	+	−	24 000	+	9000	+	+	48
19	Mar 11	11 days	+	+	+	−	14,000	−	6500	−	−	4
22	April 2	12 hr	−	+	−	+	20,000	+	250	−	+	[illegible]
23	April 8	2 days	+	+	+	−	22,000	−	9000	+	+	12
24	April 30	14 days	+	+	+	−	16,000	−	9000	+	+	10
25	May 7	49 days	+	+	+	−	10 000	−	1200	−	+	24

obtained. In case 14 it is known that such signs or symptoms were not present although the patient was ill with general symptoms of infection for six hours before the appearance of any headache. The clinical records of some of the patients are even more enlightening than the tabulated data. For example in case 5 the soldier first reported to his regimental medical officer because of pain in the right ankle and knee, and was evacuated to a casualty clearing station with a diagnosis of rheumatism. In case 22 the patient complained of sudden severe pain in the right shoulder approximating in time to the onset of the headache. It should be pointed out here that the patients suffering from meningitis seldom gave this history at the time of admission to hospital. The more distressing symptoms of meningitis tended to obliterate the memory of the milder symptoms of the *earlier illness*. However, with the disappearance, under treatment, of the headache, irritability and mental confusion the patients recalled their preceding illness vividly.

It is apparent from table II that the cases varied greatly in severity from mild to fulminating. Meningococci were recovered from the cerebrospinal fluid in 13 of the 16 cases. In 1 the fluid was not cultured, in 2 it failed to yield any growth. These 3 were clinically typical cases of cerebrospinal fever. The intervals between the onset of meningitis and the beginning of treatment were from five to seventy-two hours.

In addition to the usual symptomatic treatment, sulphapyridine was used as in the ameningitic cases, but was continued for ten days and a total of 40 g. was given. In all but the mildest cases the dosage by mouth was augmented by the intravenous administration of 2–4 g. of sodium sulphapyridine at the onset of treatment. Unconsciousness or persistent severe vomiting made necessary the continuation of the intravenous therapy in cases 5, 14 and 22. Blood levels of 4.2–12 mg. of free sulphapyridine per 100 c.cm. and C.S.F. levels of 2.7–10 mg. per 100 c.cm. were obtained during the first forty-eight hours.

Of the 16 patients, 12 made a rapid and complete recovery, all symptoms disappearing in three to five days. In these the C.S.F. pressure, cell-count and protein content fell rapidly, but in some several weeks passed before the cell-count and protein were entirely normal. Deafness, present in 3 patients on admission, cleared entirely in 2; the third was left with slight nerve deafness not sufficient to lower his medical category. This patient had mild intermittent headache which persisted for ten weeks. One patient continued to complain of slight headache and neck pain for eight weeks; in this case, although the cell-count and protein content returned rapidly to normal the C.S.F. pressure continued high; the end-result is not yet known. Cases 5 and 22 died.

Case 5, a fulminating infection with severe meningitis, was comatose on admission and the cell count in the spinal fluid was 40,000; *N. meningitidis* was recovered from both blood and C.S.F. The patient showed some improvement and subsequent samples of blood and C.S.F. failed to yield growth. In spite of this temporary improvement, the coma deepened, breathing became rapid, stertorous and irregular, pulse and temperature rose. Clinically death occurred from respiratory failure. At necropsy there was much œdema of brain and spinal cord with flattening of the cerebral convolutions, and the brain was compressed downwards with herniation of the hippocampal unci through the tentorial notch, and of the cerebellar tonsils through the foramen magnum. This cerebellar pressure cone was well developed. The pial blood-vessels were intensely injected, but practically no meningeal exudate was present. Death was apparently due to medullary compression consequent on increased intracranial pressure.

Case 22 was desperately ill on admission, with extensive purpura and showed only 250 cells in the C.S.F.; this, however, yielded meningococci, as did the blood. With treatment there was temporary clinical improvement and both blood and C.S.F. became *sterile*. The early improvement was followed by acute left heart-failure, manifested by acute pulmonary œdema and rising pulse rate. He died thirty six hours after admission. At necropsy, although the pial vessels were extremely injected and the brain somewhat œdematous, there was a complete absence of gross meningeal exudate, and microscopically several sections had to be studied before evidence of scanty cellular exudate was seen. Generalised purpuric hæmorrhages and an extremely flabby heart, the chambers of which were much dilated, were indications of the severe toxæmia.

BACTERIOLOGY

Blood samples were planted in glucose broth. C.S.F. was drawn directly at the bedside into small vials containing sloped Löffler's medium. It is evident (tables I and II) that recovery of the organism from the blood in non-fulminating cases was largely a matter of chance. For example, twenty-one samples of blood from case 21 yielded only two positive cultures. Growth was demonstrable in some cultures in twenty-four hours, but in others longer periods of incubation up to ten days were required. This variation was found in cultures obtained at different times from the same patient. For instance, one blood sample from case 26 yielded growth in twenty-four hours; another required seven days before growth was demonstrable by film or subculture.

All the strains isolated gave typical fermentation of glucose and of maltose. They were tested for agglutination with specific antisera by the late Dr. W. M. Scott and Dr. Marion Watson, from whose reports the following summary is made:

Of the 10 strains isolated from the ameningitic group cases 6 and 26 were group I; cases 12 and 20 were group I, type III; case 10 was group I, uncommon type; case 15 was group I, aberrant type; case 17 was probably group II; case 8 was agglutinated by group I and group II antisera; cases 3 and 31 were not agglutinated by either. So far as the agglutinative type was concerned, therefore, the strains exhibited considerable variety. Of 10 of the strains isolated from the meningitis cases, 5 (cases 16, 22, 23, 24 and 25) were group I, type III; 3 (cases 9, 11 and 18) were group II; 1 (case 10) was group I, uncommon type; 1 (case 13) group I, aberrant type. Strains isolated from cases 5 and 7 were not sent to Dr. Scott, but tests in the laboratory of this hospital showed them to be group I. One strain, case 4, was not tested. It is to be noted that meningitic cases from whom the same agglutinative type was isolated showed widely different premeningitic periods. For instance, cases 16 and 22, from whom group I, type III, strains were obtained, each had a premeningitic period of twelve hours, while cases 24 and 25, from whom the similar group I, type III, strains were obtained, had premeningitic periods of two weeks and seven weeks respectively.

DISCUSSION

The fact that the number of cases of ameningitic meningococcal septicæmia approached the number of meningitic cases in this series strongly supports Heinle's statement that "meningococcic septicæmia can no longer be regarded as a rare disease." The character of the skin lesions, with their sudden occurrence in crops, associated with symptoms of infection, fever and leucocytosis in the presence of proven bacteræmia, provides good evidence that they are due to localisation of organisms in the skin. The isolation by Kennedy (1926) of gram-negative diplococci from what appears to have been a similar lesion is strong confirmation of this view. So, too, the muscle and joint pain, abrupt in onset and often occurring at the same time as the skin lesions in the proven bacteræmic cases, seems to be due to similar localisation of bacteria in deeper tissues. The recovery by Still (1898) of a gram-negative diplococcus from a tendon sheath—the site, apparently, of a similar lesion—is corroborative evidence.

The occurrence of skin lesions, localised muscle pain or localised joint pain during the premeningitic phase of meningitic cases is strong, if not conclusive, evidence that the premeningitic illness was really due to meningococcal septicæmia. More of the ameningitic cases might have developed meningitis, like case 10, had the infection not been interrupted before that incident. The course of the infection as exhibited by the patients in this series as a whole appears to have been the development of bacteræmia followed by localisation of bacteria in the skin, skeletal tissues and sometimes the central nervous system. If the nervous system was not involved early, remissions and relapses occurred and chronic meningococcal septicæmia developed.

In some of the meningitic cases with longer premeningitic periods the diagnosis might well have been made and effectual treatment given before the onset of meningitis This would have resulted in an increase in the number of ameningitic cases in the series, and—what would have had more significance—a corresponding reduction in the number of cases of meningitis treated in this hospital In others with a shorter premeningitic phase appreciation of the significance of such signs and symptoms might have suggested the character of the infection and have led to closer supervision and earlier treatment It is still important that cases of meningococcal meningitis should be treated at the earliest possible moment, further reduction in mortality seems to depend on such early treatment

There is no reason to suppose that a peculiar susceptibility or resistance of the host was operative in this series Some of the patients had recently arrived in this country, others had been here for a year or more There is nothing to suggest that the troops from which they came differed in any way from their fellows, or that the environment in which they lived affected their reaction to the infection The fact that organisms of several different agglutinative types were recovered from both the ameningitic and meningitic groups goes far to exclude the possibility that a special characteristic of the organism was important in determining the course of the infection It appears unlikely, therefore, that the findings here reported are peculiar to this group

SUMMARY

A series of 26 cases of meningococcal infection, occurring in Canadian soldiers stationed in England and admitted to a Canadian general hospital between July, 1940, and June, 1941, is reported

Of these patients, 11 did not have meningitis on admission, but suffered from meningococcal septicæmia, only one of these subsequently developed meningitis The clinical findings in this group include the presence of characteristic skin lesions and of localised muscle pain and joint pain

Most of the 16 meningitic patients had a premeningitic phase in which the signs and symptoms were identical with those of the patients in the ameningitic group, and were no doubt also due to meningococcal septicæmia

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PARADOXICAL CEREBRAL EMBOLISM

WITH RECOVERY

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PARADOXICAL embolism, by definition, is the passage of an embolus, usually originating in a thrombus of a systemic vein, direct from the right to the left side of the heart, without traversing the pulmonary vessels, to produce a systemic arterial embolism The condition was first described by Cohnheim (1876), and Zahn (1881) demonstrated an embolus in situ astride a patent foramen ovale Von Recklinghausen (cited by Thompson and Evans 1929–30) suggested the term "paradoxical," rather than "crossed" embolus which had previously been used From an analysis of 13,234 consecutive autopsies, Thompson and Evans found that paradoxical embolism was responsible for death in 4% of all cases of cerebral embolism, and mentioned that diagnosis during life can never be quite certain The following is a case of paradoxical cerebral embolism in which the patient recovered.

A gunner, aged 26, admitted to hospital on March 7, 1941, complaining of pain and swelling behind left knee of 24 hours' duration Had had varicose veins for some years but they had never given trouble Tender and swollen varicose vein behind left knee, diagnosis of phlebitis made and treatment instituted On March 11 thrombosis had spread up great saphenous vein for several inches On evening of the 21st patient was lying on his bed, having been allowed up day or two, and when spoken to was found to be Soon regained consciousness, but speech slurred, both widely dilated and generalised tremor of limbs Next ing complete flaccid left sided hemiplegia, fine left, paralysis of left external rectus oculi, left palate and lower face Incontinence urine, which lasted 24 hours 23rd paralysis had become spastic, with increased reflexes and absent abdominal reflexes on left and left extens plantar response No alteration of sensation or any abnormal sign in central nervous system Lumbar produced normal fluid under normal tension No enlarge ment of heart or cardiac murmurs, blood pressure 125/ Chest showed no evidence of pulmonary embolism Tempera ture and respirations normal X ray of chest at later da normal Urine normal

By March 27 movement returning to left foot and knee, and by end of April patient was moving about ward with help On May 24 examination prior to a medical board revealed slight left sided lower facial weakness, weakness of conver ence of left eye with bilateral nystagmus on looking to left, some weakness of left hand and arm and very slight weakn of left leg and foot, left abdominal reflexes diminished, with accentuation of deep reflexes on left and left extensor plantar response All these signs were less a month later and patient was then walking about freely

DISCUSSION

The embolism had presumably occurred in the right middle cerebral artery, in the region of the internal capsule—the commonest site for such a lesion though Hartfall (1931) recorded a case of paradoxical embolism in the basilar artery

There are two routes by which an embolus could pass directly to the left from the right side of the heart through a patent foramen ovale or through an opening in the interventricular septum Pressure is higher in the left than in the right auricle, and the foramen ovale is usually guarded, on the left side of the interauricular septum, by a flap-valve The head of pressure on the left side is sufficient to keep the flap closed and so to ensure the competence of the valve From the mechanical point of view an alteration of pressure between the two sides of the heart is required to destroy the competence of the valvular foramen ovale, thus a rise in the right auricular pressure and a fall in that of the left auricle would cause the valve to open Haggart and Walker (1923) found that a partial occlusion of the pulmonary artery in cats caused a rise of pressure in the right side of the heart, accompanied by a fall of pressure in the left side This mechanism has been supposed to operate when an embolus lodges in the pulmonary artery, and Thompson and Evans have advanced three criteria for the production of paradoxical embolism

1 At least a third of the diameter of the pulmonary artery must be occluded by an embolus less than this is not sufficient to alter the pressures materially, while occlusion of more than a half results in immediate death

2 A second embolus must shortly follow the first and appear in the right auricle

3 The second embolus must be small enough to pass through the foramen ovale, now rendered patent through alteration in intracardiac pressure

In the case here described there was no clinical evidence of a pulmonary embolus, physical examination of the lungs was normal, respiration-rate unaltered, tempera ture normal, there was no cough and no sputum, and a radiogram of the chest, when the patient was well enough to have one taken, was normal Of Thompson and Evans's 5 cases of paradoxical embolism, only 2 showed evidence of pulmonary embolus, and it seems that though this occurrence is possibly a mechanical necessity in the cases of valvular foramen ovale, it is not essential to paradoxical embolism Two other possibilities exist First, a widely patent foramen ovale could allow the passage of an embolus without previous pressure changes In 1100 consecutive autopsy records examined by Thompson and Evans at the London Hospital, patency of the foramen ovale was found in 35% (29% up to 2 cm and 6% up to 7 cm) In a further 24 cases dying from pulmonary embolism, and found at autopsy to have a patent foramen ovale, there was no evidence of paradoxical embolism Sir Thomas Lewis (1934) stated that patency (which he distinguished from mere persistence by the size of the aperture) of the foramen ovale was very rare, neither condition he said gave rise to signs It seems possible that a widely open foramen, giving rise to no physical signs, could transmit an embolus in the absence of pressure changes

A second theory put forward as a possible alternative, is that the embolus arrives in the right auricle, coils up over the tricuspid valve and blocks it sufficiently to cause the momentary rise in pressure necessary to force open the valve guarding the patent foramen ovale. The embolus is then swirled through the foramen to the left heart and so to the systemic circulation the tricuspid valve acts normally again, the foramen ovale flap-valve closes and the pressures are restored to normal I do not suggest that these alternatives are mutually exclusive, but that either may be in operation according to the state and size of the foramen ovale

Diagnosis can never be certain, but Thompson and Evans stated that "If a patient the subject of venous thrombosis develops cerebral embolism and if in such a patient there is no clinical evidence of any cardiovascular disease present then it may be justifiable to assume that the embolus is of the paradoxical variety" In my case there were no clinical or radiological signs of cardiovascular abnormality. The circulation-rate was estimated with the object of demonstrating if possible, the existence of a patent foramen ovale The arm-to-tongue method was employed, using Suprachol The time was 12 sec the normal for young men being 12–16 sec Although the result was inconclusive it was at least at the rapid extreme of normal range

The differential diagnosis lay between paradoxical embolism and thrombophlebitis migrans Ryle (1936) says that thrombophlebitis migrans is never due to varicosity, that it is essentially migratory affecting multiple small lengths of superficial veins, and is accompanied by fever hæmoptysis, pleurisy and hæmaturia may also occur Paradoxical embolus, therefore, was confidently diagnosed in this case Recovery was virtually complete I can find no record of a previous case of paradoxical cerebral embolism which recovered, with the exception of case 1 in Thompson and Evans's series, which they described as unique

SUMMARY

A case of paradoxical cerebral embolism is described, in a young man who recovered completely

There was no evidence of previous pulmonary embolus

The embolus may have reached the systemic circulation either by passing directly through a widely patent foramen ovale, or (if the patent foramen was of the valvular type) by causing temporary obstruction to the tricuspid valve so that the pressure in the right auricle rose above that in the left auricle, and the embolus was swept through the foramen

I wish to thank Dr L C Martin, who had charge of the case, and Dr Leslie Cole who estimated the circulation-rate

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For the treatment of scabies MESSRS BOOTS have issued a solution of benzyl benzoate called Scobenzol This contains benzyl benzoate 25%, soft soap 25%, and isopropyl alcohol 50%

BRITISH DRUG HOUSES have prepared a thick cream containing titanium dioxide, zinc oxide and small quantities of purified silicates in a non-fatty base for application in exudative dermatitis and similar conditions "Siccolam" is said to have dehydrating properties similar to calamine lotions but of much greater degree, and it can be used either alone or with the addition of sulphur tar or other medicaments It is issued in 2 oz and 4 oz collapsible tubes

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ISOAGGLUTININ CHANGES
AFTER TRANSFUSION OF INCOMPATIBLE BLOOD AND SERUM

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LITTLE attention has so far been paid to serological changes in the recipient after the transfusion of incompatible blood There are only 3 recorded cases in which such changes have been noted

Ro (1937) reports the case of a patient of group O who received 500 c cm of group A blood Although preliminary cross-matching showed no agglutination of the donor's cells by the recipient's serum, when the test was repeated with serum obtained two days after the transfusion agglutination occurred up to a dilution of 1/20 At the end of five weeks the agglutinating power of the recipient's serum for A cells had increased further and agglutination occurred in a dilution of 1/200. Four weeks later the titre had fallen to 70 (the titre being expressed as the reciprocal of the greatest dilution in which agglutination is noted) Ro suggests that the recipient's serum contained only a hæmolysin for A cells before the transfusion and that the introduction of A cells stimulated the production of an agglutinin In any case, it seems clear that the agglutinin titre rose rapidly during the period following the transfusion

Wiener (1941) has published details of 2 cases, both of which had been referred to previously (Wiener 1939) The first patient, of group O, received 500 c cm of group B blood Six hours after the transfusion, which was followed by a rigor and hæmoglobinuria but no serious sequelæ, it was observed that whereas the titre of the anti A isoagglutinin was 32, that of the anti B agglutinin was as low as 1 Further estimations were made at short intervals, and it was found that while the titre of the anti-A isoagglutinin remained constant, that of the anti B agglutinin rose steadily, reaching a peak, at the thirteenth day, of 512 The same figure was found when the serum was re titrated on the twenty fourth day after the transfusion. The other case was less closely observed Six days after the transfusion of incompatible blood (of group AB, the patient belonging to group A), it was found that the titre of the anti-B agglutinin was 128, and eight days later 256 It is concluded that these changes represent an absorption of isoagglutinin by the injected agglutinogen followed by an immune response to the foreign agglutinogen

In only one of these 3 cases were frequent titrations of the recipient's serum carried out and in that observations were only extended up to the twenty-fourth day after transfusion. It may therefore be of interest to record the following case in which, after the transfusion of incompatible blood the isoagglutinins in the serum of the recipient were repeatedly titrated and the changes were followed for some months The results obtained are in substantial agreement with those of Ro and Wiener, but changes in the "other agglutinin" were also found —i e after the transfusion of group B blood to a person of group O not only was the titre of the anti-B agglutinin affected but also that of the anti-A agglutinin These changes were traced to the use of a serum of group different from that of the patient

CASE-RECORD

A married woman aged 32, was admitted to hospital at 1 A M on Sept 16 1940 half an hour after receiving injuries caused by a high-explosive bomb The injuries were mainly due to falling masonry and included fractures of both legs She was found to be "shocked" and was treated with warmth, morphia and the transfusion of blood and plasma After receiving 540 c cm of citrated stored blood 3 days old (equal to 360 c cm whole blood) and 250 c cm of pooled plasma, she improved sufficiently for the doctors in charge to leave her for the night Next morning it came to our notice that the bottle of blood that had been given was not of group O, as had been assumed, but of group B The patient was visited by us for the first time at 10 A M some eight hours after the transfusion had been given She was then in a very poor condition Her lips and nails were ashen grey and her skin very cold No pulse was palpable at either wrist or over either brachial artery and no sounds could be heard at the latter site on auscultation We were told that although no untoward symptoms had occurred during the transfusion, no great improvement had followed, the patient's condition had deteriorated since, particularly during the last three hours

After a preliminary intravenous injection of 150 c cm of 3% sodium citrate, 1500 c cm of pooled citrated plasma, 100 c cm of four times normal reconstituted serum and 2 pints of citrated blood (group O) were transfused The clinical condition improved steadily throughout the transfusion and four hours from the beginning of this treatment, when all but the last 500 c cm of blood had been given, the blood pressure was 116/80 mm Hg and the extremities had become quite warm

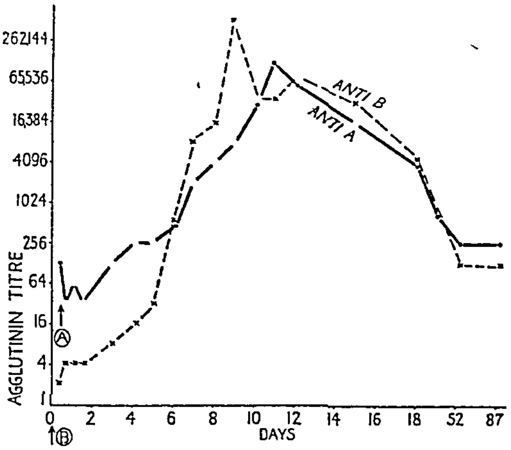

Fig 1—Changes in titre of serum isoagglutinins after transfusion of (1) group B blood (at B), (2) concentrated serum of group A (at A) Recipient was group O

A quarter of an hour after the preliminary intravenous injection of alkali the patient was catheterised and 95 c cm *of blood stained urine was* withdrawn The urine was slightly acid to litmus and had probably all been formed many hours previously, since the blood pressure was still unrecordable at this time Very many red cells and some leucocytes but no casts were found in the centrifuged deposit of this specimen, the supernatant fluid only contained 0 7% hæmoglobin (Haldane) The patient was catheterised again at 12 45 P M, when 170 c cm of urine was withdrawn, this was neutral to litmus On centrifuging, it was apparent that the red colour was due almost entirely to red blood-cells, the supernatant fluid containing only a trace of hæmoglobin as measured by the benzidine test

A venous sample was first obtained eight hours after the initial transfusion and the findings were hæmoglobin 66%, serum bilirubin 2 mg per 100 c cm serum proteins 4 3%, blood urea 55 mg per 100 c cm, blood group O Microscopical examination of a suspension showed fair sized agglutinates which were not increased by the addition of anti A or anti B serum A sample of serum was obtained at the same time and titrated with A and B cells from the donors normally used by this laboratory The technique employed is that recommended by Taylor and Prior (1938), the end point is read microscopically and clumps of 3–5 cells are taken as evidence of agglutination The titre of the anti A agglutinin was 128 and of the anti B only 2 (see fig 1) At 12 45 P M, after the patient had received 1500 c cm citrated plasma and 100 c cm of four-times normal serum, a second venous sample was taken and examined The hæmoglobin had fallen to 42% while the plasma proteins had risen to 4 7% The serum bilirubin was 2 5 mg per 100 c cm, and the blood urea 45 mg per 100 c cm (see fig 2) Microscopical examination showed rather bigger agglutinates than in the first smear The titre of the anti A agglutinin had fallen to 32, while that of the anti B had risen slightly to 4

After the further transfusion of two bottles of blood and 150 c cm of 3% citrate, another venous sample was obtained (5 20 P M) The hæmoglobin was now 49%, serum bilirubin 1 8 mg per 100 c cm, serum proteins 4 9% and blood urea 75 mg per 100 c cm The titre of the anti-A agglutinin was 64 and of the anti-B again 4

From the time when the patient was first seen by us, an attempt was made to measure the fluid intake and the urinary output During the first twenty four hours 3000 c cm of lemon squash containing 35 g of potassium citrate was given (as advised by Bushby and others 1940), and 2000 c cm of the same mixture was given during the subsequent twenty four hours A rather incomplete record of the fluid intake and urinary output was kept, but it was clear that there was a large negative water balance up to the eighth day, although the urinary output never fell to really low levels

The patient was visited again on the morning of the 17th, some thirty hours after the incompatible transfusion Her clinical condition was surprisingly good She was lucid and not in pain Her skin looked faintly yellow She had been catheterised at 5 A M, and 70 c cm of urine had been withdrawn This specimen contained albumin and was to litmus The sediment contained many red blood cells no casts The supernatant fluid contained only a trace hæmoglobin On this occasion the temperature was 99° F pulse rate 120 and blood pressure 116/80 mm Hg The bloo still contained agglutinates, the blood-urea had risen t 101 mg per 100 c cm, the serum bilirubin to 3 2 mg per 100 c cm and the serum proteins to 5 1% The titre of the anti A isoagglutinin was 32, that of the anti B agglutinin still 4

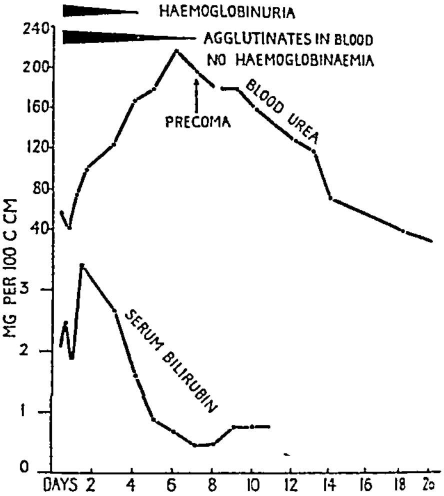

Fig 2—Findings after incompatible transfusion

On the 18th the patient was better, although the blood pressure was 136/102 mm Hg and the blood urea 126 mg per 100 c cm The serum bilirubin had fallen a little (2 7 mg per 100 c cm) A smear of the blood showed only a few small agglutinates The titre of the anti B isoagglutinin had risen to 8 and that of the anti A isoagglutinin to 128 The urine was alkaline to litmus, and the sediment contained a few red blood cells and pus and epithelial cells, but once more no casts During the past twenty four hours she had passed only 10–20 oz of urine, compared with a fluid intake of 80 oz

Until the 22nd (the 7th day) the patient appeared to improve steadily, despite a consistently raised diastolic pressure and a steadily mounting blood-urea During this period agglutinates were found in the blood but they became progressively smaller and actually were last seen on the 23rd From the 18th onwards the titre of both anti A and anti B isoagglutinins rose steadily, and, as will be seen from fig 1, reached very great heights during the period Sept 24–27 (9th to 12th days) Between Sept 23 and Oct 11, when the titrations were read, it was noted that hæmolysis occurred in the first or first and second dilutions with both A and B cells

On Sept 23 the patient was much worse She was very drowsy, her respirations were deep and there was a heavy brown fur on the tongue she was considered to be in precoma The blood-pressure was 150/100 mm Hg On this and the subsequent two days the patient was made to sweat profusely by giving Dover's powder and aspirin and heating her with electric blankets, &c Whether as the result of the sweating or not, she was much better on the 24th, and the urinary output increased from this day onwards On the 25th the improvement was maintained and the blood pressure had fallen to 136/80 mm Hg From this time onwards, recovery was uneventful from the medical point of view

During the ten days after the transfusion, two attempts were made to perform renal function tests Neither was wholly satisfactory, but both revealed an unequivocal degree of impairment of renal function On Sept 21 the clearance wa 18% of normal and on the 26th, 30% (van Slyke) On the 26th the urine contained a trace of albumin and a few epithelial and granular casts The urea clearance test was repeated on Oct 4 and was then 50% of normal

Further examinations of the serum were made during the following months A slow reduction in the titre of both isoagglutinins was found From the abnormally high levels reached two weeks after the transfusion the titres gradually fell towards normal

DISCUSSION

The changes in the titre of the anti-B isoagglutinin will be seen to be of the same nature as those described by Wiener; they consist of an initial reduction, presumably due to an absorption by the transfused group B blood, followed by a big increase, presumably representing an immune response. The first specimen in our case was obtained eight hours after the transfusion and thus may be compared with the first specimen in Wiener's case, obtained after 6 hours. The titre of the anti-B isoagglutinin was found, as in Wiener's case, to be extremely low. Thereafter there was a steady rise in titre, and the peak was reached on about the eighth day (not before the thirteenth day in Wiener's case). The extent of the rise, however, seems to have been much greater in this case even when allowance is made for individual differences in the reading of serum titrations. Thus in our case agglutination with B cells could be detected in a dilution of 1/500,000 compared with the figure of 1/512 given by Wiener. Wiener (1941) has recently stated that with the technique that he employs the average isoagglutinin titre is only 16–32. In this laboratory, using the technique referred to above, rather higher figures are obtained (average 64–128). This difference in the normal end point is insufficient to account for the much greater rise in titre observed in our case. The slow return to a normal level is in accord with Ro's observations.

The changes in the anti-A isoagglutinin—a small initial fall followed by a large rise—at first seemed to be a non-specific response to the injection of the group B blood. Then, however, a more convincing explanation suggested itself. At the time when these observations were made, Aubert, Boorman and Dodd, of this laboratory, were engaged in confirming and extending the work of Schiff (1924), an account of their work is in the press. Schiff first demonstrated the presence of the group-specific substances in soluble form in the serum and postulated an equilibrium between the concentration of agglutinogen in erythrocytes and serum. With this fact in mind, it seemed likely that the rise in the titre of the anti-A agglutinin might have been due to the injection of group A substance in either the plasma or serum that had been transfused in the course of treatment. The plasma, however, was taken from a pool of different groups. It has been demonstrated that this plasma is virtually free of agglutinins, and it may therefore be safely assumed that it only contains traces of the corresponding agglutinogens. The serum, on the other hand, was found to be of group A and had not been pooled. Soon after we had made these observations, Aubert and his colleagues demonstrated that it was possible to produce an immune response in man to the agglutinogen contained in serum of groups A, B or AB. This latter work was carried out with Seitz-filtered human serum. Since the serum injected in our case was a four-times concentrated solution, reconstituted from dried serum * which had been Seitz-filtered before drying, we tried the effect of injecting similarly prepared serum of group A into two people of group O. The results are given in fig. 3. As will be seen, after a small fall, the titre of the anti-A agglutinin rose considerably. Thus a satisfactory explanation for the changes in the titre of the anti-A isoagglutinin in the patient who also received group B blood was reached.

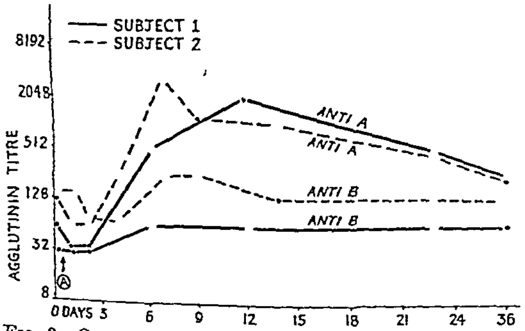

FIG. 3—Control experiments. Changes in titre of anti A agglutinins in two patients of group O after the transfusion of 100 c.cm. of four times normal concentrated human serum of group A, reconstituted from the dried product. The serum had been Seitz-filtered before being dried. Transfusions given at A.

It will be noted that the rise in titre of the anti-A isoagglutinin was also very great and considerably exceeds that of the two "controls." It also exceeds that produced by Aubert in any of his experiments (personal communication). The fact that the rise in titre of both agglutinins was so large suggests the possibility of some non-specific stimulation in each case. Aubert has noted slight changes in the anti-A agglutinin after the injection of the B agglutinogen in B serum and vice versa. Further, it is well known that the naturally occurring anti-A or anti-B agglutinin in the serum of some rabbits is often much increased after the injection of OM or ON cells to produce anti-M or anti-N sera. Davidsohn (1938) has pointed out that the isoagglutinin titre of human serum is increased after the induction of serum sickness. In view of these observations it seems reasonable to suppose that some reciprocal non-specific stimulation may have occurred between the one antibody response and the other.

Before this explanation for the changes in titre of the anti-A isoagglutinin had suggested itself, the recipient's serum was tested for the presence of anti-M and N agglutinin, in case their production had been stimulated. No anti-M or anti-N antibodies were found.

As has been mentioned, agglutinates were detected in the recipient's blood-stream up to the seventh day after transfusion. Only until the day after the transfusion, however, were these agglutinates fair-sized. From this day until the seventh only a few small agglutinates persisted, but even on the seventh day a few clumps of five cells were seen. No clumps could be detected on the eighth day or later. Burnham (1930) found some donor cells remaining in the recipient's blood stream on the third day, but none on the sixth day, after the transfusion of incompatible blood. Wiener and others (1941) in another case found that all but a few of the incompatible cells had been eliminated two days after transfusion.

The rise in serum-bilirubin is a typical finding and is too great to be attributable to the transfusion of stored blood per se. In our experience the transfusion of blood previously stored for three days with a citrate-saline-glucose solution normally leads to only small transient increases in the serum-bilirubin of the recipient.

From the clinical aspect the case adds nothing to existing knowledge of the syndrome of renal insufficiency after the transfusion of incompatible blood, particularly because of the complicating factor of severe injury. As Grant and Reeve (1941) have recently pointed out, there is as yet no precise knowledge of the circumstances in which renal function is disturbed in air-raid casualties.

The passage of many red cells in the urine may have been due to a contusion of the left kidney, since that side of the body was very bruised.

It is interesting to note that there was no immediate reaction to the transfusion—540 c.cm. of citrated stored blood (containing 360 c.cm. whole blood) was transfused in approximately thirty minutes, but no untoward effects were noted. The temperature, however, was not recorded. Others have noted that the transfusion of incompatible blood is not necessarily accompanied by any obvious immediate reaction (Grove and Crum 1930, Wiener and others 1941).

The progress to uræmia and then to recovery was very similar to that of some of the cases described by Bordley (1931), and the final outcome was in close accord with his observation that no patient receiving less than 350 c.cm. of incompatible blood died.

Knowledge of alterations in the titre of the affected agglutinin, after the transfusion of incompatible blood, has important practical applications. First, if after a hæmolytic reaction, cross-matching is repeated with serum obtained from the recipient within a day or two of transfusion, a false negative result may be obtained owing to the temporary suppression of the agglutinin concerned. Secondly, when the donor cannot be traced, serial titrations of the recipient's serum will decide whether or not the blood given contained an incompatible agglutinogen. Thirdly, cross-matching repeated on the

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* From the Medical Research Council's serum drying unit at Cambridge.

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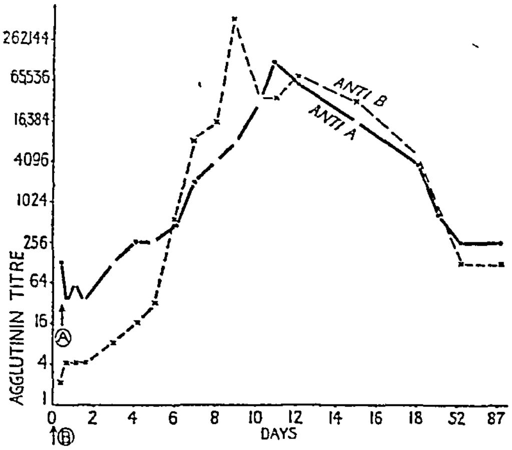

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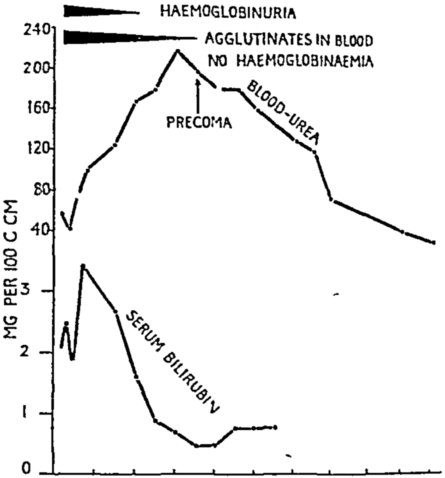

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Further examinations of the serum were made during the following months A slow reduction in the titre of both isoagglutinins was found From the abnormally high levels reached two weeks after the transfusion the titres gradually fell towards normal vided between ligatures. There was no wound in the lung. d the pericardium was now inspected—it was tense and lue—cardiac pulsations were only barely palpable on its urface and no wound could be found. An exploring needle as inserted and blood was withdrawn. The pericardium as accordingly opened and about ½ pint of blood escaped ith a rush; the anæsthetist immediately reported a considerable improvement in the quality of the pulse and the eart could be seen beating freely. In spite of careful earch no bleeding point could be seen on the surface of the eart or on the pericardial walls and it was decided to close he chest. The pericardium, incised as it was for about 3 in., was left wide open and the pleura was drained. The chest was now closed. One pint of blood was given on the patient's return to the ward.

The next day the man's condition was fairly good, but his mental state was unsatisfactory. About 10 oz. of blood-stained fluid had drained from the tube when the patient pulled it out and it could not be reintroduced. Repeated aspirations were done and a fortnight later an empyema was drained under local anæsthesia. By the end of October the patient was in a poor way; he had air hunger, his respirations were laboured, the temperature was swinging and the pulse-rate was 140. Radiographs showed the pericardial shadow to be greatly enlarged in all diameters, and on screening restricted cardiac pulsations were seen. A diagnosis of suppurative pericarditis was made. On Oct. 29, 1938, pericardiotomy was done under local anæsthesia. An incision 3 in. long and parallel with the left lower border of the chest was made, beginning at the chondroxiphoid junction and extending downwards and laterally. The 7th left costal cartilage was removed and the perichondrium deep to it cut away. This exposed the internal mammary artery which was divided between ligatures. Dissection was carried out in the chondroxiphoid angle and the surface of the pericardium, tense and pale, was found. Owing to the position of the incision there was no risk of damage to the left pleura. The pericardium was opened and a profuse flow of thick pus came out in jets synchronous with the heart beat. A finger was inserted into the pericardium and "bread and-butter" adhesions, such as can be found in old empyemata, were felt and separated; more pus escaped. A drainage tube was placed down to the pericardium and the patient was nursed sitting upright to facilitate drainage; 2 pints of blood were given immediately. Saline irrigations carried out twice daily allowed a profuse discharge of pus to escape. The temperature settled and the general condition improved. A pure streptococcal culture was obtained from the pus and sulphanilamide was given to control the infection. The patient was discharged to a convalescent home on Dec. 14, 1938. On Nov. 8, 1939, he returned for incision of an abscess at the site of the original wound. This cleared up without any trouble. He had been on full work for the last 8 months as a packer in a furniture factory and had noticed no ill effects as a result of his pericarditis.

THORACO-ABDOMINAL WOUND PENETRATING THE RIGHT VENTRICLE

CASE 4.—A coloured man, aged 25, was admitted on Nov. 12, 1938, to the Groote Schuur Hospital suffering from a stab wound in the left side of the chest, through which 3 in. of omentum projected. It was thus evidently a thoraco-abdominal injury. The patient was in good condition and operation was undertaken 2 hours after admission. Under open ether anæsthesia, an incision in the 7th interspace about 10 in. long with its centre surrounding and excising the original stab, which was in the mid axillary line, was made. The chest was opened and the neurovascular bundle beneath the 7th rib was tied off after it had been under-run. A rib-spreader was introduced and the hole in the diaphragm identified. This was about 3 in. long; the spleen could be seen just under the hole. A moderate amount of blood in the pleural cavity was mopped up and the lung was pulled down, examined, and being uninjured was released and allowed to retract. At this point it was noticed that the pleura had once more filled with blood and this was traced to a wound about ½ in. long on the posterior surface of the pericardium. The pericardium was then seen to be tightly distended with blood. Since it was now obvious that a cardiac wound was present I decided to close the diaphragm and not to explore the abdomen further. The omentum was returned to the abdomen and the diaphragm was sutured with two layers of continuous no. 2 chromic catgut. The left phrenic nerve was crushed as it passed over the pericardium to paralyse the diaphragm and facilitate subsequent manipulations. The rib spreader was now removed and another incision, at right angles to the first, was made extending for about 4 in. upwards and inwards; this gave an inverted T-shaped incision. The 7th, 6th and 5th ribs were cut in the line of the supplementary incision, and their neurovascular bundles divided between ligatures; it was now possible by means of strong traction to elevate a sort of flap consisting of the chest wall, upwards and outwards. The rib spreader was reintroduced. The pericardium was now opened and about ½ pint of blood escaped. The heart was delivered into the wound, but owing to its movements it was impossible to reach its posterior surface. A no. 2 chromic suture was passed through the fibro fatty tissue at the apex and this acting as a tractor, the heart was lifted out and its posterior surface exposed. A wound about ½ in. long was found on the posterior surface of the right ventricle, close to the posterior interventricular vessels and about a third of the distance between the auriculoventricular sulcus and the apex. Two sutures of no. 1 chromic were inserted and these controlled the bleeding. The traction suture was now cut, the heart returned to its place and the pericardium was left wide open. A stab wound was made in the 8th space posteriorly and a self retaining catheter was inserted. The chest wound was then closed and the patient returned to bed.

Convalescence was uneventful. The tube was removed in 48 hours and the patient left the hospital at his own request on Dec. 2, 1938. When seen 2 months later he was fit and at work again as a labourer.

DISCUSSION

These cases show variable symptomatology. Thus, 3 were shocked on admission; the fourth, who had the thoraco-abdominal wound, was in good condition. It will be noticed that case 2, though apparently shocked on arrival at hospital, had a pulse-rate of 96 which had risen to 110 on leaving the operating table. Only in cases 1 and 2 was there any profuse external bleeding, which in case 2 came in occasional jets of dark blood; this patient had a penetrating wound of the right ventricle. In the other case of right ventricular penetration (case 4) external bleeding was not noteworthy. In case 2 the heart was saved from pressure by leakage into the pleura. Cardiac tamponade, characterised by a rapid pulse of decreasing volume with absence of an apex-beat, occurred in only one patient (case 3) in spite of the fact that the pericardium communicated with the pleural cavity; here, old adhesions seem to have prevented leakage of blood into pleura.

Every case was explored along the track of the wound. The original skin incision was excised and the wounded interspace widely opened; a view of the damage was then obtained, regardless of chest-wall structures. Ribs were sectioned with shears, costal cartilages were divided with a knife and—except in case 1—interspaces were cut across between two ligatures which transfixed and tied the neurovascular bundles. The importance of this last procedure is measured by the fact that the only death in the series (case 1) was due to a leaking intercostal vessel.

In order to suture the penetrating heart-wounds in cases 2 and 4 it was necessary to steady the heart. In case 2, a finger was placed in the hole in the heart (Elkin's manœuvre 1936). In case 4, where the stab pierced the phrenic surface of the right ventricle, a suture was passed through the fibro-fatty tissue at the apex and used as a tractor to lift the heart (Beck 1926). The chest was closed quickly by bringing the ribs together with pericostal sutures. Intercostal muscles were disregarded but parietal layers were carefully closed.

Separate drainage of the pericardium invites ascending infection. It is better to leave the pericardium opening widely into the pleural cavity and to drain the pleura with a large self-retaining catheter passed into the chest through a cannula; the end of the catheter dips under water. It is possible to get a wound of the heart without penetration of the pleura (Elkin and Phillips 1931), but even in such cases it would usually be necessary to open the left pleura in order to get sufficient exposure, so that pleural drainage would entail little extra structural damage. If case 2 had been drained, the patient might have been saved many tappings and an exploratory thoracotomy. In case 3 the adhesions appear to have prevented satisfactory pericardiopleural drainage tenth to fourteenth day after transfusion is most likely to detect the presence of a weak or atypical incompatible agglutinin, since the immune response will be maximal at this time

SUMMARY

After the transfusion of group B blood to a woman of group O, changes in the titre of the anti-B isoagglutinin were observed There was an initial reduction, followed by a rapid increase, and then a slow fall to the original level These findings confirm previous observations

Similar changes in the titre of the anti-A isoagglutinin were also found These changes almost certainly represent a response to the injection of the A agglutinogen contained, in soluble form, in the group A serum transfused in the course of treatment

We are grateful to the medical officers of the hospital concerned for allowing us access to their patient and to Dr O M Solandt, then director of this depot, for helpful criticism

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STAB WOUNDS OF THE HEART AND PERICARDIUM

FOUR CASES WITH THREE RECOVERIES

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IT has been our practice to explore and do an open thoracotomy on all consenting cases of penetrating wounds of the chest admitted to our beds at the New Somerset and later the Groote Schuur Hospitals Experiences in a series of 17 cases since the procedure became standardised were detailed in a previous paper (Schrire 1940) In this report 4 cases of penetrating wounds of the pericardium and 2 of perforation of the right ventricle are described

WOUND OF THE SURFACE OF LEFT VENTRICLE

CASE 1 —A coloured man, aged 36, was admitted to the New Somerset Hospital on March 26, 1936, with a stab wound of the chest received in a drunken brawl an hour before admission The knife had entered the left 6th interspace 1 in outside the nipple line and the wound was bleeding profusely, the patient was cold and breathless Morphine, gr ¼, was given immediately and the wound was temporarily plugged with dry gauze After an hour he had recovered sufficiently from his shock to be operated on Anæsthesia was induced with chloroform and ether and continued with ether The wound was excised and the interspace opened up, to increase the exposure, the costochondral cartilages of the 5th and 6th ribs were divided and a rib retractor was inserted The lung had escaped injury and a wound, ¾ in long, was seen in the pericardium over the left auricle, no blood issued from it The wound was enlarged and it was then possible to see that there was a superficial slit on the surface of the left wall of the left ventricle which had divided the superficial fibres of the myocardium, there was no bleeding from this wound and it was left untouched Two interrupted sutures were then inserted to close the pericardium and the chest was closed No drain was used The patient stood the operation well His condition was satisfactory till the next day when his pulse rate began to rise and he died 24 hours after the injury Autopsy showed that death was due to hæmorrhage from the 6th intercostal artery which had bled into the pleura

PENETRATING WOUND OF RIGHT VENTRICLE

CASE 2 —A coloured man, aged 46, was admitted to the New Somerset Hospital on Feb 27, 1937, having been stabbed with a kitchen knife half an hour before admission examination in the casualty department a wound ½ in and transverse in direction, was seen 1 in inside and 1¼ above the left nipple He was much shocked The rate was 96 A probe inserted into the wound could not made to enter the thorax The pulse remained steady 2 hours, during this time occasional profuse jets of blood issued from the wound Physical examination showed a complete absence of breath sounds and dullness of the left side of the chest No heart sounds could be heard on the left side but distant sounds were found behind the lower half of the sternum With 1% procaine as a local anæsthetic an incision 4 in long was made in the line of the 5th rib and the small skin wound was excised The 5th costal cartilage was found to be severed in an oblique direction and 3 in of it and of the 5th rib were resected A hole in the pleura about 1¼ in long was found and enlarged The left lung was seen to be partially collapsed but every now and then the patient would take a deeper breath, or cough, and the lung would be forced into the wound A slit on the anterior surface of the pericardium was now seen from which dark blood welled up and overflowed into the pleura which contained about a pint The flow from the pericardium was intermittent, occurring about three times a minute The wound in the pericardium was enlarged and a hole was found in the right ventricle ½ in to the right of the anterior interventricular vessels From the hole in the heart, which was ¾ in long and transverse in direction, dark blood issued in large jets synchronous with the heart beats My left forefinger, placed in this wound, controlled the bleeding I decided to enlarge the opening in the chest wall, and, as the patient would not keep still and the hæmorrhage was under control, open ether was given Using the right hand, I prolonged the skin vertically downwards for 3 in along the left border of the sternum and divided the 6th left costal cartilage The rib spreader was now introduced and a good view of the pericardium and heart was obtained A curved needle with no 1 chromic catgut was now used to put in the first suture through the middle of the cardiac wound and this was tied fairly loosely so as to approximate, but not tear through, the wall of the ventricle Using this suture as a guy, five more interrupted sutures were inserted and the bleeding was stopped The pericardium was then closed with three interrupted catgut sutures The lung was found to have escaped injury and the pleura and chest musculature were rapidly approximated after the neurovascular bundles had been transfixed and ligated The skin was then closed No drainage was employed Once the suture of the heart itself was completed the ether was discontinued and the closure was done while the patient was recovering The patient left the table in good condition with a pulse rate of 110

Convalescence was long and trying The superficial part of the wound became infected and was treated with hot fomentations, a pleural effusion, which fortunately remained sterile, developed in the left pleura and required frequent tapping and one small exploratory operation with negative findings Several blood transfusions helped to maintain strength The patient was discharged to a convalescent home 3 months after admission He was seen a year later in good condition and was in full work

WOUND OF PERICARDIUM AND PLEURA, CARDIAC TAMPONADE

CASE 3 —A coloured man, aged 21, was admitted drunk to the Groote Schuur Hospital on Oct 3, 1938 He had been stabbed in the chest an hour before, and was cold, clammy and shocked, the casualty officer noticed that the pulse was small and rapid and the respirations shallow The wound 1 in from the right border of the sternum in the 5th interspace, did not bleed to any unusual extent Under observation, the pulse became imperceptible and his general condition steadily deteriorated while the apex beat was neither visible nor palpable Cardiac tamponade was diagnosed and the patient was operated on an hour after admission He was wildly excited and quite uncoöperative, and anæsthesia was induced with C_2E_3 and maintained with nitrous oxide, oxygen and ether The chest was opened by a vertical incision which ran parallel and 1 in lateral to the right border of the sternum, and the original wound was excised Three costal cartilages were resected to improve the exposure There was some blood in the pleural space, but owing to dense old adhesions the lung had not retracted and it was necessary to separate the adhesions by means of sharp dissection in order to get a working space, the internal mammary artery was

THE LANCET

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REST FOR INFLAMED TISSUES

Nature's method of healing has never altered, it is our technique of how to assist her that changes. Rest has always been the most natural ally of the vis medicatrix naturæ on which all healing depends. A long line of "Menders of the Maimed" in British medicine—Hunter, Hilton, Hugh Owen Thomas and others—taught that inflamed tissue is capable of dealing with its enemies unaided if kept at rest. But there are varying degrees of rest. To lie in bed does not necessarily keep the whole body at rest, the many splints are not always effective, and any fixation by traction will exert a pull on diseased structures. There is no doubt, however, that strict local rest of the injured part is obtained by the closed-plaster treatment of infected wounds. Thomas and many others would not use plaster because they felt that it impeded the circulation in the diseased part. But a properly applied plaster supports rather than constricts the vessels of supply. The comfort of the patient in plaster is our surest proof. Muscles are tissues with high vascular demands, and, as we know from Volkmann's contracture, when there is compression of the main vessel the muscle will die long before there is skin involvement, and any shortage in its blood-supply is soon demonstrated by exquisite pain. In the resting limb the maximal blood-flow is determined to a great extent by the diameter of the larger supplying arteries. A good blood-supply, and therefore an intact major vessel, is the sine qua non of the closed-plaster method of treatment. As Trueta has urged, if the blood-supply of the limb is jeopardised either by trauma or operation, treatment in closed plaster is to be avoided. A trickling stream will provide special opportunities for the flourishing of organisms, especially anaerobic, and against these early operative interference is our most useful aid.

The theoretical basis of the closed-plaster treatment is by no means fully understood. Exactly how does a plaster prevent the spread of infection? Sampson Gamgee believed that pressure on a wound directly benefits the development of the cells in it by preventing degeneration and vacuolation; Winnett Orr ascribed a special virtue to the soft paraffin with which he packed the wound; Albee suggested that bacteriophage is produced under the plaster; and Garcia Alonso maintained that a sort of civil war among the various types of bacteria confined under the plaster prevents the domination of pyogenic organisms. Probably all these views hold something of truth, but the experimental work of Barnes and Trueta[1] offers the most likely explanation of the success of complete immobilisation. The flow of the lymph is the clue. It has long been known that the capillary endothelium of the blood-vessels is resistant to bacteria and that infection reaches the blood-stream via the lymphatic circulation. Anything that diminishes the flow in this lymph will therefore help to localise the infection, and Drinker showed and Barnes and Trueta have confirmed that if a limb is immobilised the flow of lymph almost ceases. It apparently does not cease completely for, as Cressman and Blalock[2] point out, transmitted arterial pulsations probably produce some slight movement of lymph. This movement Clark and Clark[3] describe as a "bobbing" back and forth synchronous with the heart beat or respiration, with only a sluggish forward movement. Besides the lymph-trunks, which via the glands lead to the blood-stream, the lymphatic system consists of a network of anastomosing, interlacing vessels. Thus, if there is movement, not only does the lymph carry bacteria to the lymph filters, and on rare occasions to the blood, but local spread takes place because infection is squeezed into the lymphatic meshwork. Barnes and Trueta demonstrated experimentally that manual compression of the muscles produces no increased flow in the lymph-trunks but that full joint movement does greatly increase the flow. Hence the importance of immobilising the joints above and below an infected wound. Immobilisation has, of course, other important functions. It protects the frail capillary endothelium, which tears readily and waits with pouting mouths for further organisms. A dressing with the gentlest hands is then like the tramplings of an elephant's feet. Gamgee knew the importance of support for tissues which through bruising, incision or œdema have lost their natural elastic support. Dickson Wright taught the same in the treatment of varicose ulceration, where he showed that lack of support interfered with the blood-flow and that even pressure was the surest way to get the best blood-supply and healing. Winnett Orr recognised the fragility of capillary endothelium and that is why he recommended soft paraffin. Trueta realised that, provided the limb was at rest, a multiplicity of organisms disporting themselves on the wound surface interfered but little with wound healing.

There has always been the fear of ankylosis of the associated joints when immobilisation is prolonged. For acutely inflamed joints it was even the habit in the last war to insist on the patient moving despite the exquisite pain. Over fifty years ago Thomas condemned this practice in a forcible manner when he wrote "it is as reasonable to attempt to cure a fever patient by kicking him out of bed as to benefit joint disease by wriggling at the articulation." Ogilvie[4] has said the same in discussing the treatment of wounds and sepsis of the knee-joint. He maintains that immobilisation must be continued until infection is clinically overcome, and that the joint must therefore be completely immobilised for a minimum of three weeks. The slightest movement, such as changing a plaster, will result in a flare-up, and to immobilise a knee-joint absolutely nothing less than a hip spica will do. To stretch damaged or healing tissues by early movements does not loosen them but actually results in the laying down of more and more scar tissue in the lines of strain. Where it is particularly important to avoid scar formation, as in septic

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[1] Barnes, J. M., and Trueta, J. *Lancet*, 1941, 1, 623.

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Search of the literature has shown only 10 cases of thoraco-abdomino-cardiac wounds with 2 recoveries, both recorded by Pool (1912) Case 4 is a third instance of recovery after this rare lesion

I am indebted to my chief, Mr W L Gordon, F R C S, for permission to use his beds and for moral support, and to Dr G A Elliot, Dr Arthur Landau and Prof J F Brock for assisting in the after treatment of the cases

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Reviews of Books

Lymphatics, Lymph and Lymphoid Tissue

Their Physiological and Clinical Significance C K DRINKER, M D, D Sc, professor of physiology, school of public health, Harvard University, and J M YOFFEY, M D, F R C S, senior lecturer in anatomy, University College of South Wales and Monmouthshire Cambridge, Mass Harvard University Press Pp 406 $4 00

THIS book, appearing at a time when the behaviour of the lymphatics is exciting a good deal of attention, records what is known and indicates what is yet unknown about the lymph and the lymphoid tissue The first half of the book describes the composition, formation and circulation of the lymph It seems clear that, while proteins and particles, including bacteria, may escape from the blood capillaries together with fluid carrying solutes, only solutes with variable amounts of fluid can return again through the capillary wall Protein molecules and particles, with the remainder of the fluid, must make their way back to the circulation by the lymphatics The conditions governing capillary permeability under normal and pathological conditions are discussed, and there is a detailed account of the lymph flow from the various parts of the body It seems that much is known about the lymph flow from some organs and regions of the body and hardly anything about the flow from others Much work on lymph flow has been done in Professor Drinker's own laboratory

Experiments have resulted in lymph being obtained from several of the less accessible parts of the body In connective tissues the lymphatics seem to be relatively permeable, particles and proteins entering them with ease and rapidity From mucous and serous surfaces, fluids and the smaller protein molecules readily enter the lymphatics, whereas the larger proteins and particles as a rule do so only very slowly Absorption from the nasal cavity has been studied in great detail, and an account is given of the passage of virulent bacteria and viruses from the nasal mucosa into the cervical lymph The authors think it almost certain that substances will only pass through the cribriform plate from within outwards They believe that the lymph, and in particular the lymphocytes, may play an important part in the dissemination of viruses throughout the body Although the vaccinia virus, which is pathogenic for rabbits, can be isolated from the cervical lymphatics soon after instillation into the animal's nose, it is apparently impossible to detect the virus of poliomyelitis in the lymph after it has been dropped into the nasal cavities of monkeys

Factors controlling the flow of lymph are discussed at length In the limbs, at any rate, the flow is more or less independent of the production of lymph, the formation of lymph depends on capillary permeability, but the removal from the tissues of the fluid so extruded depends almost entirely on extrinsic factors such as movement, massage and posture The authors maintain that lymph and tissue fluid are identical, but it is not clear how much of the fluid actually exists free among the tissues

The second part of the book reviews the many theories which have been brought forward to explain the functions of lymphocytes and lymphoid tissue The mystery remains complete, but the summary of a very extensive literature is an able one It is interesting to learn that phylogenetically the lymphoid tissue has quite a separate origin from the lymphatic vessels The authors go to some lengths to emphasise their belief that the l play a very small part in the reduction of œdema limbs It is difficult to agree with them since, as point out, it has been clearly shown that the lym in œdematous areas are held widely open, thus flow of lymph along them would be greatly ai by movements and pressure so slight as to produce increase of flow in a normal limb Again, the rea not left with a clear idea of the view the authors about the part played by the lymphatics in the fight against infection

Sick Children

(4th ed) DONALD PATERSON, M D Edin, F R C P London Cassell and Co Pp 610 15*s*

THIS is one of the smaller handbooks of children diseases, but it is unusually comprehensive To tak two examples, mental tests suitable for various age are printed in an appendix, and there is a set of radio grams showing the ossification of the wrist and hand from birth to the age of fifteen The index is fairly good and the illustrations are excellent A number of items are frankly abstracts, references to the originals being faithfully given, and the effect of authenticity thus produced is maintained by the practical tone of the whole book

Textbook of the Practice of Medicine

(6th ed) Editor FREDERICK W PRICE, M D Edin, F R C P London Humphrey Milford, Oxford University Press Pp 2032 38*s*

AFTER many war-time vicissitudes the new edition of this well-established textbook has at last appeared Revision, though widespread and on the whole adequate has been mainly in detail, such innovations as the sulphonamide group, the newer insulins, chest-leads in electrocardiography, and rupture of the intervertebral disc have been introduced The two war years which have elapsed since the last edition appeared have witnessed comparatively few advances in medicine, but it is somewhat surprising to find no reference to the medical aspects of poison gases or of shock, and a section on military medicine would not have been out of place More space is allotted to visceroptosis than to either carcinoma of the stomach or jaundice and the Meulengracht diet is dismissed in a few scathing words The section on diabetes mellitus is more likely to confuse than enlighten the reader, and perhaps the editor should have made it clearer that his own views on primary cardiac strain are unorthodox Of the 99 illustrations all but 22 (of which at least 2 could have been spared) fall in one section These are minor criticisms and the new edition is well representative of the teaching of the London medical schools

Second Yearbook of Research and Statistical Methodology

Editor O K BUROS New Jersey The Gryphon Press Pp 383 $5

IN this second venture, which in minor ways is a great improvement on the first, the editor lists 390 books, written in English and published since 1933, which deal with statistical methods, scientific method, social relations of science and similar subject together with selections from the published reviews of them Any such list is clearly helpful to the research worker, the teacher and the taught, but the value of "evaluative comments" contained in reviews is open to some doubt, reviews of the same book being often laudatory, derogatory or vacuous according to the school of the reviewer Many reviews deserve no further publicity than they originally received, though Mr Buros rather optimistically hopes that his reproduction of them will stimulate editors and reviewers to do better Given sufficient help and money he would like to extend his field to books in other languages and to non critical and critical abstracts of the literature on research and statistical methodology This might be of greater benefit to interested workers than the present pages of extracts from many reviews of the same book Incidentally, the index of names leaves much to be desired, the page reference being to the book listed Mr A, therefore, is mentioned in connexion with book no 20, but since references to book no 20 occupy 11½ pages it takes Mr A some time to learn what is said of him or what he said of it rting with 13–27 mg per 100 g has this amount luced to 1 or 2 mg—a worthless amount Kale ffers a reduction from 155 mg to 7, this making it most useless as a source of vitamin C, though still luable for vitamin A and probably for calcium and on There can be little doubt that similar facts ould be discovered with other sources of vitamin C ich as swedes, turnips and spinach

None the less, the hay-box used with discretion is an xtremely valuable addition to cooking appliances ven in peace-time and may be invaluable in war-ime It will cook most vegetables, stews, meats for oiling, and most cereals and milk puddings, though it s not very successful with rice And foods left to ook in it are usually hot even after a lapse of 6 hours lepending on the efficiency of the heat insulation and he initial volume of the food The discretion necessary can be taught and learnt unfortunately only by hose with a modicum of dietetics and a knowledge of where to turn for information It is a gross pity that there is a dearth of trained dietitians to educate the public in hay-box and other cookery, and that, though the need has been outspoken for the last decade and more especially since the war began, little or nothing has been done by any ministry or public educational body to supply such teachers

IMMUNITY TO TETANUS

Tetanus is, like gas gangrene, a rare infection in civil practice, both need the opportunity of wounds peculiar to warfare if they are to flourish The deep penetrating wound soiled by infected earth or clothing and left unattended for twenty-four hours or more provides the ideal conditions for the anaerobic growth of *Clostridium tetani*, and it was only when such wounds were surgically excised and the patient given prophylactic tetanus antitoxin that the incidence of tetanus in the 1914–18 war was reduced from 8–9 per 1000 to less than 1 per 1000 Since then, active immunisation with tetanus toxoid has passed from the experimental stage and the protection of army horses against lockjaw to its clinical application for the protection of the armed forces Boyd[1] showed that immunity to tetanus, taking 0 01 unit of antitoxin per c cm as the effective lower limit could best be obtained by giving two injections each of 1 c cm of tetanus toxoid at an interval of not less than six weeks The injections produce little or no upset, the only undesirable complication is the rare occurrence of an anaphylactoid reaction after the second dose, apparently due to a protein derivative in the culture-medium,[2] and readily countered by an injection of adrenaline That this risk is very rare is borne out by the absence of systemic reaction noted by Peshkin[3] in the immunisation with alum-precipitated diphtheria and tetanus toxoid of 186 allergic children

The efficacy of Boyd s method of immunisation was largely substantiated by the absence of tetanus among the 80% or so of the B E F in France who were actively immunised for circumstances prevented a large proportion of the wounded from getting in addition the recommended dose of tetanus antitoxin[4], yet cases of tetanus were reported only among those who were not actively immunised Confirmation of Boyd s preliminary work has lately come from two sources in this country Marvell and Parish[5] who recommended intramuscular rather than subcutaneous injection, found that in 116 persons given two 1 c cm doses of tetanus toxoid at an average interval of six weeks the titre was less than 0 01 unit per c cm in only 13 out of 187 blood-samples tested at intervals ranging from one to nine months after the second injection, 11 of these 13 samples were examined six to nine months after the second dose It was noted that women responded better to immunisation than men, whereas staff (stablemen and technicians in the tetanus laboratory) whose work might bring them into contact with tetanus toxin gave no better response than other male staff Those with low titres after the second dose were given a third "boosting" dose which was most effective in raising the titre if given after a long interval (seven to nine months), Peshkin noted the same phenomenon among his immunised children These findings have been substantially corroborated by Evans On another page he records an investigation of blood-samples from staff of the National Institute for Medical Research who were given two doses of tetanus toxoid at an interval of nine weeks While none of 81 subjects had 0 01 unit of antitoxin per c cm before the first injection nine weeks later a fifth of them developed more than 0 1 unit in response to the first dose, which suggests that some of them already had a low basal immunity The second injection brought every person above the 0 01 threshold, and the level of immunity noted seventeen weeks after this dose was largely maintained ten months later, Marvell and Parish, and Peshkin, on the other hand noted a waning immunity in a proportion of cases with the lapse of time Like them, Evans found that a third dose given after an interval of ten months produced a striking rise in titre Thus, the ' injection de rappel of the French given a year or so after primary immunisation, has much to recommend it, for it boosts up an already existing immunity and gives the necessary additional stimulus to those few people who do not respond to the first injections An alternative and apparently effective, method of immunisation against tetanus is that recommended by Ramon and lately supported by MacLean and Holt[6]—the combination of tetanus toxoid with T A B vaccine in two doses given at a month's interval With this combination the immediate antibody response to the tetanus toxoid was much greater than when toxoid was used alone, but the subjects were not followed up to find if the immunity was maintained Another point which is still at issue is whether it is better to give a wounded and immunised man a further injection of toxoid as French and American authorities advise or a dose of tetanus antitoxin as is the recommendation of our Army Medical Service It is conceivable that in a shocked and unattended soldier infected with *Cl tetani* the sudden liberation into the circulation of toxin accumulated at the site of injury might do irreparable damage before the host's protective mechanism could be stimulated to produce antibody in such cases artificial antibody seems desirable Where infection occurs in a healthy non-shocked person, the toxin produced in situ should provide the necessary stimulus without artificial aid from outside burns immobilisation in plaster is being used to keep the healing tissues at rest, and in the deep burn it also enables a barrier of granulations to develop which seals off important structures such as tendons and joints

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[1] Boyd J S K *J R Army med Cps* 1938, 70, 289
[2] Parish H J and Oakley C. L *Brit med J* 1940, 1, 294
[3] Peshkin, M M *Amer J Dis Child* 1941 62 9 309
[4] Perry H M *Brit med J* 1940 2, 364
[5] Marvell D M and Parish H. J *Ibid* 1940, 2 891
[6] MacLean, I H and Holt, L B *Lancet* 1940, 2 581

In the early stage of acute sepsis, except when there is lymphangitis, the use of closed plaster to secure the essential strict immobilisation does not seem desirable In the closed progressive acute lesion, where pus has still to be evacuated, the closed plaster will increase the tension in the tissues walling the forming abscess and is thus to be avoided The time for plaster only begins when effective drainage has been established The experimental work of TRUETA and BARNES shows that only in the draining, inflammatory limb will plaster cause the lymph flow to cease In the early stage of acute sepsis, therefore, strict immobilisation of the joints above and below by splintage, either by plaster slab or other material, is called for As soon as drainage is established the closed-plaster method can be applied As in wounds of war the closed-plaster method is for the open draining wound FRASER[5] has used this method in the treatment of acute osteitis, where after drilling the bone, as advocated by STARR he packed the wound and encased it in plaster DODD[6] insists on strict immobilisation in the treatment of multiple boils He thinks that any movement —squeezing, bathing or fomenting—may detach infected thrombi which may settle in the skin, or may form abscesses in the kidney, ischiorectal fossa or bone He therefore confines the patient to bed, securing rest by infrequent dressings, and by splinting (even for boils of the neck, where he uses a long back splint with foot piece for the head) and his results have been gratifying He also[7] advocates complete rest in the management of abdominal distension after operations on the gut, and most surgeons would agree that immobilisation is the principle to be followed in all forms of intra-abdominal inflammation, though they might differ as to the method by which rest is best secured—for instance, when and in what dosage should morphia be given? In the treatment of infected fingers there has also been difference of opinion about the value of immobilisation As JEAN PIERRE DAVID of Rouen wrote in 1779 "there is a time for rest and a time for motion in the treatment of most surgical conditions" Those who use plaster for wounded fingers hold that complete rest for two or three weeks does not lead to stiffness, and longer periods are harmless if the position of the fingers is changed once a fortnight When the inflammation has subsided, they say, and there is no risk of tearing capillaries or spreading infection, movement should begin

Nevertheless in all these cases the disadvantages of immobilisation, especially if long continued, must be recognised, the inconvenience of the patient must be considered and a balanced outlook maintained The theoretical foundations of the principle of complete rest have been established, and in this war its application to infected wounds has been brilliantly successful, it still remains to extend its use and define its indications for the treatment of other infections.

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[5] Fraser, J *Ibid* 1934, 2, 272 [6] Dodd, H *Ibid*, 1941, 1, 558 [7] *Ibid*, 1940, 2, 98.

THE HAY-BOX REDIVIVUS

SINCE the beginning of this century the has enjoyed a deserved reputation among conn of cookery, and also among lazy amateur cooks prefer other activities to standing over the stove It is well known that cooking is possible the boiling point of water Indeed it is doubtful if interior of a roast joint ever reaches such a te ture The juiciness, palatability and digestibility the inner cuts are largely due to this fact high-class restaurants use the plan of raising temperature of the outside of their joints to a point for a short time in the oven and then them to a place where the temperature is lower, that cooking may continue slowly for a sid time This not only produces a more tender cut is economical in that not so much of the juices of meat are lost to the exterior Cooking is much slower by these means, but much less attention is needed after the initial stage, and where time is of little consideration slowness is no disadvantage A similar principle underlies the cooking of food in a hay box. Food is brought to the boiling point and then after a few minutes' exposure to that temperature is transferred in its container to a heat-insulated box and left for hours to cook in its residual heat For many years there have been on the market "fireless cookers which work on this principle Foods are boiled in highly polished saucepans, which, when their contents are hot throughout, are removed, tightly sealed, to a metal-lined container into which the saucepans fit snugly This container is insulated from heat loss by a packing of kapok, asbestos or some other non conductor of heat Some hours later, when the container is opened, the food is found to be admirably cooked and may still be smoking hot and ready to serve An amateur apparatus can easily be constructed from a packing case with hay as the non-conductor, using a weighted cushion also stuffed tightly with hay as a lid Hence comes the term "hay-box cookery" for all such methods of preparing food for the table

Hay-box cookery comes to the fore in war-time It saves fuel It needs little attention It releases a person for other duties When, as at present, married women are at work on munitions, it may solve the problem of the hot meal on the return home at the end of the shift Also foods can be cooked overnight so that little preparation is needed in the morning before an early start for the works Earnest amateurs therefore rush in to instruct the working-classes in hay-box cookery, and this naturally arouses the inhibitory instinct of other earnest amateurs who a "What about killing (sic) the vitamins?" The hay box has sundry disadvantages The home made apparatus is not easy to make or to keep sweet and there is a considerable destruction of vitamin C varying with the length of time the foods remain in the box Experiments on brussels sprouts, kale and potatoes show a diminution which in the two last named is really serious Brussels sprouts, with 123 mg per 100 g in the raw state have this reduced to 66 after boiling for 15 minutes Two hours cooking in the box, after this, reduces the amount to 29 and six hours to 24 The sprouts have thus lost two thirds of their original content, though even so they are still a valuable source of vitamin C The potato, other occupation without training Information about ir capacity, obtained from the hospital, will be passed their local employment exchanges and they will be vited to seek help there if they find difficulty in getting nployment

The Ministry recognises how important it is for the man achieve the fullest possible physical restoration both uring the time he is in hospital and when he begins ork, and that if he is to keep his job when peace turns he must be fitted to do not any job passably ut one particular job better than most, and it must be job which will still exist in peace-time It may well e true, as the Minister of Labour says, that 75% of isabled people are fit to take up some kind of work gain, and that they could master many of the processes now being taught at Government training centres and echnical colleges The scheme puts such training in the orefront Since it will not be easy in such centres to give curative as well as technical training, courses are also to be provided at institutions which already have special experience of preparing the disabled for industry In addition it is hoped that some employers will agree to provide training for disabled men But there is some evidence that people who have qualified at Government training centres are not always being used, at present, on the work for which they have been trained It would need much closer supervision of the factories than is now customary to ensure that the disabled employees are never given work detrimental to their condition If a return to work produces a loss instead of an advance in power and function, it will be a disaster to the injured person instead of a benefit All this applies with special force to patients boarded out of the Army, many of whom at present flit uneasily from unsuitable job to unsuitable job before finding one within their compass, or too often lapse into the ranks of the unemployable Possibly, too, the official attitude to the question of reabsorption into industry has been too narrow, harping too much on surgical conditions, which though they cover most of the air raid casualties represent only some 20% of the conditions compelling discharge of men from the Army Medical conditions are probably responsible for almost as many incapacities among the civil population as among soldiers Nicoll[3] has discussed the rehabilitation of the injured with reference to the coal mining industry, and much of what he says holds for a range of disabilities stretching far beyond the results of injury

Mr Bevin plans that training allowances of 42*s* a week shall be paid to men, 33*s* to women, 17*s* to boys and 15*s* to girls This wide discrimination between the rates to the sexes seems scarcely necessary, since dependants' allowances are to be paid to those in training at the rate of 7*s* 6*d* for a wife and 3*s* for each child The principle of Mr Bevin's plan, however, is so good that we must hope to see it put speedily into force, minor defects can be put right once it is working

OPERATION FOR HYPERTENSION

THE experimental finding that in animals renal ischæmia will produce persistent hypertension has clinical implications which are now being explored At a combined meeting of the sections of medicine and of therapeutics and pharmacology of the Royal Society of Medicine on Nov 11, Prof G W Pickering gave it as his opinion that experimental results will in due course explain most of the human cases of hypertension Dr Clifford Wilson had produced renal lesions in rats by partially occluding one of the renal arteries, pathological changes were found only in the kidney with an intact circulation and were completely absent in the clamped kidney, they consisted of fibrinoid arteriolar necrosis and endarteritis with occasional involvement of the glomeruli, and closely resembled those in sections from human cases of malignant hypertension He suggests that the histological changes found in the kidney in the terminal stages of Bright's disease are produced by hypertension Since the lesions in experimental animals only affect the unclamped kidney the most obvious explanation seems to be that they are caused by the hypertension, and this suggests a vicious circle renal ischæmia leading to hypertension which in turn produces renal vascular lesions with increased renal ischæmia, and so on

In the last year or so there have been a number of reports of hypertension associated with non-nephritic kidney disease, and in cases where the lesion was unilateral removal of the affected kidney has given encouraging results Dr Robert Platt, at the same meeting described such a case in a girl of 8 who had a blood-pressure of 220/120 mm Hg and bilateral papillœdema and retinitis A year before, investigation for *Bacillus coli* infection had shown a functionless left kidney The prognosis at the time of the second examination was so grave that the affected kidney was removed and proved to be small and hypoplastic The day after operation the blood-pressure fell to 155/95 mm Hg and five months later was only 125/70 The child has remained well and has now no swelling of the discs or retinal œdema Similar cases of unilateral nephrectomy were summarised recently in our columns by Richardson and Smart,[1] who added 2 cases of their own to those recorded One of these was a case of tuberculosis of the kidney and the other of hypernephroma, in both, removal of the damaged kidney caused a dramatic fall in blood-pressure maintained for several months, up to the time of publication Barker and Walters[2] have reported successful results of operation in 5 cases of unilateral pyelonephritis All the reported cases are readily explained by analogy with experimental results, they are generally associated with occlusion of the renal artery or vein, diminished urinary outflow, or disease of the kidney substance

The biochemical aspects are being investigated by several groups of workers, intent on isolating the active substances produced by the damaged kidney and causing the rise of blood pressure Their findings up to the present were reviewed in our issue of Nov 8 (p 575) In the meantime it is evident that the renal function must be investigated in all cases of hypertension Presumably many cases of hypertension with unilateral renal dysfunction might be saved by operation, provided removal of the damaged kidney was carried out before vascular changes have been produced in the contralateral kidney An example of such a case is to be found in the report by Davson[3] of an autopsy in which one kidney showed a hydatid cyst and the other the typical histology of malignant hypertension, presumably secondary to the partial occlusion of the renal vessels of the opposite side by the growth of the cyst

It remains to be seen what proportion of cases of hypertension are due to renal ischæmia No certain correlation has been shown between non-nephritic kidney disease and hypertension, but Goldblatt's experiments do not suggest that the renal damage necessary to cause hypertension need be gross, in fact as a rule renal function is normal in his animals during experiments Slight degrees of blockage in the renal arteries of man cannot necessarily be demonstrated during life by methods so far evolved, and at present the only certain way of proving that hypertension is not associated with such minor degrees of occlusion is to wait for the autopsy report A series of such reports has been recorded by Blackman[4] who investigated the renal arteries of 50 cases of so-called essential hypertension and found the

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[3] Nicoll, E A *Brit med J* April 5, 1941, p 501

[1] Richardson, G O and Smart, G A *Lancet*, Nov 15, 1941, p 594
[2] Barker, N W and Walters, W *J Amer med Ass* 1940, 115, 912
[3] Davson, J *J Path Bact* 1941, 53, 207
[4] Blackman, S S *Bull Johns Hopk Hosp* 1939, 65, 353

Annotations

A MINISTRY OF MEDICAL SERVICES

THE demand for a reorganisation of our medical and health services grows increasingly vocal, the latest exposition being contained in a booklet[1] published by the British Association for Labour Legislation, and written by Dame Janet Campbell and Dr H M Vernon, both of whom have long experience of public administration as well as of clinical work Written mainly for the lay public, the greater part of the book is occupied by a summary of the recognised merits and defects of the health services as they exist and function at present—facts with which most medical readers are now familiar The authors agree that the main object to be borne in mind in reconstructing our medical services is to secure, for every man, woman and child in proportion to their several needs, all the medical skill, knowledge and institutional amenities available, independently of individual ability to pay for them As to method, Dame Janet Campbell apparently favours a great extension and expansion of the panel service first because it is a system in being, and secondly because it goes a long way towards satisfying the democratic case for freedom of choice She would also make it include necessary consultant, specialist and hospital services The approved societies would cease to have any connexion with the medical services, beyond accepting the doctor's certificate of sickness and incapacity—though, as a matter of fact, apart from what are now called extra benefits, there is little other connexion at the present time But the novel suggestion of the booklet is that the medical and nursing services should be altogether dissociated from the Ministry of Health, a new "Ministry of Medical and Nursing and Social Services" being set up to organise post-war medical reconstruction It may well be doubted, however, if it would be wise from a national point of view, or in the long run from the narrower point of view of the profession, to dissociate doctoring and nursing from other organised state activities which, we are coming to realise, have a direct bearing on national and personal health

SURGERY FOR SYRINGOMYELIA

WHEN the nature of a disease is imperfectly known the response to various forms of treatment carried out more or less empirically must be the principal guide to its management For this reason the paper in which Worster-Drought, Wakeley and Shafar[2] record their experience of surgical treatment in ten cases of syringomyelia is of considerable importance There are two good reasons for operation when cavitation causes distension of the cord so gross as to block the subarachnoid space One is that the pressure on the long tracts in the cord can be most effectively relieved by draining the cavity, the other is the possibility that the signs and symptoms may be due not to a syringomyelic cavity but to an intramedullary tumour It must be recognised, however, that cavitation rarely progresses to this extent —in the present series, for example, only one out of the ten cases showed signs of a subarachnoid block, though it may be added that, as one might expect, considerable improvement followed operation in this case Three other patients, however, derived similar benefit from the opening up of cavities which had neither obstructed the subarachnoid space nor produced symptoms in the legs, though changes in the reflexes did indicate some interference with the long tracts Under such circumstances the permanent clinical manifestations must be due to local destruction of the cord, while the signs which up after the cavity has been drained may be a to œdema and vascular changes in its im neighbourhood These changes seem to be the pressure within the cavity, which Worster D and his colleagues consider the most important influencing the response to surgical treatment pressure does not necessarily vary directly with the of the cavity, but should it be low little can be from operation, since signs and symptoms then entirely on destruction of nervous tissue and glial growth, neither of which can be affected by myelo Unfortunately it is not possible to distinguish between the two pathological varieties of syringomyelia —the "dry" form in which gliosis predominates and surgery is useless, and the "wet" in which cavitation is the chief feature and removal of the fluid may be beneficial In addition to draining a cavity an attempt may be made to prevent its refilling either by making the drainage opening a permanent one or by obliterating the cavity The former may be achieved by fixing silver clips to the edges of the opening, by placing muscle tissue between them, or by suturing the lining membrane to the arachnoid on each side In the present series the walls of the cavity, which had fallen into apposition after escape of the fluid, were painted with tincture of iodine in the hope that the resultant inflammatory reaction might lead to their permanent adhesion with obliteration of the cavity It is to be hoped that other surgeons will record their experience so that some estimate may be formed of the proportion of cases of syringomyelia which may be expected to benefit from operation Unfortunately it will not be possible to foretell the result in any individual case until the distinction between gliosis and cavitation can be made on clinical grounds with a greater degree of accuracy than is now possible

MAN-POWER OF THE DISABLED

AN injury which disables a man for the occupation he has been following does not necessarily incapacitate him for other useful work The Minister of Labour has prepared a plan[1] for training people disabled while on war service or in civil life and for settling them again in industry. He believes that large numbers of disabled men and women could hold good jobs on their merits and not simply because of considerate treatment For the time being preference in training may be given to war service or air raid victims, but the scheme will form the basis for a post-war resettlement scheme covering all persons over 16 disabled in road, industrial or factory accidents The value of rehabilitation is not only that it fits a man to earn his living but that properly used it can restore power to damaged muscles and joints and thus reduce disability This was proved during the last war, and remains a principle at Enham Village Settlement, it was recently illustrated by the report in our columns[2] on 40 cases treated at the Allendale Curative Workshops The Minister of Health is favouring hospital schemes for the rehabilitation of injured people, and Mr Ernest Bevin's plan is designed to work in with these scheme The patient will be interviewed by a representative of the Ministry of Labour while he is still in hospital and the choice of suitable training for him will depend on his own preference, on the nature of his disablement and on the opportunity and demand in particular trades By conferring with the physicians and surgeons in charge of the case it should be possible to arrange work within the patient's capacity, and such early contact with him should enable the ministry to plan ahead and ensure that a job is available when he is ready to take it No doubt many patients will be able to resume their former or

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[1] "National Health Services" From the Secretary, 21, Clareville Grove, London, S W 7 Pp 46 9d

[2] Worster Drought, C, Wakeley, C P G and Shafar, J *Brit J Surg* 1941, 29, 56

[1] Interim scheme for the training and resettlement of disabled persons Pp 8 From the Ministry of Labour, St James's Square S W 1

[2] *Lancet*, Nov 1, 1941, p 516

Special Articles

INJURIES AND DISEASES OF WAR

A NATIONAL PATHOLOGICAL COLLECTION

So far no steps have been taken to replace the ecimens illustrating injuries and diseases of war which as made between 1914 and 1918 and housed at e Royal College of Surgeons. These were mostly deroyed in the air-raid of May 10–11 although, as noted the college annual report, Tonks's famous pictures the facial injuries of the last war are intact. The ollege and the War Office have asked the Medical esearch Council to make a new collection and a subommittee of the War Wounds Committee has been ppointed to consider how this might be done. The hree fighting Services, the Ministry of Health, the epartment of Health for Scotland, the Royal College f Physicians of London and the Royal College of urgeons of England are represented on the subcommittee, and they hope that the whole profession will help n the task of collecting material. This should include pecimens, pictures, photographs and radiograms illustrating lesions produced by missiles, war gases, explosion gases, secondary missiles (such as fragments of masonry or debris), crush injuries, the effects of blast in air or water, and burns from any causes; there should also be material illustrating repair, infection and the results of treatment.

PRELIMINARY CARE OF SPECIMENS

The value of pathological specimens when mounted depends on discriminating choice of material, the care taken in collection and the preliminary treatment. The subcommittee offers the following advice.

Only those specimens should be chosen in which the lesions can be clearly displayed.

The collector should take every care to maintain the shape and form of the specimen during fixation, when the greatest amount of shrinkage and distortion is liable to take place. A hollow viscus or any tubular structure should be suitably packed with absorbent cotton-wool soaked in formol saline, before the specimen is immersed in the fixative. Structures such as nerves, arteries, segments of bowel or slices of solid organs should be fixed in position on a suitable frame, to prevent shrinkage, bending and distortion.

Fixation should be carried out in a convenient receptable such as a bucket (only if enamelled or tinned), a basin or a jar; the volume of the receptacle should be at least twice and preferably three times that of the specimen. This ensures that the greater part of the weight of the specimen is supported by the fluid, but cotton-wool should be placed at the bottom of the receptacle to prevent flattening. Bottles with relatively narrow necks, through which specimens would need to be forced, should be avoided. The receptacle should be covered with a lid, but need not necessarily be tightly corked.

The fixative used should be 4% formol saline. Stronger solutions do not give better fixation and tend to inhibit penetration of the tissues. In the case of solid organs, with the exception of the brain, the fixative never penetrates more than about ¼ in. For this reason all dissection and trimming should be carried out before fixation is completed.

The fixative is made up of: sodium chloride 9 g., commercial formalin (40% formaldehyde) 100 c.cm., water 1000 c.cm. Formalin solutions tend to become acid by oxidation to formic acid, and it is important that any acid formed should be neutralised. This can be done by adding a small quantity of carbonate of magnesia (mag. carb. pond.), chalk or marble chips to the stock solution, which should be stirred occasionally. The clear neutralised fluid for fixation can then be decanted as required.

The specimen should remain in the fixative until it is sufficiently hardened for safe dispatch by post to the receiving depot, where fixation will be completed if necessary. The time required varies considerably with the nature of the specimen. Small delicate specimens will be adequately fixed in a few hours, whereas larger, fatty specimens may require a week for fixation. Since glycerin and other mounting fluids are now almost unobtainable, no large scale attempt will be made at present to restore the colour of specimens. The specimens will be stored in separate containers to prevent crushing and distortion, and they will be mounted when supplies of mounting fluids are available.

For dispatch by post, a specimen should be taken out of the fixative, drained of excess fluid, wrapped in lint moistened in fixative, and covered with jaconet. The parcel should then be packed in dry wood wool or sawdust, in a suitable box. The dry packing should be sufficient to prevent leakage during transit, and the box should be clearly labelled "Pathological Specimen." A precise history should be sent with each specimen, giving the cause of the injury, treatment and clinical progress, and emphasising any pathological point that the collector regarded as important. The name and age of the casualty, the hospital concerned, and the name of the collector should be stated. The history may be sent by separate post, or in the box with the specimen, provided that the papers are protected from damage by moisture. An acknowledgment, with comments on the condition of the specimen on arrival, will be sent to the collector.

Specimens are to be sent in the first place to one of two receiving depots where they can be temporarily classified and stored. For Scotland and the north the depot is the pathological department of the University of Leeds, and specimens should be addressed to Prof. M. J. Stewart. The depot for the south is at Hill End Hospital, St. Albans, Herts, and specimens should be addressed to Prof. Geoffrey Hadfield.

MEDICAL WAR RELIEF FUND

SINCE this fund was set up just over a year ago over £34,000 has been contributed by the medical profession at home and overseas to provide immediate help for British doctors and their families to whom the war has brought financial hardship. The need is sometimes temporary but it is almost always urgent, and within a few weeks of the fund's beginning the distribution committee had made its first awards, and during its first year 44 applicants have been helped with a total call on the fund of nearly £5000. They include the dependants of 5 doctors killed on active service, 16 doctors whose homes or consulting-rooms have been damaged by bombing, 7 who have lost their practices as a result of evacuation, 8 whose incomes dropped when they joined the services or who needed help to set up in practice again after resigning their commissions because of ill health. An award was also made to the wife of a doctor who has remained in one of the Channel Islands after the German occupation. The following three cases illustrate the scope of the work.

Dr. G., a senior general practitioner, lost his life in a raid in which his house was completely destroyed. His only child was killed at the same time. The widow lost her clothing and other possessions and although the doctor's estate would eventually furnish her with a modest income she was temporarily without means. She was awarded a suitable sum as a gift to provide for her immediate needs.

Dr. M., a specialist serving in the R.A.M.C., was killed on active service, leaving a widow and child. Mrs. M. has been awarded a gift (to be administered by the Royal Medical Benevolent Fund) which will supplement her small income during the child's remaining years at school. As Dr. M.'s elderly mother had been partially dependent on him a similar arrangement has been made in her case, and Mrs. M. senior has been introduced to two other benevolent societies one of which has awarded her a small grant while the other has given more permanent assistance in the form of a small pension.

Dr. K. is an elderly consultant. His consulting rooms were bombed and destroyed with the furniture, instruments and books which they contained. The income from his practice had diminished owing to the war and although he had no debts of any magnitude neither had he the means to acquire new premises and equipment while awaiting the payment of war-damage compensation. He was awarded a substantial sum for this purpose—the greater part as a loan and the remainder as a gift.

These cases show grants to widows and dependants which have been made as gifts, but where the applicant was a doctor whose troubles seemed to be temporary part of the help was given as a loan and some of these are already being repaid. The gifts amounted to £4795 and the loans to £3040. The distribution subcommittee of the fund has worked in close cooperation with the Royal Medical Benevolent Fund and acknowledges its debt to the accumulated wisdom and experience of that body. Not only has the R.M.B.F. provided applicants with persuasive introductions to other funds which have granted supplementary awards, but it has undertaken the administration of long-term educational grants, an arrangement which will assure widows with young children of continued counsel and help when the work of the war fund is happily accomplished.

The generosity of the B.M.A. and R.M.B.F. has made it possible to keep the administrative costs of the fund for the year down to £150, or less than 0.5% of the amount extraordinarily high proportion of 86% with some degree of stenosis He also found that clinical and histological evidence of vascular nephritis was present in only 56% of cases In all 50 he found arteriosclerotic plaques in the intrarenal arteries It is noteworthy that Goormaghtigh claims[5] to have demonstrated endocrine cells, similar to the chromophil cells of the anterior pituitary, in the walls of the renal arterioles of animals and he states that during clamping of the renal artery these cells become hyperplastic If his findings are confirmed pathologists may be able to demonstrate similar cells in human kidneys from cases of hypertension

RENAL COMPLICATIONS OF CHEMOTHERAPY

HÆMATURIA is now established as an important complication of treatment with sulphapyridine and the more recent chemotherapeutic drugs The clinical picture produced has been described by Laird[6] in three stages In the first stage, hæmaturia is microscopic only and pain is sometimes present, in the second, the hæmaturia is gross and usually accompanied by pain, but clears up rapidly on withdrawing the drug and giving ample fluids, and, in the third, despite such remedial measures, there is impairment of renal function which may lead to nitrogen retention, anuria and death Treatment is straightforward, withdrawal of the drug and the pushing of fluids producing rapid improvement in cases in the first and second stages Where it is impossible to administer abundant fluids by mouth because of vomiting or unconsciousness, 4 28% sodium sulphate with 10% glucose in normal saline should be given by the intravenous drip method In the third stage, with anuria, ureteric catheterisation has proved a life saving measure Hæmaturia due to chemotherapy should be diagnosed in the earlier stages in which the simple measures are uniformly successful It results from the deposition of crystals of the acetylated compounds in the renal tract, and Lehr and Antopol,[7] investigating the influence of urine on the crystal shape of acetylated sulphanilamide compounds, observed that the characteristic urinary crystals were not formed in highly dilute urines (sp gr 1014 or less) Macroscopic hæmaturia is thus most likely to develop in patients in whom the daily urinary output is allowed to fall below 1500 c cm It can be prevented by maintaining the daily fluid intake above 3000 c cm, and it would be regrettable if the importance of this simple preventive measure became minimised by reports on the effects of the concurrent administration of alkali Sunderman and Pepper[8] and Climenko and Barlow[9] have determined that acetylsulphathiazole is more soluble in alkaline than in acid urine, while Schwartz and others[10] have demonstrated a greater number and incidence of crystals of the drug in the urines of 50 pneumonia cases treated with sulphathiazole than in 50 comparable cases receiving the same drug in similar dosage but in which the concurrent use of sodium bicarbonate had rendered the urine less acid In this investigation the urine was tested with litmus only and those giving a neutral reaction were included with those classed as alkaline, in addition, no record is given of fluid intake or the specific gravity of the urine specimens The validity of the conclusions must be viewed with reserve until the work is repeated under more carefully controlled conditions Furthermore, Loewenberg and his colleagues[11] have described a case of pneumonia, treated with equal amounts of thiazole and sodium citrate, in which acetylsulphathiazole were found, although the was alkaline Similarly with sulphapyridine evidence that the administration of alkali will not itself prevent renal complications and that sulphapyridine may crystallise out in alkaline Haviland and Bratton, in a personal Sadusk and his colleagues have stated that the of acetylsulphapyridine in urine remains essentiall same for a range of pH 3 3–7 4 and that its solubili pH 7 9 is not significantly greater

Alkalisation of the urine, then, cannot be counted to prevent renal complications during chemo and any benefit that does result from alkalis is prob due to the diuresis they produce But the requirement for adequate diuresis is an adequate flui intake We can take the patient to the water easily enough, but there is the familiar difficulty in making him drink He must have the reason for the procession glasses of water explained to him, and something can be gained by presenting the fluid in more attractive form, though even this is difficult now that citrous fruits are scarce When the patient is vomiting other routes must supplement fluids by mouth Much ingenuity will in fact be required on the part of the attendants if the necessary five pints a day are to go in, but if they are taken and retained we can be as sure as anything is in medicine that there will be no crystallisation of the drug in the renal tract

RADIOGRAPHY OF THE HEART

IN the examination of the heart radiography is still widely regarded as a poor second to electrocardiography This is partly because the latter method is older and the necessary apparatus more compact A more substantial reason however is that the information given by the electrocardiogram is usually clear cut whereas the shape and size of the heart are subject to wide normal variation according to body-weight, shape of the thorax and movements of respiration, which must be discounted before any deductions are drawn The value of radiology has recently been emphasised by Denstad,[13] whose work brings into prominence the pathological conditions which, hidden to clinical and electrocardiographic examination, can be revealed by radiology Although electrocardiographic changes and enlargement often run parallel, considerable enlargement can exist with a normal e c g, while severe changes, such as branch block or inverted T wave, may exist with little if any enlargement From the diagnostic point of view radiography is of great value in mitral disease where the characteristic murmurs may be indefinite In *auricular fibrillation* the heart is alway enlarged, and Denstad believes that fibrillation can only occur after a certain degree of dilatation has been reached In hypertension enlargement is generally commensurate with the severity of the symptoms and i a more reliable index of the prognosis than the blood pressure In this as in degenerative condition radiology is of special worth since the enlargement cannot always be determined clinically In pericarditis radiology gives invaluable information in revealing the size of the heart itself the degree of calcification and fixation and hence the advisability of operation The work of Denstad and others shows that without radiology the examination of the heart cannot be regarded as complete

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[5] Goormaghtigh N *Compt rend Soc Biol* 1939, **132**, 465, *Arch Biol* 1940, **51**, 293, *Amer J Path* 1940, **16**, 409

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[10] Schwartz, L, Flippin, H F Reinhold, J G and Domm, A H *J Amer med Ass* 1941, **117**, 514

[11] Loewenberg, S A, Sloane, N G and Chodoff, P *Ibid* 1940, **115**, 2069

[12] Toomey J A Reickle, H S and Takacs W S *J Pediat* 1940, **16**, 179 Tsao, Y F, McCracken, M E Chen Ji Kuo P T and Dale C L *J Amer med Ass* 1939 **113**, 1316 Brown, W H, Thornton, W B and Wilson J S *Ibid* **114**, 160 Sadusk, J F jun, Waters, L and Wilson D *Ibid*, **115**, 196 Smith, E, Evelyn K A and Nolan J F *Canad med Ass J* 1940, **42** 27 Wilson C L and Billingsley, O B *J Amer med Ass* 1941, **117**, 285

[13] Denstad, T *Acta radiol* 1941, suppl 40

In England Now

Running Commentary by Peripatetic Correspondents

IF the G P of the future is not to be a martyr to riter's cramp, ambidexterity must be forthwith introiced into the curriculum Certificate-writing has a eat future At present it is only in its infancy and obably does not occupy more than a quarter of the octor's working day I don't think that I am ever lled on to sign more than 35 different kinds of certicate Let's have them all in during one surgery hour s well we may) and tot them up First, then we have , a farmhand with an infected toe That's easy bviously he can't work till his toe is better so I give him weekly panel certificate In totters old B with paralys agitans He gets a pink certificate, so that I don't ave to write another one for him for a whole month h, wait a bit—he belongs to two private clubs which ay him a few shillings and he might as well have them, o I sign them for him Total so far 3 Mrs C brings n her little boy with a cough He is she tells me, on the atural deposit and produces the appropriate form—only iagnosis and initials to be written on that one Her usband has also looked in because he has broken his late, so he gets a certificate stating that he requires ental treatment In comes Miss D, she gets headches, worse after sewing or reading, and she thinks uite rightly, that she needs glasses I give her an phthalmic certificate and call for the next patient It s Mr E, big fat and elderly, to say that his truss is lmost wear'd out and he needs a new one I give him a ertificate for a surgical appliance and mop my brow otal to date 7 Mrs F has sent up her little girl with a ertificate claiming maternity benefit The nurse could ave signed this but Mrs F forgot to ask her when she as attending, so perhaps the doctor will oblige He does h, and Mrs F wants an extra milk certificate for nursing nothers and Auntie who is expecting, wants one too—0 up The wife of a sailor wants a form signed so that he can draw her separation allowance, she is followed y the wife of a soldier and the wife of an airman in imilar circumstances Total, 13 Old Mrs G and her idowed daughter Mrs H come in together Mrs G ants her O A P paper signed and Mrs H one for the idows' pension A J P lawyer, minister of religion r other responsible person could sign these, but the doctor s unfortunately so much more accessible than other esponsible persons Hello here comes young I the elegraph boy, with an almost invisible dog-bite There s a regular questionnaire to fill in about this, but it is one at last and I makes way for his father, a postman, with lumbago He can't work with lumbago poor chap, so I give him a post-office certificate 17 Mrs J's husband is a diabetic so needs a certificate for the food office, and could she have a certificate so that she may get glucose for the baby? You know how he needs glucose, doctor And you said little Charlie wasn't to go back to school till his throat was quite better—well, he school attendance officer keeps badgering her, so ould she have a note to show him No I dig in my oes If the school attendance officer won't take her word for it that little Charlie is under the doctor, let him ome and see me That settles the school attendance fficer and gets me out of writing one more certificate Ir K is still far from right in his stomach in spite of he operation which I said would cure it I didn't, but gree that he should have extra milk and write a certiicate accordingly—20 up Miss L is a nice, bright girl nd won't keep me a minute Just sign this to say that he is fit for work in the NAAFI I examine her, nswer the questions and sign Mr M is going to work n the dockyard and has a special form for me to fill in nd sign—I examine him and do so At this point the elieving officer creates a diversion by looking in to say hat old Miss N who was always a little odd, has identiied herself with Hitler, and, in a state of nature, is arranguing the delighted multitude from an upstairs window I slip out and certify her Back again, I find Ir O in great distress He lost both legs in the last ar, has mitral stenosis and has been called up The nan at the labour exchange agrees that Mr O is probably nfit for national service but must just have a line to that ffect from his doctor Mr P really does not take long He is recovering as quickly as he can from a number of bomb wounds and blast effects, but has to have a weekly certificate of unfitness to work It's all a lot of red tape, he says, but I rebuke such levity Mrs Q says that my partner has ordered her daughter to go under the X rays in hospital and she has brought the hospital-aid form for me to sign Mrs R's old father has passed away at last We agree that it's a merciful release for all three of us Even in death he is a nuisance requiring not only a death-certificate but a cremation-certificate as well 28 Only two more patients I see Here's Mr S who has been pulling turnips and got a tenosynovitis, that means an industrial diseases certificate And Mr T has been knocked over by a car He isn't badly hurt but I must fill in a road-accident form Apart from sending off a throat swab, a sputum, a blood for W R a specimen of urine and a request for an X-ray report all of which require certificates that seems to be all Yes I make it 35 kinds When I get home if ever, I can fill in the antenatal examination, emergency midwifery and vaccination forms and write letters to the county council recommending children for T's and A s

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It is not altogether surprising that from time to time the less sensational elements of the lay press look with a tinge of suspicion at successive blasts of semi-official eulogy in praise of this or that source of vitamins It may sometimes appear that the changes are rung a trifle freely on the virtues of many things as they happen to hang heavily on the official hands—sometimes carrots sometimes rose-hips We have recently succumbed to the rose-hip propaganda, and have organised expeditions of our nursing staff into the country lanes in search of berries, "vivid red and slightly soft' to quote the official instructions There is no dearth of volunteers for these outings, despite the fact that the collection of rose hips is known to be prickly, devastating in its effects on stockings and sometimes rather dirty By way of compensation, it involves a not-too-smooth ride a few miles into the countryside, a picnic forenoon and a departure from everyday routine Raiment of ancient vintage is pulled from obscurity, and the party sets out in a gay spirit of adventure, though scarcely perhaps a very fashionable gathering The instructions for picking are explicit enough The fruit is not to be bruised or in any way damaged, and the berries brought back as soon as possible after picking in suitable containers—'baskets, not tins"

Back at the hospital the work of extraction begins The hips are placed in a pan, covered with water and subsequently mashed with a wooden spoon, and the mass squeezed through a jelly bag to obtain the juice, care being taken to filter out the sharp, stiff hairs on account of their reputed capacity to produce gastric irritation Our instructions were that the fruit should be boiled for about a quarter of an hour until tender, which seemed a little odd in view of the known properties of vitamin C and we found when we tested the vitamin content of brew prepared in this way that the prescribed boiling for a quarter of an hour was highly prejudicial to vitamin-C content reducing it to about a third of what it had been at the boiling point On the other hand, nothing short of boiling succeeded in extracting any considerable quantity of vitamin from the fruit, so that we were driven to compromise by slow raising to the boiling point with discontinuance of heating as soon as that was reached We were able in this way to obtain an extract of fairly stable vitamin content though it fell considerably short of the impressive figures issued with the official instructions From the juice we prepared a syrup by the simple addition of sugar and hope piously that the resultant product will keep with us for a period of three months We estimate that it will be necessary to take 3 oz of the syrup daily to produce any appreciable effect

The next problem was to determine how best it could be used In our early enthusiasm we had hoped to carry out something in the nature of a controlled experiment that would enable us to record any improvement in health among the rose-hip takers, but we soon found that an experiment of this sort on any worth-while scale was out of the question, and we had to content ourselves with the selection of a score of nurses who seemed to experience habitually more than their share of the ills of this world These unhappy people were singled out as experimental contributed Economical administration and discerning distribution are necessary for the greater part of the fund's work is believed to lie ahead Contributions may still be sent to the hon secretary at B M A House Tavistock Square London W C 1

OUTPUT AND THE WORKER

"APPLY EXISTING KNOWLEDGE"

THE 21st report of the Select Committee on National Expenditure[1] dealt with labour problems and war output and the Government has now published as the 25th report[2] of the committee a detailed commentary on these recommendations The replies are divided into broad categories such as hours of work, wages, management, discipline industrial relations, transport, food lighting in factories, and incentives to output In the main the Government finds itself in agreement with the views of the committee but differs on some details For instance, it is implied that the committee did not have a clear idea of the functions of the Industrial Health Research Board when it recommended that the board should work in the closest cooperation with, and advise the production departments The responsibility of advising these departments on factory conditions and the health of the workers belongs to the Ministry of Labour—presumably through its Factory Department lately transferred from the Home Office—and the function of the board is to investigate general scientific problems Another recommendation was that the board should carry out investigations to determine the best length of the working week for a wide range of different kinds of work and for men, women, and juveniles, but the board has been doing this kind of work for many years—its first emergency report[3] was a summary of its findings since the last war—and as it has indicated that weekly hours of work should not exceed 60 for men and 55 for women, it appears more useful to apply existing knowledge than to undertake further investigations which would be unlikely to produce different results It is proposed, however, to carry out further inquiries into the conditions of some sections of industry and of particular kinds of work and to ask for the board's help

The recommendation that workpeople should have one day's rest in seven has in the Government's view, been confused with the question of Sunday labour The committee is reminded that they said in their 17th report that the general atmosphere of Sunday is not conducive to the maximal effort, and with the object of maintaining production at its highest level most of the departments concerned agree that Sunday work should be restricted to essential maintenance or repair work and emergencies Some aircraft firms have reported that Sunday work has been given up with beneficial results on output Some workers have resisted the abolition of Sunday work because they receive double pay for that day, and the Government cannot accept the committee's recommendation that the loss of the extra payment for Sundays should be taken into account when fixing wage rates for week-days It seems that 5½ or 6 days a week on production work is the best system which can be arranged and that rota systems are not easy to run because of the additional labour force required and inherent difficulties in organisation and supervision The policy of the Government is, however, that factories should be employed for as much of the 24 hours as possible, and an increasing number are working round the clock

In addition to the committee's recommendations employers have been urged to adapt women's working hours to allow them reasonable time for shopping and in some factories this has been done Discussions have been held with retail trade organisations and with the Ministry of Food and shopkeepers are to be asked to keep their premises open for longer hours on one more day a week and to adjust the shop lunch-hour to suit the industrial workers who may also leave written orders for goods to be collected after closing time

The Government fully endorses the policy that managements should, where possible, take workpeople into their confidence and both groups are encouraged to come together for the exchange of information and · We said recently[4] that if workers are treated like · they will act like them and it is encouraging to see the lesson is being slowly and painfully learnt It agreed that men should be appointed to positions authority in industry, particularly as charge hands foremen, for their qualities of leadership and ability as well as for their technical skill Publicity been given to the established training courses for personnel managers, welfare supervisors, and foremen and also to the work of the conciliation officers of the Ministry of Labour whose main function is to intervene when disputes arise between unorganised sections of industry and employers who do not recognise trade unions It is emphasised that any publicity which created an impression that the services of the conciliation officers were immediately available to settle disputes by direct intervention would tend to undermine the constitutional authority of employers' organisations and trade unions

In reply to a recommendation that a persistent offender who refuses to obey a direction under the Essential Work Order should be dereserved, the Government states that it has always been made clear that men are kept out of the forces for the purpose of working assiduously and those not doing so will not be allowed to remain reserved But the specific proposal that military enlistment should be regarded as a penalty for industrial offences is open to objection and it would not meet with the support of the workers, nor, it might be added, of the armed forces themselves

Transport difficulties and the measures needed to overcome them are discussed at length The arrangements for supplying food to the workers are described and the Government cannot accept the recommendation that the Factories (Canteens) Order 1940, should be applied to all factories doing work for the Crown, and not only those employing more than 250 people For the smaller factories the policy is to establish British Restaurants nearby and the workers can either go to them or have meals sent to the factories The committee pointed out in their report that speeches congratulating workpeople on their efforts make for complacency, but the Government says there is no need to stimulate them to greater output on the basis that their best efforts have been feeble and unsatisfactory It probably should have been stated more definitely that if a worker is praised he will respond and will not become slack because he has been made to feel that he has done his best There are varying types of complacency or states of euphoria Report answers report on the whole satisfactorily and shows that constructive thought is being given to constructive criticism

Infectious Disease in England and Wales

WEEK ENDED NOV 8

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1366, whooping-cough, 2029, diphtheria, 1069, paratyphoid, 31, typhoid, 12, measles (excluding rubella), 747, pneumonia (primary or influenzal), 731, puerperal pyrexia, 108, cerebrospinal fever, 113, poliomyelitis, 33, polio-encephalitis 4, encephalitis lethargica, 3, dysentery, 148, ophthalmia neonatorum, 84 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Nov 5 was 1315, including scarlet fever, 166 diphtheria, 298 measles, 23, whooping cough 505, enteritis, 32, chicken pox, 28 erysipelas, 22, mumps, 5 poliomyelitis, 6, dysentery, 23, cerebrospinal fever, 22, puerperal sepsis, 8, enteric fevers, 45, german measles, 1, other diseases (non infectious), 62, not yet diagnosed 69

Deaths —In 126 great towns there were 1 (0) death from enteric fevers, 1 (0) from scarlet fever, 1 (0) from measles, 2 (0) from whooping-cough, 24 (6) from diphtheria, 41 (2) from diarrhœa and enteritis under 2 years and 20 (0) from influenza The figures in parentheses are those for London itself

Bristol reported 1 death from an enteric fever There were 3 fatal cases of diphtheria at Liverpool

The number of stillbirths notified during the week was 164 (corresponding to a rate of 32 per thousand total births) including 13 in London f Government policy urging better organisation and ore speed in work The essence of victory lies in peed in audacity in taking risks and in dauntless ourage Unless the Government can supply these irtues they will, in the opinion of the country, have utstayed their welcome ' Mr Lloyd George went over o Shinwell after the speech and congratulated him— Conservative, Liberal and Labour M Ps did so too Mr A V Alexander s reply to the debate in which he dealt largely with Shinwell was on lines of personal attack and produced a bad impression on the House and he passed over the big questions raised by other members without remark

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[1] *Lancet* 1941, 2 341
[2] 25th report from the Select Committee on National Expenditure London H M Stationery Office Cmd *121* *6d*
[3] See *Lancet*, 1940, 1, 699
[4] *Lancet*, 1941, 2, 566

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The Prime Minister had stated earlier in the day that a full debate on the address might if desired, extend over 2 or 3 weeks Parliament is awake and a succession of debates on big issues of policy is certain Mr Churchill does not now propose to make any changes in membership of the Government

Obituary

HUGH MORELAND McCREA

OBE MD RUI

By the death of Hugh Moreland McCrea a very remarkable man is lost to our profession The qualities in the aggregate required to make a great clinical physician are much more rare than those needed to make a great surgeon for the problems presented to the latter are solvable chiefly by touch sight and personal dexterity whereas those with which the physician has to cope require not only the piecing together in order of importance of a number of data obtained from various sources but the correct deduction from the whole assemblage

Vandyk

The power of doing this varies with individuals, but from time to time men appear who possessing a faculty for retrieving and marshalling in surprising context impressions latent in subconsciousness have it in remarkable degree The term *flair* is commonly used to describe this faculty and McCrea was one of those gifted persons To the gift was added an insatiable zest for professional knowledge which was continually added to by acute observation and voluminous reading The result was a many sided physician without one weak facet so that whatever the nature of the case he brought to it the ability of an expert on that particular malady He was at first in general practice surely the best of all preliminary schools for a career of pure medicine but like certain other great physicians who began that way the call to consulting work at last assumed imperative proportions His outstanding professional qualities became so widely recognised that he may justly be termed the consultant s physician, so many of them were numbered amongst his patients

His energy and kindness matched his abilities, for he threw his whole heart into every case great or small to which he was called and a multitude is in his debt His passing enhances a regret often felt before that he was never on the staff of a teaching hospital where the high ideals and deep mine of clinical lore of which he stood possessed could have been passed on to the younger men coming after him Amongst those of us who knew him he will always be remembered as a beloved physician and an unfailing help in time of trouble

V B

McCrea was born in 1877 at Belfast, where his father was a medical man of considerable distinction and his maternal grandfather was Dr R Dill, professor of midwifery at Queen's College He was at school at the Royal Academical Institution before entering Queen's University on a science scholarship He took the Malcolm exhibition and the Coulter clinical scholarship qualified M B in 1901 and for two years held resident appointments at the Royal Victoria Hospital In 1903 he settled in general practice at Wargrave, whence he moved to London four years later He combined a rare acumen with a profound knowledge of modern tendencies and of the various branches of medicine He was specially familiar with the many problems which ophthalmology presents to the practitioner of medicine and the ophthalmoscope revealed much to him which would have been hidden to many He was for long on the outpatient staff of the Paddington Green Children's Hospital and during the last war acted as senior physician to the City of London Military Hospital He became chairman of the Final Medical Appeal Board and he organised the emergency medical corps under the auspices of the Royal Society of Medicine For these services he was made O B E

The idea of forming a vast private hospital where private patients would have at their service the same advantages as those enjoyed by patients in the voluntary hospitals early took root in his mind and soon after the war finished he set about, with indomitable energy to realise his dream The result was the London Clinic of which he was the originator and principal promoter When in the years to come such institutions have grown up in all the great centres of population working either independently or in association with the voluntary hospitals it should be remembered that McCrea pioneered the way

For some time his health had given rise to anxiety but the end came on Nov 8 with unexpected suddenness He married Kate Rose, daughter of Charles Hannen of the Chinese Customs, and leaves his widow with two daughters

MILLICE CULPIN

LRCPE

Dr Millice Culpin, who died at Brisbane on Sept 1 at the age of 95, was Queensland s oldest doctor He was born in this country and began his schooldays at Alleynes Grammar School Stevenage, shortly before the outbreak of the Crimean war He qualified L S A. from the London Hospital in 1877 and took the Scottish conjoint qualification five years later He set up in practice in Brisbane over sixty years ago and soon all his interests were centred in his new home · except for one holiday many years ago he never returned to England He represented Brisbane in the federal parliament from 1903 to 1906 but public life was to him a duty, faithfully performed, and his real interests were his work, his books and chess He was also a member of the Rationalist Society of Queensland Dr Culpin leaves three daughters, and his two surviving sons are both members of the medical profession—Prof Millais Culpin of London and Mr Ernest Culpin of Brisbane

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TRAINING THE LUFTWAFFE DOCTOR —The medical officer of the Luftwaffe seems to be a true son of the winged Hermes for he is trained to be both doctor and flier (*Dtsch med Wschr* Sept 12 1941, p 1018) After taking his Abitur—which is the equivalent of our matric—the candidate does six months' military training before joining the medical academy of the Luftwaffe which is at present housed in a suburb of Berlin Here he is taught the principles of aviation and at the same time begins his medical studies But his military training also continues and is considered an important part of his curriculum, for in spite of the Geneva convention the German medical officer ' often has purely military tasks of leadership to fulfil " So that he may lead medical flying units and cope with the problems of aviation medicine and flying in high altitudes the student must himself learn to fly gliders and planes and he must be able to manage not only the larger types of aircraft used for the transport of casualties but also the smaller makes such as the " Storch " and ' Weihe,' for they have the advantage of being able to land in a confined space He is also taught to use a parachute, for if he joins a company of paratroops he must be able to jump with his men Institutes for research in aviation medicine have been set up in Hamburg Freiburg-i-Br Jüterbog and Berlin animals and elaborate precautions taken to ensure that they duly consumed the syrup Whether it will do them any good we are not yet in a position to say, it can scarcely do them much harm, unless some of the "sharp, stiff hairs" have eluded us But, almost irrespective of the outcome, we have come to the conclusion that the game is scarcely worth the candle and that the chief virtue of our essay in rose-hip extraction lies in its significance as a gesture of benevolent interest We have had much the same feeling about the outcome of our attempts to grow oats and potatoes, but in war-time we do, with the official blessing, many curious things Rose-hip jelly as a jelly may be quite good, even appetising, but the treatment of rose-hips on the domestic hearth as a source of vitamin C seems to be rather an overrated amusement

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After several false starts traceable to the water-pipes or to the singing of high-spirited colleagues and military policemen Wailing Willie really got going the other night, warning us of the unpleasant proximity of Hitler's young friends Our siren is no ordinary one Its voice is well and truly broken and in full cry resembles a byre at milking time or the ear nose and throat ward on tonsil morning Like the heating system its efficiency depends on the steam pressure and varies accordingly When the fires are banked up well and there is no other claim on its motive power its roaring is echoed and re-echoed from the hills like the wail of the last of the banshees, but on one famous night when the fireman had fallen asleep and let the furnace go down, all that Willie could do was to give an apologetic gurgle such as follows removing the stopper from a bottle of flat ginger beer As ill luck would have it that very night the all-clear came within five minutes and the raiders-past signal lacked its usual triumphant ring

The garb in which the various members of the staff parade on such occasions is to me a never-ending source of interest and amusement I myself am sufficiently hidebound in the fetters of convention to regard the absence of a collar and tie as the last infirmity of noble mind and dress accordingly Such opinions are not held by my colleagues The Physician, as all good physicians should, upholds similar ideals to my own but the very fountain head of orders has been known to appear wearing a lounge suit on top of his pyjamas, in extenuation, however, it must be said that the occasion in question was the third of three successive nights Some version of engineers' dungarees which our female friends assure us is termed a shelter-suit seems to be favoured by the junior members of the medical staff of that sex and I have found it in my heart to envy them when searching half asleep for a lost collar-stud at two in the morning The nursing staff, however, are allowed no such easily put on garment, but they are probably well used to dressing in the earlier stages of coma at 6 30 A M and little deserving of our sympathy They at least can put a cap over their curlers when rudely awakened, but the mere male who appears with untidy hair is frowned on by all alike

The wail of Willie is the signal for action stations for the fire-watching parties, who proceed armed with stirrup pump and sand to their appropriate places The selection of one's appropriate locus is not as simple as it sounds since our firemaster, one Sir Thomas Tucker, erstwhile leading light of the brigade in a provincial town, has an engaging habit of changing this about once a week without notice He has even been known to go off on holiday and take his beloved stirrup pumps with him for a change of air It is true he left us the hoses but according to his own teaching these are an invention of the devil only to be used by experts (for which read "himself") Despite these interesting diversions it is always with a grievance that I leave my warm and comfortable bed to watch for incendiaries which never fall or to shelter from high explosive dropped fifty miles away

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MESSRS T J SMITH and NEPHEW have issued a second edition of their booklet "The Preparation of Plaster Casts," which includes patterns and directions for a spinal jacket in addition to the six plasters described in the first edition The booklet can be obtained free of charge, and a set of master patterns made of stiff paper is supplied with the first order for wide "Cellona" material

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

ON Nov 11 Parliament was prorogued It quote Hansard, "End of the Sixth Session (opened November 1940) of the Thirty-Seventh Parliament United Kingdom of Great Britain and Northern in the Fifth Year of the Reign of His Majesty George the Sixth" But it was only a winding Nov 11 in order to open a new session on Nov 12, Speaker suggested that the custom of all filing past him, shaking his hand and bidding farewell, should be dropped "On this occasion I you farewell from this place and hope soon to again"

The King's speech on the prorogation of Parl referred to the Atlantic Charter as "a beacon in radiating resolution, justice and unselfish purpose" to conferences with the prime ministers of C Australia, New Zealand and South Africa The speech on the opening of the new session on Nov referred to consideration of "the urgent problems will face them when the nations now enduring tyranny of the oppressor have regained their freedom and further welcomed the restoration of the Emperor Ethiopia to his throne as the first country to be liberated and re-established

The content of these two statements of policy do not satisfy the House of Commons There is a widespread feeling that changes in policy are required—with regard to production for war purposes, with regard to the direction of our military efforts, with regard to interference with individual liberty centring round the use of the powers of Defence Regulation 18B, with regard to the allowances of wives, children and other dependants of men in the forces All members support the war effort of the Government but many think it should be intensified and that it should take cognisance of those larger issues of political and economic change that loom in men's minds in prefigurement of the future Sir Richard Acland, the wealthy landowner who is serving in the ranks in an Army Unit, emphasised these larger issues Contrasting this war and the last he said, "In this war there is a positive and passionate longing on the part of the overwhelming majority of the people not to go back to the miserable world which they knew in 1939 We want to move on to a new way of living where the motive of service will transcend the motive of individual gain" Acland referred to a meeting he had had with a very "tough set of successful business men" who all wanted "a Britain without property owners" and ended by what was in effect an appeal to Winston Churchill to take the lead in a complete renewal of Great Britain's economic and social structure

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Major E E Gates, in a well-delivered maiden speech dealing with the anomaly of the difference in pay between the services and industrial workers, ended, "Unless the Prime Minister devotes himself closely and immediately to our pressing domestic problems with the same brilliancy that he has so far devoted to the grand strategy the war may be lost in these islands"

Mr Austin Hopkinson said this war was "really Armageddon" and that it would from the biological point of view decide the future progress of the human race He regarded the present war as the climax of human history and as embodying the conflict of principles which had been perceived clearly for 3000 years "In one country after another, in Northern India, in Greece and finally in Palestine one man after another has arisen and said that the whole human race is going to ruin—and that until men really believe, and act upon the belief, that it is better to give than to receive, there is no hope whatsoever for the future of humanity"

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Mr D N Pritt, K C, criticised the continued presence in the Government of men who were "extremely lukewarm" towards our alliance with the U S S R Mr Shinwell reaffirmed the essential unity of the nation and our determination to effect the speedy destruction of Hitlerism but made a powerful and sustained criticism ough maternal tissue and so it may be said that the cental surface is sealed in such a way as to prevent s of blood through the separated placental surface it where such a very thin covering is involved there is und to be much tearing and it is likely that the herence of this thin maternal remnant does little to event loss of fœtal blood Personally I believe that e cord should be tied at once in order to conserve the tal blood-volume

Dundee   A E CHISHOLM

WHAT'S IN THE LOAF?

SIR,—Your timely leader discloses a situation nearly credible but so obviously in accordance with the ugly cts that further action is required

When the Medical Research Council issued their emo on national flour last spring it was understood that it contained the specification of national heatmeal flour which we were asked to eat Any oubts about this were dispelled when Lord Woolton ddressing the bakers at their national conference at eicester in June, said he had been at great trouble over he bread question but had been "advised by the most minent scientists in the country" and mentioned the Iedical Research Council by name in this connexion Everyone understood that one of the two 85% extraction lours specified in that memo was a specification of the wheatmeal bread to be introduced by the Ministry of Food It did not matter which, the millers were or their convenience to make one of these and then pass on to the other No other specification was issued nor ny information given by the Ministry of Food casting ny doubt; we knew what national flour was to be The specification was therefore examined and found good, especially when reports were issued by various nutritional laboratories as to the B vitamins minerals, &c this flour could be relied on to supply I therefore started a campaign to popularise wheatmeal bread explaining to patients how they would thus get a generous supply of the essential B vitamin as well as four times the anæmia-preventing iron they got from white flour How by this means the Ministry had made a cheap protective food available That it contained even less indigestible fibre than white and would be more digestible I was confirmed in these views when Circular 2470 was received from the Ministry of Health in June This was sent to me in my capacity of M O to the local infirmary and asked me to make the new bread available to patients and staff This circular is so illuminating that I quote one passage in full

> "The Minister has been in consultation with the Minister of Food on this matter and he is advised that national wheatmeal flour is now available to bakers This flour contains the greater part of the germ of the wheat, with some of the finer bran, but excludes the coarser bran It thus contains not only most of the vitamin B_1, but also most of the remainder of the vitamin B complex, as well as valuable minerals removed in producing white flour National wheatmeal flour is therefore of high nutritional value and is particularly valuable at times when there is restriction upon the availability of other foods from which these vitamins and minerals could be obtained."

Can anyone doubt that the flour specified by the Medical Research Council was under consideration? There was no other published, or known, and the reference to the fineness of the fibre left in is itself sufficient evidence if any were needed You now call attention to an order of the ministry regulating what national wheatmeal flour really is to be, and which was issued only two months after the consultations between the ministries on the same subject As you explain it this order simply makes fun of what the Minister of Health was told Or perhaps I had better say of what he informs us he was told by the Minister of Food Instead of containing the greater part of the germ of the wheat the flour need not contain any Instead of containing most of the B_1 vitamin it need not contain more than white flour from which most of it has been removed Instead of containing most of the remainder of the B complex this will be absent as will the valuable minerals For it may be nothing more than white flour to which some bran has been added!

So all that I have been telling patients, on the word of two ministries, has been without justification I object to being misled at any time, but particularly on a matter of such importance to us all in war-time

It will only be fair to the M R C if I state that a letter from the council informs me that the policy of the country as regards the production of white and brown bread is decided entirely by the Ministry of Food and that they have nothing to do with this, the letter concludes (italics mine). "No doubt, IF the Medical Research Council had to give advice *without taking into consideration any other body*, they would recommend 85% extraction flour with added calcium" Compare this situation with that at the Air Ministry and ask where we should be today if Sir Archibald Sinclair had adopted the same attitude towards his scientists and left planes to be made in ways giving most profit to manufacturers Because can anyone doubt that financial interests have a connexion with the change of front on wheatmeal? Or is it simply the dullness shown by the previous representative of the Ministry of Food in the House of Commons who declared there "We want no scientific stunts on the Kitchen Front"? The Ministry of Food have able men who understand nutrition at their service Why are they not being used?

All should be grateful to you for raising such a vital though unpleasant question

Grimsby   S W SWINDELLS

PERINÆAL SUTURE UNDER LOCAL ANÆSTHESIA

SIR,—In your annotation last week (p 611) you rightly emphasise the value of repair of the perinæum under local anæsthesia and refer to a paper by B Williams and to another by Neal Smith, the latter reporting its use with good results in 17 cases at Charing Cross Hospital Thirteen years ago in your columns (*Lancet*, 1928, 1, 1281) I described an exactly similar method even to the insertion of the needle through the skin surface and stressing, as Dr Smith does, the importance of infiltrating the tissues immediately under the skin or mucous membrane The only difference between Dr Smith's method and mine, so far as I can see is that I advised the addition of adrenaline chloride solution (1 drop of a 1 · 1000 solution to each drachm of Novocain) and pointed out that it spared the patient any pain from insertion of the needle if a swab soaked in the solution was placed for 5 minutes beforehand against the raw surface The method as described by me has since been in routine use by the students and staff in the obstetric unit of University College, both in the hospital and on the district, and during these 13 years it must have been used in several thousand cases The results have been so uniformly satisfactory that no one has suggested that it should be discontinued To my knowledge the method is now routinely and successfully used in at least three other London hospitals

University College Hospital, W C 1   F J BROWNE

STUDENT AND SCREEN

SIR —The comments in your issue of Nov 8 draw attention to the neglected possibilities that lie in the film for teaching medical students The increasing amount that has to be learnt in a limited time makes it surprising that no request for use of films has yet been made by medical students Though academic circles in this country have hardly noticed this weapon there are a number of good scientific films that could be more widely used in teaching—films on mathematics, physics chemistry biology anatomy and physiology and films illustrating operative technique in surgery and obstetrics Medicine has not yet been filmed so much though the film on malaria which you reviewed is of very high quality. There are films on subjects ranging from oxygen therapy to the treatment of war neuroses, there are health education films for children and adult audiences, and the relation of medicine to the community is illustrated in films such as the British Commercial Gas Association's excellent nutrition film "Enough to Eat," and the Ministry of Information film "Health in War."

The chief reason why a wider use has not yet been made of available films is probably ignorance either of their existence or of how to get hold of them The Scientific Films Committee of 30, Bedford Row, W C 1, have viewed a large number of scientific films and are continuing to do so A list of scientific films with an independent evaluation of their merit for showing to

Letters to the Editor

WORKING HOURS

SIR,—In September, 1915, Mr Lloyd George, then minister of munitions, appointed a Health of Munition Workers Committee, "to consider and advise on the question of industrial fatigue, hours of labour and other matters affecting the physical health and physical efficiency of workers in Munition factories and workshops" The committee recognised that if men are asked to work for fifteen hours a day for weeks and months on end, as was the case in 1916, one of two results must follow, either the health of the workers will break down or they will not work at full pressure In either case output must suffer The committee made the provisional recommendation that hours of work for men should not exceed 65–67 per week, for women and girls 60, with no night work for girls under eighteen, and for boys under sixteen, 60 hours with no night work In 1917 the committee stated that they were convinced that the maximum limits of weekly employment provisionally suggested were too high except for quite short periods and that the time was then ripe for a further reduction in the hours of work They were satisfied that reduction could be made with benefit to health and without injury to output

It is some 120 years since Robert Owen ran his New Lanark Mills for only 10½ hours a day instead of the usual 15–16 and found that output did not sensibly fall below its previous level, while there was marked improvement in the cheerfulness of the operatives and in their vigour The events of the last war demonstrated beyond question that there was a point beyond which it was folly to extend hours of employment and that that point was much lower than had been accepted previously Subsequent work carried out under the auspices of the Industrial Health Research Board has all pointed in the same direction Vernon in his book "The Health and Efficiency of Munition Workers" suggested that the optimum working hours for women are between 48–54 per week, and girls under 18 should not be required to work more than 48 hours per week It is only after two years of war that these well-established principles have received some measure of official sanction The Government comment on a recommendation in the 25th report of the Select Committee on National Expenditure, issued recently recognised that investigations by the Industrial Health Research Board have established that, over an extended period, weekly work hours should not exceed 60 for men and 55 for women, and the Government is satisfied that it is more useful to restrict weekly hours now within the limits mentioned than to make further investigations It is officially agreed that, to maintain maximum production, Sunday work should be abolished in industry, except to meet the most compelling emergency and except in those plants where workers have a break of at least 24 hours per week under a rota or relief system

It is a matter for profound regret that it has taken so long to relearn such an essential lesson of the last war, and it is to be hoped that never again will there be a temptation to succumb to some of the follies in this matter of working hours that have been perpetrated during the last two years

DUNS SCOTUS

PNEUMOCOCCAL MENINGITIS

SIR,—So many reports of the recovery of isolated cases of "pneumococcal meningitis" have now been made that one would gain an impression that the outlook had very materially altered since sulphapyridine was introduced I am sure there must be many clinicians like myself who feel that this scarcely reflects the true state of affairs, and who are therefore grateful to Dr Cooke for his significant paper in THE LANCET of Nov 1

There are two observations I would like to make on your annotation of Nov 8 When assessing the results of treatment is it satisfactory to lump all cases under the generic term of pneumococcal meningitis? My own experience leads me to subdivide those cases into three groups First the *septicæmic case* where meningitis is a late, often terminal, complication of a pneumococcal infection distant from the meninges, second, the *invasive case* where meningitis is a result of local spread from a focus of infection close to the meninges, third, the *traumatic case* where the infection is by the passage of organisms from the nose or through a breach of bone (this last the postoperative case) Such a subdivision has, think, considerable importance in relation to therapy Septicæmic cases occur even during the of sulphonamide therapy, and presumably this that either the organism is insusceptible to the drug or the patient is unable to utilise it, the fatality-rate in this group is still high In the invasive case sulphonamide therapy may, for the time, discourage further invasion, but will almost certainly not eradicate the primary focus for which surgery will still be required if recurrence of the meningitis is to be prevented In the traumatic case, however, sulphonamides may be expected to show optimal results, for the organism is here probably of low virulence and its invasiveness may therefore be promptly checked The clinician's assessment of the value of chemotherapy will thus depend on the kind of case he is called on to treat

My second point is to ask for the evidence which supports the statement that type III is the most common single type in this infection" I cannot recollect having seen a single type III infection of the meninges My earlier records are unfortunately not readily available, but I have seen twelve cases since 1935 in which the types were II (4), V (1) VI (2), VII (1) XIII (1), XXIII (2) and one where the pneumococcus did not agglutinate with any of Cooper's 32 types None of these cases recovered despite the administration of sulphapyridine Only three of them did not belong to the septicæmic group The type VI was caused by an antral infection, while the type XIII was secondary to a mastoiditis There was no apparent primary focus in the case from which the untypable strain was obtained (It is at least arguable that the comparatively rare primary pneumococcal meningitis should be included in the septicæmic group) I can readily understand that type III, which is so often present normally in the nose or throat, might be most frequently encountered in the traumatic group but I can see no reason for supposing a high incidence of this type in the septicæmic or invasive group In these groups one would expect the type incidence to correspond to that peculiar to the district from which the cases were drawn

Knightswood Hospital, Anniesland THOMAS ANDERSON

WHEN TO TIE THE CORD

SIR,—I was interested in your leading article of Nov 8 on when to tie the cord It always seems to be taken for granted that the baby will gain extra blood if delay is made before applying the ligature until pulsation in the cord has ceased I suggest that this is contrary to the truth and that the baby is liable to lose blood by this delay In any case I think the following argument is worth consideration From the point of view of the welfare of the babies the matter is of importance It is obvious that the only force propelling the fœtal blood stream, and hence that part of it going to and coming from the placenta, is the fœtal heart beat This force is of only moderate power and yet it is the only force available for the return of blood from the placenta to the fœtus This is a great task for a comparatively weak organ to fulfil Intermittent uterine contractions during the third stage obviously can be of little or no account in this process Consider the work that the heart must do and the conditions prevailing The placenta is an inert body and is, in the third stage, largely unsupported Therefore, before any blood returns to the fœtus the placenta must fill up and form what is equivalent to a heavy lake of blood The fœtal heart must take on the strain of overcoming the resistance of this inert and heavy lake in order to force any blood at all back to the fœtus through the umbilical vein It is practically certain that the task is too great and that far more blood remains in the placenta than ever returns to the fœtus Thus the fœtus will lose more and more blood the longer the flow continues to go into the placenta But the fœtus may lose blood in another way as well There may be a certain amount of separation of the placenta and there may thus be direct fœtal blood loss through the separated placental surface It is true that anatomically the placenta separa

edical Society of London

A meeting of this society will be held at 11, Chandos Street, 1, on Nov 24 at 3 30 P M, when Dr John Parkinson will d a paper on heart attacks, Mr V E Negus on congenital ortening of the œsophagus, and Mr Guy Blackburn on gional ileitis

oyal Medico-Psychological Association

A meeting of this association will be held on Nov 26, at , Chandos Street, London, W 1, at 2 15 P M,, when Dr Lilian Hutton will read a paper on the investigation personality in patients treated by prefrontal leucotomy

iochemical Society

A meeting of this society will be held at the Courtauld nstitute, Middlesex Hospital London, W 1, on Saturday, ov 29, at 11 A M., when Dr G M Findlay will open a dis-ussion on the modes of action of chemotherapeutic agents

edico-Legal Society

A meeting of this society will be held at 26, Portland Place, ondon, W 1, on Thursday, Nov 27, at 4 P M, when Dr I Neville Stafford will read a paper on the coroner and ivilian war deaths

ocialist Medical Association

At a meeting of this society on Saturday, Nov 22, at 12, Great Newport Street, London, W C 2, at 2 30 P M, Sir Albert Howard and Mr Frederick Ridley, F R C S, will speak on griculture and health

War Wounds Committee in Scotland

The Medical Research Council has set up in Scotland a sub ommittee of their war wounds committee The members are Prof J R Learmonth (chairman), Dr A B Wallace (secretary), Prof J S Young, Prof R C Alexander, Prof D F Cappell, Prof C F W Illingworth, Prof C H. Browning, Dr D P Cuthbertson, Sir John Fraser, Prof T J Mackie, Mr C P Stewart, Ph D and Dr J M Johnston

Domestic Staff in Hospitals

In recognition of the national importance of domestic work in hospitals the Minister of Health has decided to issue a badge to all those employed on domestic work in hospitals, who give at least 96 hours regular service each month Women who are whole time hospital helpers on registration will not be called for interview

Calls to the Bar

On Nov 17 the following were called to the bar Lieut Colonel Ralph Brooke, F R C S, R A M C (Inner Temple), Dr F H Blackburn and Mr E A Butterworth, F R C S (Middle Temple), and Dr A. P Cogswell (Gray's Inn)

Control of Scabies

The Minister of Health has issued a new regulation giving medical officers of health authority to inspect premises in which verminous people have been accommodated and to examine and treat other people on those premises They may also order the cleansing or destruction of articles on the premises

International Hospital Association

At 2 P M on Nov 25 at B M A House, Tavistock Square, W C 1, the United Kingdom council of this association will hold a conference to discuss the position of hospitals in the post war world Prof A T Jurasz, dean of the Polish medical faculty in the University of Edinburgh, will read a paper on the international position of hospitals after victory and the coming of peace Representatives of 54 countries have been invited to attend, and the Minister of Health will be present Admission will be by special ticket only, and further information may be obtained from the hon secretary, 17, Bloomsbury Square, London, W C 1

Anglo-Soviet Medical Committee

The aims of this committee are to form a liaison between the medical professions of Great Britain and the U S S R to exchange the latest clinical and scientific knowledge, to facilitate visits of medical specialists between the two countries, and to give specialist advice on medical aid to the U S S R It is proposed to make the minimum annual subscription for associate members 5*s* A bulletin on the committee s work will be issued from time to time and a general meeting will be held early in the new year Those who wish to become associate members should write to the hon secretary of the committee, 1, Wimpole Street, London, W 1

Notes, Comments and Abstracts

HOME VISITING OF DEFAULTING VENEREAL-DISEASE PATIENTS

J L BURN, M D DURH., B HY, D P H
MEDICAL OFFICER OF HEALTH, CITY OF SALFORD

A NOTE of a year's working of a scheme of home visiting of defaulting female patients who had attended a venereal-diseases clinic may be worthy of record Only women and children were followed up, these consisted of female patients who had defaulted in attendance at the venereal-diseases clinic of the county borough of Barnsley and some special cases referred thereto All the defaulters (some of whom had not been seen for some years) had received several invitations by letter to attend, and up to the time of the visit all these letter-invitations had proved ineffective It is considered that the number who would have returned to the clinic without a visit would have been negligible

The home visiting was carried out by a health visitor who also acted as a part-time nurse in the venereal-disease clinic, and part-time health visitor in the maternity and child-welfare service An advantage was that the visitor was not "known" to patients or public as a venereal-disease visitor Additionally, her position enabled close liaison to be maintained between other health visitors and medical officers of the maternity and child-welfare and school medical services The visiting—which was done with the aid of a car—occupied time equivalent to one session only per week, thus, for the year's working, the number of sessions occupied in home visiting was under 50

In all, 163 persons were visited The medical diagnoses on the case sheets of the persons visited were syphilis or ? syphilis, 105, gonorrhœa or ? gonorrhœa, 38, non-venereal disease, 20 The total number of visits paid was 305 92 persons were visited once; 28 persons twice, 23 persons three times, 15 persons four times, 3 persons five times, 1 person six times, and 1 person seven times Of the 163 persons, it was found that 26 had removed and 3 had died, leaving a net total of 134 Of these, over a third (i e 50, or 37% of the total) attended regularly, while another 16 attended more or less regularly

On visiting several clinics throughout this country, I was impressed by the fact that some of the most dangerous types of patients from an infective point of view are young people who default after a few attendances—this despite the fact that the patients were handled with the greatest tact and efficiency In each case, verbal promise had been obtained to continue attendance until cured It is always easy to elicit promises in the clinic Follow-up letters had proved of no value

In addition to the problem of defaulting, the problem of untraced contacts is serious—only 10% of the wives or partners of infected patients on an average were traced These facts are full of danger to the public health, and make consideration of the help which home visiting can give more urgent

Figures quoted in the excellent booklet of the British Social Hygiene Council, "Notes on Social Service in the Treatment Centre," are very striking At St Mary's Hospital, Paddington, the proportion of defaulters in the total number of patients is now as low as 6%, owing in large measure to the work of the almoner, described in Miss Dorothy Manchee's book "Social Service in the Clinic for Venereal Diseases" (London, 1938) At Guy's Hospital, the percentage of defaulters who were induced to return rose in six years from 46% to 80% At the corporation V D department in Edinburgh, among the women and children patients, 9 out of every 10 defaulters were persuaded by the nurse's visits to return and continue treatment In 1921–22, before the appointment of a nurse-almoner, the defaulter rate was 54%, in 1937 it was 8 5%

The appointment of a fully trained almoner of the right personality is undoubtedly ideal, but many clinics are too small for the whole-time employment of an almoner, and there are not sufficient trained almoners to go round The task of persuading committees to make expert and to general audiences and for teaching purposes has been prepared Detailed critiques of these films and their contents are also available The S F C has arranged a number of film shows at the request of various medical societies, and also shows of health films (similar to the public health show given by the London Scientific Film Society last winter) for more general audiences It is important that films should be used widely in the health education of the public, and a start has been made with "Defeat Diphtheria" and "Breath of Danger," The committee will be glad to give information to those who wish to know more about or to arrange shows of films of medical interest

London, W C 1 RONALD MACKEITH

DISPOSAL OF STILLBORN CHILDREN

SIR,—The sequel to the story of your peripatetic correspondent, or one like it, about the fœtus in the abdomen of a man, was that the mortician rather unnecessarily reported it to the coroner As the body had been removed some miles away from the hospital the coroner was concerned that the body should have got into his jurisdiction and did not quite know what to do about it So he reported to the Home Office who sent one of the Big Five from Scotland Yard to see me on a Sunday morning to suggest that the mortuary keeper had been aiding and abetting the offence of concealment of birth. Of that it was shown that he was not guilty However, the chief inspector's visit was followed by a documentary admonition to which I was able to reply that the procedure of placing a baby's body in the coffin of an adult had written authority from the Home Office, given some years before Whereupon there was some flutter in the official dovecote The hospital changed its procedure but the disposal of stillborn children still gives trouble

BETA

Appointments

ALCOCK, WILLIAM, M B Sheff, B Hy Durh, D P H M O H and school M O for Burton on-Trent

COKKINIS A J, M B Lond, F R C S V D specialist at Hillingdon and West Middlesex county hospitals

COOPER, J D, L R C P E, L D S temp asst M O at Forest Gate Hospital, West Ham

FERRIS, R D, M B Melb, F R C S E ' deputy R S O at Coventry and Warwickshire Hospital

NELSON, MARY, L R C P I temp asst T O for Sheffield

POLLEY, S F, M R C S R S O at Rugby Hospital

SUTTON S J, M R C S temp asst M O, Whipps Cross Hospital, West Ham

Colonial Service —The following appointments are announced

BOWYER, J H, M B Dubl, D P H, D T M & H superscale officer (grade A), Malaya

SHIRCORE, J O M B Edin, M R C P E M O Nyasaland

WAKEFIELD, T C, M B Edin, L M superscale officer (grade B), Malaya

Births, Marriages and Deaths

BIRTHS

BABINGTON —On Nov 12, at Leicester, the wife of Major G C Babington, R A M C —a son

CLARKSON —On Nov 11 at Witney, Oxon, the wife of Major Patrick Wensley Clarkson, R A M C —a son

HAGENBACH —On Nov 8, at Bath, the wife of Dr Charles Hagenbach —a daughter

HAYWARD BUTT —On Nov 11 at Crail, Fife, the wife of Surgeon Lieutenant Peter Hayward Butt, R N —a son

KEKWICK —On Nov 13 at Mursley, Bletchley, Bucks, the wife of Major Alan Kekwick, R A M C —a son

LEISHMAN —On Nov 11, 1941, at Alresford, Hants, the wife of Dr Hugh Leishman—a son

MARRIAGES

WILKIE—DUFFY —On Nov 29, at Upminster Essex, Duncan Richard Primrose Wilkie, M R C S, captain R A M C, to Mary Duffy, S R N

DEATHS

GOLLAND —On Nov 14, Alfred Golland, M R C S, of Holly Mount Bosbury

GRAHAM —On Nov 11 at Edinburgh Frederick Maurice Graham, M D Durh, F R C S, chevalier de la Légion d'Honneur

MORRIS —On Nov 11, at Bognor Regis, Henry Cecil Low Morris, M D Brux, M R C S

WRAITH —On Nov 13, Oswald Samuel Wraith, M D, F.R C S E, of Bournemouth, aged 83

In a recent casualty list W S /Captain L Maclean, R A M C, was posted as a prisoner of war

Medical News

Royal College of Surgeons of England

At a meeting of the council held on Nov 13, with Sir Webb Johnson, the president, in the chair, the fol were re elected members of the court of examiners year from Dec 11 Mr R Milne, Mr R Davies Mr G T Mullally, Mr V Z Cope, Mr C E Shattock Mr E W Riches

Diplomas of membership and public health were (with the exception of F -X Darne, J D C Gowans, D Sambrook, A L H Smith, and Glenys Wade) to the dates named in the report of the comitia of the Royal C of Physicians in THE LANCET of Nov 8, p 585 Licences dental surgery were granted to the following —

Denis Abraham, J E L Armitage, Barbara M Barne Bergmann, R D Bookless, N A Bostock, J A Boyd B G A E Cadman, M F Caton, Philip Cohen R F Cutmore, C De Silva A W Donald, John Dunnett, W J Ford, J H F R M Gillies, A P Gimson, A E G Goodfellow, F L Hall T J cock, M H Holmes, Eric Horne J P Howes, A V Hurst, Kettle, D E Laurie, J F K Leggett, T A Lock, John Morr Wilson, Esther M Myers A B Nahaboo, D A T Payne, W Renouf, Gwendolen M Rodgers, Allan Ross, D F Soul Stacey Henry Stooke, R V Tait J R H Williams, J T Willmot H J W Wilmshurst and F M Wood

Society of Apothecaries of London

The following candidates, having completed the fin examination, have been granted the diploma of the societ entitling them to practise medicine, surgery and midwifer G M Pearson, Guy's, J S Taylor, Leeds, H A Worth Sheff, and S S Zoha, Osmania and N E Lond Post Grad Hosp

University of Wales

At recent examinations for the degrees of M B, B Ch A A Edwards satisfied the examiners in the subject o medicine

University of Sheffield

The following appointments have been made medica tutors, Dr H P Brody and Dr J Pemberton, surgica tutors, Mr A W Fawcett and Mr H Blacow Yates, obstet rical tutor, Dr W J McCord, hon lecturer in applie anatomy, Mr J T Chesterman, and research assistant to th department of pathology and to the cancer research labora tories Dr M J Pirawer

The following external examiners were appointed in th faculty of medicine anatomy, Prof R D Lockhart, physio logy, Prof R J S McDowall, medicine and therapeutics Prof L G Parsons, pathology and bacteriology, Prof S L Baker, obstetrics and gynæcology, Prof A L Robinson forensic medicine, Prof Sydney Smith, pharmacology, Prof W J Dilling, and public health, Dr J A Charles

The following were appointed representatives on th committee of management of Sheffield Hospitals Council The junior pro chancellor, the vice chancellor, Mr H J W Marsh, Prof H N Green, M D, and Prof E J Wayne F R C P

Royal Society of Medicine

On Monday, Nov 24, at 2 P M, Surgeon Lieut Commander John Bunyan, L D S, will read a paper to the sectio of odontology on the treatment of mouth infections wit particular reference to the use of electrolytic sodium hyp chlorite On Nov 27, at 2 30 P M, at the section of urolog Mr Clifford Morson, Mr Charles Wells and Mr Hugh Bur will open a discussion on rupture of the urethra and it treatment On Nov 28, at 2 30 P M, the section of disease u children will discuss the effects of war time rationing on chil health, and the openers will be Miss E M Widdowson, Ph.D Dr Dagmar Wilson and Dr W W Payne At 3 P M, on th same day, at the section of epidemiology and state medicin Dr Melville Mackenzie will read a paper on the control o louse borne typhus and Dr G M Findlay and Prof P A Buxton will also speak

Vitamins for Babies

From Dec 8, the Ministry of Food in cooperation with th Ministry of Health will distribute fruit juices and a cod live oil compound to all children born after Jan 1, 1940 Th first issue of fruit will be blackcurrant syrup or puree but late concentrated orange juice from America will be availabl The ration will ensure an adequate intake of vitamins C, and D to some 1,360,000 children Distribution will be mad through maternity and child welfare centres and food office

ORIGINAL ARTICLES

HIGH STILLBIRTH AND NEONATAL MORTALITIES

DUGALD BAIRD,
M D GLASG, F R C O G
REGIUS PROFESSOR OF MIDWIFERY IN THE UNIVERSITY OF ABERDEEN, OBSTETRICIAN IN CHIEF TO THE ABERDEEN MATERNITY HOSPITAL

JOHN F B WYPER,
M B GLASG, B SC
RESIDENT REGISTRAR AT THE HOSPITAL

IN his book "Poverty and Population"[1] R M Titmuss quotes an estimate made by Dr Enid Charles that if fertility remains at its present level the population of England and Wales will decline at the rate of 24% in each generation, so that on the basis of the 1931 census the number of children in 1945 will have decreased by 25%, and the number of people over 60 will have increased by 36%. Titmuss also quotes Glass who points out that in England and Wales there are great regional differences in fertility. The birth-rate of the south of England is much lower than that of the north and Wales. If the rates for the south-east had operated in the north and Wales during the decade ending 1936 our child population would have been reduced by about 250,000. Titmuss holds that it is illogical and inefficient to contemplate inducing people to have more children until we have judged the extent of contemporary waste in human life, for though it is only the higher fertility-rates in the north of England and Wales which are saving the country from a more rapid and disastrous decline in population, it is exactly in these areas that the infant mortality is highest. For example, in 1935 the infant mortality for Jarrow was 114 per 1000 live births as compared with 32 per 1000 for Coulsdon and Purley. Social conditions in Scotland are on the whole worse than in England, and there are similar variations in fertility so that the same conclusions can be drawn. The infant death-rate in Scotland in 1940 was 78 per 1000, for England and Wales it was 55 per 1000. It is obvious, therefore, that in Britain today many infants are dying who should not do so.

It has been recognised for some time now that the infant mortality is largely dependent on poverty and its resulting low standard of living. That neonatal mortality also depends on social conditions is suggested by the figures published by McNeil[2] who showed that in 1937 the neonatal mortality in Scotland was 38 per 1000, in the north of England 34 and the south-east 24. Comparing cities he showed that the rate for Glasgow was 43 per 1000 for Greater London 24, Chicago 25 and Amsterdam 16.

Less information is available about stillbirths, these were notifiable for the first time in Scotland in 1940, where the rate for that year was 42 per 1000 and for England and Wales 36 per 1000. Since most neonatal deaths are directly connected with pregnancy or child-birth, it is permissible to add them on to the stillbirths to get some idea of the number of children who reach the stage of viability and yet die as a result of some complication of pregnancy, labour or the puerperium. In Scotland during 1940 the figure was 80 per 1000 births, this seems a dangerously high figure, especially when taken in conjunction with the falling birth-rate.

Before one can give any opinion as to how the figure can be lowered it is important to study the actual causes of death in detail. This can only be done in hospital where records are detailed and an autopsy is usually carried out. With this end in view, we have analysed the stillbirths and neonatal deaths occurring in the Aberdeen Maternity Hospital during the years 1938–40 inclusive. The cases were divided into booked cases and emergency cases.

MORTALITY IN BOOKED HOSPITAL CASES

There were 93 stillbirths (27.1 per 1000) among the 3427 booked cases. In 49 the child was mature and in 44 premature. Among the full-time cases there were two main groups. In the first group (19 cases) no adequate explanation could be found to explain the stillbirths, the fœtus died before the onset of labour or during the course of an easy labour and in some of these a small tentorial tear was found with or without intracranial bleeding. In the second group (12 cases) trauma was the important factor and here the labour was difficult owing to breech presentation, prolapse of the cord or uterine dysfunction, the death of the child was understandable, being due to asphyxia shock or cerebral hæmorrhage. In the premature babies (44 cases) prematurity was the chief factor in bringing about the stillbirths. In some cases a pathological condition of the mother was present (pre-eclampsia in 6 cases debility in 5, placenta prævia in 4, accidental hæmorrhage in 3) but in almost half of the cases (19) no explanation for the premature onset of labour could be found. The stillbirth figure of 27.1 per 1000 births seems high but compares favourably with the stillbirth-rate of 39 per 1000 for the city generally and 42 per 1000 for Scotland as a whole. In the present state of our knowledge the figure cannot be reduced substantially.

During the same period there were 94 neonatal deaths among booked cases (46 full-time and 48 premature)—a rate of 27.4 per 1000 births. Causes of death in the group of full-time babies were infection 18 trauma 6, unknown 5 gross fœtal deformity 6 atelectasis 3 accidental hæmorrhage 1, placenta prævia 1, suffocation by overlying (after discharge from hospital) 3 miscellaneous 3. Among the 18 deaths due to infection, 16 occurred after discharge from hospital. As far as could be ascertained, 7 were due to pneumonia and 9 to gastro-enteritis. The 2 deaths in hospital were due to pneumonia. It appears therefore, that the risk of infection in full-time babies in a well-run maternity hospital is much less than in the home. Of the 6 deaths from trauma, 3 followed difficult labour and might have been avoided if cæsarean section had been done, the other 3 followed fairly easy labour.

The factors responsible for the onset of premature labour in the cases where death was associated with prematurity were as follows unknown 17 debility 7, pre-eclampsia 5, twin pregnancy 8, eclampsia 3, accidental hæmorrhage 1, placenta prævia 3, gross fœtal deformity 2, miscellaneous 2. The important factor here again is the unknown one. In 17 cases no reason could be detected by clinical means to explain why labour came on prematurely. The actual cause of death in these cases may have been cerebral hæmorrhage, atelectasis, pneumonia or gastro-enteritis, but it was felt that the important predisposing factor was the prematurity.

The neonatal mortality for the City of Aberdeen is 33 per 1000 and for booked cases in hospital 27.4 per 1000, but if the deaths due to infection after leaving hospital and overlying are removed the figure falls to 21.3 per 1000. Any substantial fall below this figure could only be effected by the prevention of premature labour, this problem will be discussed later.

MORTALITY IN EMERGENCY CASES

During the years 1938–40 there were 187 stillbirths in 616 emergency cases—83 in full-time deliveries and 104 in premature cases. In the full-time cases the most common cause of stillbirth was a mechanical factor—difficult labour and placenta prævia (41 cases or 50%). Many of the deaths in this group could have been avoided by earlier admission to hospital. Pre-eclampsia in the mother, in some cases followed by accidental hæmorrhage, accounted for 24 stillbirths. Some of the deaths in this group could have been avoided by better antenatal care and earlier admission to hospital with longer rest in bed. There were no other groups of importance.

As regards stillbirths in premature babies, the biggest factor was toxæmia in the mother (50 cases or almost 50%). The other categories were accidental hæmorrhage without toxæmia 11 cases, placenta prævia 15, cause unknown 12. In these groups fewer of the deaths are avoidable. In some of the cases of toxæmia better antenatal care would have saved the child's life, but many were probably unavoidable, they include cases where the mother made a poor response to treatment, fulminating cases, and others where intra-uterine death of the fœtus occurred even where the toxæmia was apparently mild and responding well to treatment.

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[1] London 1938

[2] McNeil C *Lancet*, 1940 1, 912

such an appointment is not easy, and it was with this in mind that I deemed it wise to proceed cautiously and utilise the services of a member of the health-visiting staff in the scheme described When the good results of such visiting are proved it will be simpler to persuade an authority to go ahead with the appointment of an almoner, or to join a group of authorities and thus to justify a whole-time appointment In dealing with so difficult a disease as venereal disease, which has social, psychological and moral complications and legal snags, it is essential to select a nurse of the right personality, discretion and power of persuading patients In nursing staffs of large health departments there is sure to be one or more who fulfils these conditions, and thereby a start can be made in this valuable work

VALUE OF HOME VISITING

It is claimed that the results of this small scheme are sufficient justification for the venture and the expense involved To get over a third of the defaulters to attend regularly is of decided value, but the results cannot be assessed merely by statistics Two individual cases are worthy of description

CASE 1 —A girl, aged 16, with acute gonorrhœa This acutely infectious case, living under bad home conditions, defaulted before completing treatment The visitor got to know her patient, and the mother's opposition melted before a simple explanation of the function of a special treatment centre The patient was persuaded to attend Again she defaulted Further visits resulted in regular attendance, and she was finally discharged cured In this case, the girl was put in touch with a girls' club, and it is believed that much social as well as physical good to her future life has ensued from the intervention of the visitor It is reasonable to assume that the possible consequences of this girl's defaulting would certainly have been a danger to herself, and probably to others

CASE 2 —A woman, aged 27, with congenital syphilis This patient suffered from interstitial keratitis and irido-cyclitis She consented to visit the clinic only after many visits had been paid, and the visitor arranged to accompany her to the clinic Subsequently, this patient defaulted, but after small personal problems had been dealt with treatment was continued more or less regularly Her eye condition dramatically improved This would not have been achieved if ordinary clinic methods of follow-up letters had been employed to secure further attendance

Only by means of visiting can the real reason of defaulting be discovered These patients are human—all too human There are numerous obstacles to attendance, some minor and absurd, but they are often easily overcome by right handling Weariness in attending, the wishful thinking whereby patients believe attendance unnecessary on the cessation of an obvious discharge, quarrels on the subject between husband and wife, ill health, the glib promise to attend given to the doctor in the clinic, the terror of discovery or losing a job, the threat to happiness, the guilty conscience or innocent shame—these factors, of enormous importance, show that cure of venereal disease is not entirely a medical problem

Home visiting was worth while in the case of mothers who had been treated antenatally Such patients are prone to default The birth of an apparently healthy baby convinces the mother that there is no further need to attend, while the added care of the baby renders attendance difficult In several cases the private practitioner was said to have informed them they that did not require to attend

Cases visited with the least success were those who live in " houses let in lodgings " and who frequently move from town to town Several such women suffering from acute gonorrhœa (living in the same house and having been infected by the same man) attended for a short time, defaulted, and when they were visited it is found they have moved on, leaving no address In one family where the children were congenitally infected the reason for defaulting given was that the journey to the clinic was too long This reason would never have been given in response to a letter, but could only be elicited on visiting the home In this case arrangements were made for the treatment to be given at a nearby school clinic

In several cases it was discovered that the times at which the clinic was opened were unsuitable It is of obvious importance for the staff in charge of a clinic to be acquainted with these deterrents, yet I do not see the staff can realise all the difficulties unless the which are gained from home visiting are known to t War-time difficulties of shift work, blackout, transport difficulties and increased female employment aggra the obstacles to attendance, and it is more than e important that these factors should be brought to light, so that the authorities can as far as possible make the clinics suit the patients, and make minor but nevertheless important improvements in clinic services

In only 2 cases were there definite refusals to discuss the question of attendance at V D clinics In 20 of the 134 the patients gave a definite refusal to attend, and the refusal was accepted Medical officers have the consolation of knowing that, at any rate, the patients have been warned, and that every expedient has been used to ensure attendance No attempt was made—nor was any necessary—to browbeat the patients into attending In many cases, simple methods of explanation, kindness and encouragement were all that were required to dispel ignorance and fear and secure cooperation

No attempt was made to solve the thornier problem of visiting defaulting male patients or contacts I know of no record of this work being done at all in this country On a pre-war visit to a Paris clinic I admired the ease and objectivity with which this work was done

The confidential nature of venereal disease treatment was preserved No legal difficulties were encountered. The scheme was economical—a useful point in persuading committees—the cost of the time of the nurse in visiting would not amount to more than £25 throughout the year This expense is small in view of the results obtained in the 2 cases quoted above, apart from the general fact that some attendance of nearly half of the patients who had defaulted was secured, while the attendance of over a third of chronic defaulters to the end of treatment and tests of cure was ensured

Very few venereal-disease clinics in this country use a home visitor to induce defaulters to complete treatment or to trace and treat contacts, yet I consider that the home visitor is an essential member of the team necessary to achieve greater success in this difficult work

I acknowledge the ever ready help and encouragement given by officers of the British Social Hygiene Council Any success which the scheme had is due to the personal effort of Miss Hilda E Myers of the Barnsley health department

REEVE TO THE L C C

THE mental hospitals committee of the council have always been farmers in a small way, for it was considered wise that patients at the mental hospitals of the council should where possible have a chance of doing healthy work in the open air, and farms were attached to several institutions Since the outbreak of the war the farmland of the council has been nearly doubled—today they farm over 5000 acres—and last July they asked the committee to undertake the general control of their scattered plots It therefore fell to the mental hospitals committee to present the report of the yield of the council's lands up to the end of March, 1941, though this was before they took over The committee explain that the drastic rationing of foodstuffs caused a fall in the number of eggs produced (359,000 in 1941 against 556,000 in 1939) Outbreaks of foot-and mouth disease reduced the number of cows kept and the milk production fell from 650,000 gallons in 1939 to 543,000 gallons in 1941 Next year, under the new scheme of coordination the committee hope to increase the production of vegetables, potatoes and animal foodstuffs by as much as 60%, 250% and 375% over their pre-war level of 1200 tons, 1000 tons and 1400 tons respectively If there should be a shortage of supplies the products of these farms will form a valuable pool of foodstuffs on which the claims of hospitals will be given priority

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CORRIGENDA —The Minister of Health's request in circular 2498 (see *Lancet*, Nov 8, p 571) that tuberculosis notifications should reach him promptly was addressed to county councils and county borough councils The circular was sent to the other bodies mentioned for information only—In the summary of Major Palmer's article of Nov 8 (p 563) for " antitetanic serum " read " tetanus toxoid "

ORIGINAL ARTICLES

HIGH STILLBIRTH AND NEONATAL MORTALITIES

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IN his book "Poverty and Population"[1] R M Titmuss quotes an estimate made by Dr Enid Charles that if fertility remains at its present level the population of England and Wales will decline at the rate of 24% in ch generation, so that on the basis of the 1931 census e number of children in 1945 will have decreased y 25%, and the number of people over 60 will have creased by 36% Titmuss also quotes Glass who oints out that in England and Wales there are great egional differences in fertility The birth-rate of the outh of England is much lower than that of the north nd Wales If the rates for the south-east had operated n the north and Wales during the decade ending 1936 ur child population would have been reduced by about 250 000 Titmuss holds that it is illogical and inefficient o contemplate inducing people to have more children ntil we have judged the extent of contemporary waste n human life, for though it is only the higher fertility-rates in the north of England and Wales which are saving the country from a more rapid and disastrous decline in population, it is exactly in these areas that the infant mortality is highest For example, in 1935 the infant mortality for Jarrow was 114 per 1000 live births as compared with 32 per 1000 for Coulsdon and Purley Social conditions in Scotland are on the whole worse than in England, and there are similar variations in fertility so that the same conclusions can be drawn The infant death-rate in Scotland in 1940 was 78 per 1000, for England and Wales it was 55 per 1000 It is obvious, therefore, that in Britain today many infants are dying who should not do so

It has been recognised for some time now that the infant mortality is largely dependent on poverty and its resulting low standard of living That neonatal mortality also depends on social conditions is suggested by the figures published by McNeil[2] who showed that in 1937 the neonatal mortality in Scotland was 38 per 1000, in the north of England 34 and the south-east 24 Comparing cities he showed that the rate for Glasgow was 43 per 1000 for Greater London 24, Chicago 25 and Amsterdam 16

Less information is available about stillbirths; these were notifiable for the first time in Scotland in 1940, where the rate for that year was 42 per 1000 and for England and Wales 36 per 1000 Since most neonatal deaths are directly connected with pregnancy or childbirth, it is permissible to add them on to the stillbirths to get some idea of the number of children who reach the stage of viability and yet die as a result of some complication of pregnancy, labour or the puerperium In Scotland during 1940 the figure was 80 per 1000 births, this seems a dangerously high figure especially when taken in conjunction with the falling birth-rate

Before one can give any opinion as to how the figure can be lowered it is important to study the actual causes of death in detail This can only be done in hospital where records are detailed and an autopsy is usually carried out With this end in view, we have analysed the stillbirths and neonatal deaths occurring in the Aberdeen Maternity Hospital during the years 1938–40 inclusive The cases were divided into booked cases and emergency cases

MORTALITY IN BOOKED HOSPITAL CASES

There were 93 stillbirths (27 1 per 1000) among the 3427 booked cases In 49 the child was mature and in 44 premature Among the full-time cases there were two main groups In the first group (19 cases) no adequate explanation could be found to explain the stillbirths, the fœtus died before the onset of labour or during the course of an easy labour and in some of these a small tentorial tear was found with or without intracranial bleeding In the second group (12 cases) trauma was the important factor and here the labour was difficult, owing to breech presentation prolapse of the cord or uterine dysfunction, the death of the child was understandable, being due to asphyxia shock or cerebral hæmorrhage In the premature babies (44 cases) prematurity was the chief factor in bringing about the stillbirths In some cases a pathological condition of the mother was present (pre-eclampsia in 6 cases debility in 5 placenta prævia in 4, accidental hæmorrhage in 3) but in almost half of the cases (19) no explanation for the premature onset of labour could be found The stillbirth figure of 27 1 per 1000 births seems high but compares favourably with the stillbirth-rate of 39 per 1000 for the city generally and 42 per 1000 for Scotland as a whole In the present state of our knowledge the figure cannot be reduced substantially

During the same period there were 94 neonatal deaths among booked cases (46 full-time and 48 premature)—a rate of 27 4 per 1000 births Causes of death in the group of full-time babies were infection 18 trauma 6 unknown 5 gross fœtal deformity 6 atelectasis 3, accidental hæmorrhage 1 placenta prævia 1, suffocation by overlying (after discharge from hospital) 3 miscellaneous 3 Among the 18 deaths due to infection, 16 occurred after discharge from hospital As far as could be ascertained, 7 were due to pneumonia and 9 to gastro-enteritis The 2 deaths in hospital were due to pneumonia It appears therefore, that the risk of infection in full-time babies in a well-run maternity hospital is much less than in the home Of the 6 deaths from trauma 3 followed difficult labour and might have been avoided if cæsarean section had been done, the other 3 followed fairly easy labour

The factors responsible for the onset of premature labour in the cases where death was associated with prematurity were as follows unknown 17 debility 7, pre-eclampsia 5, twin pregnancy 8, eclampsia 3, accidental hæmorrhage 1, placenta prævia 3, gross fœtal deformity 2, miscellaneous 2 The important factor here again is the unknown one In 17 cases no reason could be detected by clinical means to explain why labour came on prematurely The actual cause of death in these cases may have been cerebral hæmorrhage, atelectasis pneumonia or gastro-enteritis, but it was felt that the important predisposing factor was the prematurity

The neonatal mortality for the City of Aberdeen is 33 per 1000 and for booked cases in hospital 27 4 per 1000, but if the deaths due to infection after leaving hospital and overlying are removed the figure falls to 21 3 per 1000 Any substantial fall below this figure could only be effected by the prevention of premature labour, this problem will be discussed later

MORTALITY IN EMERGENCY CASES

During the years 1938–40 there were 187 stillbirths in 616 emergency cases—83 in full-time deliveries and 104 in premature cases In the full-time cases the most common cause of stillbirth was a mechanical factor—difficult labour and placenta prævia (41 cases or 50%) Many of the deaths in this group could have been avoided by earlier admission to hospital Pre-eclampsia in the mother, in some cases followed by accidental hæmorrhage, accounted for 24 stillbirths Some of the deaths in this group could have been avoided by better antenatal care and earlier admission to hospital with longer rest in bed There were no other groups of importance

As regards stillbirths in premature babies, the biggest factor was toxæmia in the mother (50 cases or almost 50%) The other categories were accidental hæmorrhage without toxæmia 11 cases, placenta prævia 15, cause unknown 12 In these groups fewer of the deaths are avoidable In some of the cases of toxæmia better antenatal care would have saved the child's life, but many were probably unavoidable, they include cases where the mother made a poor response to treatment, fulminating cases, and others where intra-uterine death of the fœtus occurred even where the toxæmia was apparently mild and responding well to treatment

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[1] London 1938

[2] McNeil C *Lancet*, 1940 1, 912

There must, therefore, be a large wastage in the toxæmia group until more is known about the ætiology of eclampsia The deaths from placenta prævia are unavoidable

Of the neonatal deaths in emergency cases, 24 occurred in full-time babies The causes of death here were trauma 15, unknown 2, placenta prævia 1, infection 1, gross fœtal deformity 3, miscellaneous 2 In most of these cases of trauma the death was due to cerebral hæmorrhage following difficult labour, and without doubt some of the deaths could have been avoided if the mothers had been sent into hospital earlier in labour Deaths occurred in 55 premature babies and the causes of the premature onset of labour were unknown 10, toxæmia 8, accidental hæmorrhage 9 twin pregnancy 5, placenta prævia 8, debility 2, gross fœtal deformity 2, miscellaneous 11

DISCUSSION

Booked cases —In order to assess the wastage of child life from obstetrical causes it is convenient to consider the stillbirth and neonatal death-rates together In the Aberdeen Maternity Hospital during the years 1938–40, out of 3427 booked cases there were 187 stillbirths or neonatal deaths , this rate of 54 5 per 1000 is much less than the figure of 69 8 per 1000 for the city as a whole Discounting the Maternity Hospital booked cases, the figure for obstetric practice for the rest of the city—that is to say, domiciliary midwifery and emergency cases sent to hospital—is about 78 5 per 1000, which compares very unfavourably with the figure of 54 5 per 1000 for the hospital booked cases

Among full-time babies (95 cases) the cause of death was unknown in 25 3% of cases , trauma accounted for 18 9% infection for 18 9% and gross fœtal deformity for 8 3% A few of the deaths from trauma might be avoided The deaths from infection occurred after the children had gone home and are thus at present unavoidable, so that the main scope for improvement is in the large group where no adequate explanation exists to account for the death

Most of the premature babies (92 cases) who die succumb within 24 hours of birth because they are so feeble The cause of the premature onset of labour was unknown in 37%, toxæmia in 15 2%, debility in 13%, twin pregnancy in 8 7%, placenta prævia 7 6%, gross fœtal deformity in 5 5%, miscellaneous in 13% The more highly skilled the care bestowed on them, of course, the more chance these infants have of survival, but even with the best care many of them die Table I shows that where the child weighs more than 4½ lb at birth the chance of survival is good, but that with children under this weight the mortality rises abruptly An analysis of the neonatal deaths in premature babies in hospital shows that in a series of 89 cases, 76 were under 4½ lb and of these 59 lived less than 24 hours The problem therefore involves more than improved pædiatrics

TABLE I—RESULTS OF TREATMENT OF 352 PREMATURE BABIES IN THE ABERDEEN MATERNITY HOSPITAL, DURING 1938, 1939 AND 1940

Weight at birth (lb)	5½–5	5–4½	4½–4	4–3½	3½–3	Under 3
Infants	142	75	55	32	23	25
Deaths	7	6	22	16	14	24
Death rate per 1000	49	80	400	500	643	960

Emergency cases —As far as the analysis of the deaths in emergency cases is concerned different conclusions must be drawn Out of a total of 266 stillbirths and neonatal deaths in this group, 107 occurred in full-time babies and the biggest individual factor here was trauma (41%), followed by toxæmia 12%, accidental hæmorrhage 16%, and placenta prævia 12% Trauma, placenta prævia and toxæmia together account for 65% of the deaths and most of these could be avoided by better obstetrics A big reduction could be achieved by checking the blood-pressure regularly, avoiding the use of forceps till the head is low in the pelvis, and by sending all cases of antepartum hæmorrhage to hospital as soon as there is any bleeding

TABLE II—ANALYSIS OF 250 CASES SEEN IN SPECIALIST PRACTICE, 708 BOOKED CASES SEEN IN NURSING HOME PRACTICE AND 3427 BOOKED CASES SEEN IN HOSPITAL

Parity of mother	Full time cases		Premature cases		Pregnancies ending prematurely (%)	Death rate per 1000 births
	In fants	Stillbirths and neonatal deaths	In fants	Stillbirths and neonatal deaths		
SPECIALIST PRACTICE						
1	136	1	3	0		
2	61	1	1	0		
3	30	1	1	0		
4	13	0	0	0		
5 and over	5	0	0	0		
	245	3	5	0		
NURSING HOME PRACTICE						
1	404	11	43	18	9 6	64
2	164	4	5	2	3	35
3	63	1	3	0	4 5	16
4	21	2	0	0		
5 and over	5	1	0	0		
	657	19 (28 6/1000)	51	20 (400/1000)		
HOSPITAL PRACTICE						
1	1137	39	117	34	9 3	58
2	723	17	65	19	8 3	44
3	431	14	41	13	8 7	[illegible]
4	238	8	22	5	8 4	50
5 and over	597	17	56	21	8 6	60
	3126	95 (30/1000)	301	92 (306/1000)		

In the 159 deaths from prematurity among emergency cases the cause of the premature labour was toxæmia 26%, accidental hæmorrhage 25% (more than half of these also had toxæmia), placenta prævia 14 5%, unknown 13 5% About a third of all the cases of premature labour were due to pre-eclampsia or pre eclampsia complicated by accidental hæmorrhage , in more than half of these the antenatal care was poor In cases of accidental hæmorrhage without toxæmia, cases of placenta prævia and cases where the cause of the onset of labour is unknown (62 cases or 39% of the total), little can be done in the present state of our knowledge

As far as the emergency cases are concerned there is great scope for improvement in both antenatal and intranatal care, which would result in the saving of many children Among booked cases only slight improvement in the infant death-rate can be looked for by improvement in treatment along the present lines The big factors are the toxæmias (the ætiology of which is understood so little), unexplained death and unexplained premature labour

Biochemical studies in metabolism would be valuable in the investigation of this problem, but we have not found it possible to undertake such investigations under present conditions We have, however, tried to find out whether there is any relationship between poverty and the high incidence of prematurity and stillbirths of unknown origin For this purpose we have compared booked cases in the maternity hospital with those of nursing-home and specialist practice Unfortunately, the numbers of the two latter groups are small and conclusions must be accepted with reserve

The figures for specialist practice (*table* II) show 3 deaths in 250 deliveries (12 per 1000) The deaths were due to anencephaly, melæna neonatorum, and cerebral hæmorrhage following spontaneous delivery There were only 5 premature labours, all due to pre-eclampsia, and no deaths among them

An analysis of nursing-home cases (table II), shows two points of interest First, there were a few deaths in full-time babies , these were mostly due to cerebral hæmorrhage following difficult labour (for example, breech presentation or forceps delivery in vertex cases) Secondly, a number of deaths occurred from prematurity, generally the result of pre-eclampsia (13 out of 18 of the infantile deaths in primiparæ) The incidence of prematurity was much greater in first than in later pregnancies , 9 6% of all babies in primiparæ were premature and only 3% in a second pregnancy. This in itself raises the fœtal death-rate in the first pregnancies, since, as the table shows, the fœtal death-rate in premature babies is much higher than in full-time babies The total infant death rate, including stillbirths and neonatal deaths, was 55 per 1000 births

Among the hospital booked cases (table II) the mortality for full-time babies was also much lower than for premature babies (30 per 1000 against 306 per 1000) In contrast to the nursing-home figures, the proportion of premature labours to the total did not fall off after the first pregnancy, and because of this the death-rate among the babies remained almost the same in each parity Whereas the main cause of fatal prematurity in nursing-home practice was pre-eclampsia, in hospital the largest group came under the heading of " cause unknown " (37% of the total)

The cause of death among full-time babies in booked hospital cases was undetermined in by far the biggest group, in contrast to the nursing-home cases or the emergency hospital cases where the commonest cause of death was trauma following difficult labour The almost complete absence of the " unexplained " factor as a cause of death in nursing-home and specialist practice and the difference in the incidence of premature labour points to the importance of economic factors, the most important of which would be deficiency in diet and lack of adequate rest among the poor Attendance at a hospital antenatal clinic and delivery under the best conditions in hospital will accomplish a great deal for these people In Aberdeen the comparative figures show that they can reduce the wastage of life due to both stillbirth and neonatal mortality from 78 5 to 54 5 per 1000 , in fact, if these figures are corrected for babies dying of infection after dismissal from hospital,* the relative figures are 81 7 and 48 4 These measures, however, cannot neutralise the effects of faulty diet and poor home conditions The figure of 12 per 1000 for specialist practice shows what can be accomplished where these adverse factors do not operate In this last group, the patients had not only good nursing and medical attention but good home conditions with the advantages of better education and sound nutrition The figures encourage the hope that when the living conditions of the poor resemble in their essential details those of the more prosperous section of the community a big saving in child life will result

The numbers presented here are far too small for any conclusions to be drawn with confidence, but they call for a similar analysis on a large scale Should the conclusions be substantiated they are doubly important in war-time when living conditions deteriorate and diet may become deficient In peace-time, first-class proteins and the protective foods were too expensive to be used in sufficient quantity by the poor Since the outbreak of war the Government, by such measures as the milk scheme, has done something to remedy this evil , but since there is a shortage of first-class proteins and protective foods diets are likely to remain deficient It is important to see that extra foodstuffs are given in the first instance to those who need them most—expectant mothers and all growing children The most efficient and economical method of doing this is by a widespread extension of communal dinners The expectant mother would thus be assured of one meal daily which would contain all the substances thought to be necessary for the wellbeing of her child She would have a much needed respite from cooking and washing-up, and there would be ample opportunity for practical education in the principles of good nutrition

SUMMARY

The causes of stillbirth and neonatal deaths in the Aberdeen Maternity Hospital have been analysed In 3427 booked cases where the baby was full-time there was no adequate explanation of the death in 25 3% of the total , trauma accounted for 18 9% and fœtal deformity for 8 3% There were few deaths from infection in hospital

Among the premature births no adequate explanation of the reason for the premature onset of labour could be found in 37% , toxæmia accounted for 15 2% The death-rate was largely determined by the degree of prematurity

The combined stillbirths and neonatal deaths in private specialist practice, in hospital practice and domiciliary practice were found to be 12 per 1000 54 5 per 1000 and 78 5 per 1000 The low figure in the first group is probably due to a combination of favourable factors—economic, nursing and medical In the second group the nursing and medical factors are favourable but economic conditions are unfavourable In the third group the high figure indicates the need for an all-round improvement in medical and nursing care as well as economic conditions

There is thus a large wastage of child life (approximately 80 per 1000 births) associated with childbirth in Scotland, intimately connected with unfavourable economic conditions, and malnutrition and fatigue in the mother If investigations on a large scale substantiate these findings, then measures to ensure proper feeding and care of pregnant women are urgently needed

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RELATIONSHIP OF EXANTHEMATIC AND ENDEMIC TYPHUS

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IT has long been recognised that an attack of endemic typhus protects against infection with exanthematic typhus and vice versa, but the exact relationship between exanthematic and endemic typhus has remained obscure The usual suggestion is that endemic typhus is the more primitive form, the exanthematic typhus rickettsiæ resulting as a modification from continued passage through the human host and the human body louse (cf Castaneda 1940) There may exist intermediate strains between those that do and those that do not cause inflammation of the tunica vaginalis of the guineapig (Castaneda and Silva 1939) Earlier efforts to demonstrate an antigenic relationship in animals were however not very successful Zinsser and Castaneda (1930, 1933), Varela, Parada and Ramos (1932) and Mooser and Sparrow (1933) either completely failed to show any immunity or found only a partial immunity when guineapigs immunised with killed endemic typhus rickettsiæ were subsequently inoculated with exanthematic rickettsiæ The antigens used by all these workers were, however, comparatively weak, being prepared from the peritoneal washings of rats treated with benzol and then infected with endemic typhus Veintemillas (1939), using a more concentrated antigen prepared from irradiated rats and, giving multiple injections, protected all of his test animals against an exanthematic strain of typhus rickettsia isolated in Mexico With still richer antigens prepared from the lungs of mice and rats more striking evidence of cross-immunity between endemic and exanthematic typhus has been obtained in guineapigs

Finlayson and Grobler (1940), using a vaccine prepared in Castaneda's laboratory from an endemic typhus strain isolated in Mexico, reported that they were able to protect guineapigs against infection by both endemic and epidemic virus from South Africa A single injection of 1 c cm was sufficient to protect against endemic strains, whereas two injections of 1 c cm were required to protect against exanthematic strains Later Finlayson (1940) found that when the vaccine was concentrated to half its original volume by precipitation with alum guineapigs were protected against the exanthematic strain by a single injection of 1 c cm Analogous results have been reported by Castaneda (1941) using a murine lung vaccine from an orchitic strain L, isolated in Mexico as an antigen against the Breinl strain of exanthematic typhus Of 11 guineapigs given three injections of 1 c cm , 8 were completely protected and 3 partially protected , of 11 guineapigs given two injections the total amount per animal varying from 0 5 to 2 c cm ; 6 were protected and 5 partially protected , of 5 guineapigs given one injection of 1 c cm 2 were partially protected and 3 were unprotected It would thus seem that in guineapigs the degree of immunity bears a relationship to the amount of antigen injected The question whether a similar relationship holds good in man is uncertain

AN EXPERIMENT IN MAN

Although a considerable number of human beings have been inoculated with rickettsiæ in an effort to produce immunity against typhus very little is known about the efficacy of these various forms of vaccination The following unrehearsed experiment may therefore be worth placing on record

In January, 1940, G M F, aged 47, was given three injections of Weigl's louse vaccine containing killed exanthematic typhus rickettsiæ no reaction occurred but there was no positive Weil Felix reaction and no rickettsicidal power could be shown in the serum by the intradermal test in rabbits devised by Giroud (1938) During April, 1940, four injections of 1 c cm of a mouse lung vaccine, prepared by Durand and Giroud (1940), were given at intervals of five days, the vaccine again contained killed exanthematic typhus rickettsiæ There was no local or general reaction but subsequently the serum was shown to contain rickettsicidal immune bodies by the intradermal test in rabbits against exanthematic typhus During the next six weeks experiments were carried out on the intranasal instillation into mice of both exanthematic and endemic typhus rickettsiæ In June G M F developed a febrile reaction lasting five days with maximum temperature 101° F and for the first two days considerable frontal and postocular headache A very few discrete roseolar spots were seen on the abdomen and side of the chest On the second day of fever blood was injected into rats and guineapigs An orchitis-producing strain of typhus rickettsia was isolated There were no complications and it was possible to return to work within a fortnight

A week before G M F's illness, a laboratory technician, aged 18, had gone sick with headache and fever He had received one injection of 1 c cm of the mouse lung vaccine containing killed exanthematic typhus rickettsiæ Three days after receiving the injection he complained of slight headache with no rise in temperature and two days later was given a second injection of 1 c cm of the same mouse-lung vaccine Twenty-four hours later his morning temperature was 100 2° F He developed fever which continued for a fortnight, maximum 103 8° F, associated with headache, photophobia and a transitory rash On the third day of fever blood was injected into rats and guineapigs An orchitic strain of rickettsia was obtained from the blood

From both cases a strain of endemic typhus rickettsia was thus obtained but the disease was far more severe in the technician than in G M F The same batch of vaccine was subsequently inoculated into 12 other persons not actively engaged in typhus investigations without causing any febrile reaction, and when injected into guineapigs it also failed to produce fever In both the cases here recorded the infection was therefore contracted during work with active endemic typhus rickettsiæ, being apparently modified in the first case by the presence of some degree of immunity against exanthematic typhus, despite the fact that typhus is usually more severe over the age of 40 This unrehearsed human experiment therefore bears out the contention that there is a close antigenic similarity between rickettsiæ of exanthematic and endemic typhus

CONCLUSION

In two cases of endemic typhus infection was contracted in the laboratory In one the infection was apparently modified by previous immunisation with killed exanthematic typhus rickettsiæ, thus confirming observations in guineapigs which suggest that the relationship between the rickettsiæ of exanthematic and endemic typhus is quantitative rather than qualitative

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RADIOLOGICAL VISUALISATION OF THE EUSTACHIAN TUBE

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THE possibility of obtaining information by contrast radiological examination of the eustachian tube became manifest to us during the course of a clinical investigation of the conductive form of deafness which sometimes occurs during loss of altitude in aircraft Since the results have proved of practical value an account of our technique may be of use to others engaged in similar work

This type of deafness is considered to be due primarily to obstruction of the eustachian tube brought about by an inequality of the atmospheric and intratympanic pressures According to Armstrong and Heim (1937) a positive atmospheric pressure which exceeds that within the middle-ear cleft by 90 mm of mercury may bring about closure of the tube Nevertheless, in spite of the signs and symptoms, and the studies carried out by Armstrong and Heim and other observers, there is no positive proof that the aural symptoms result from blockage of the tube

For the purposes of these notes the eustachian tube may be regarded as consisting of two cones of unequal length united at their apices (fig 1) In the adult it measures 35–40 mm in length, and it forms an angle of 45° with the sagittal plane and of 30° with the horizontal plane The pharyngeal cone—cartilaginous or membranous portion—represents two-thirds of the entire length and its nasopharyngeal ostium measures 8 mm by 5 mm The tympanic cone—osseous portion—constitutes the remaining third of the tube and the dimensions of its opening into the middle ear are 5 mm by 3 mm The tubal lumen is narrowest at the junction of the apices—the isthmus—where it measures only 2 mm by 1 mm

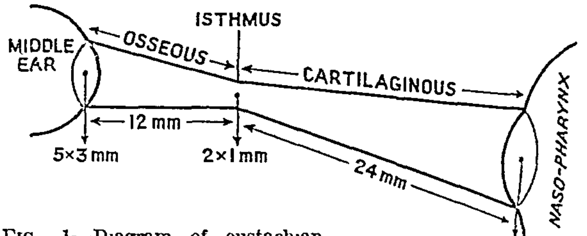

FIG 1—Diagram of eustachian tube

Published accounts of the radiological examination of the eustachian tube are few

Spielberg (1927) passed a no 4 silk catheter "about 3 cm to 4 cm within the membranous tube" through a silver catheter and then insufflated 10–15 drops of iodised oil either by a small air-pump or a soft rubber bulb He stated, also, that the eustachian tube could be filled with iodised oil through any metal tube without inserting a silk catheter If the measurements given are accurate the silk catheter was certainly in the osseous canal, if not in the middle ear Furthermore it is our experience that, although it may be possible in some cases to introduce radio opaque oil through an eustachian catheter alone, it is a haphazard method which affords incomplete pictures of the lumen of the tube

Engel (1932) demonstrated the lumen of the tube throughout its entire length in a patient suffering from suppurative infection of the peritubal cells which had ruptured into the nasopharynx While tracing the fistula from its outlet he filled the eustachian tube with opaque oil

Heimendinger (1938) took lateral and verticomental views of his patients after the passage of silk bougies impregnated with bismuth He endeavoured to inject iodised oil into the tube but was unsuccessful because the oil escaped from the nasopharyngeal orifice

Our experiments have shown that in order to obtain satisfactory radiograms it is necessary to introduce into

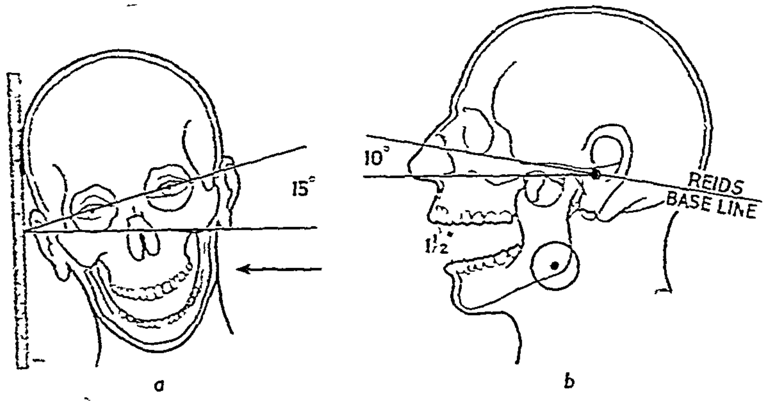

FIG 2—Positions of skull for radiography of eustachian tube

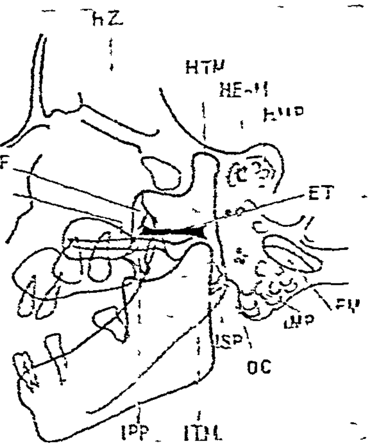

FIG 3—Relations of shadow cast by eustachian tube to surrounding bony structures H = heterolateral I = ipsolateral, Z = zygomatic arch T M. = temporomandibular articulation, E.A.M = external auditory meatus, M P. = mastoid process F.M. = foramen magnum, O C = basi-occiput S P = styloid process P P = pterygoid plate; P.M F, pterygomaxillary fissure

the tube a non-irritating opaque medium of low viscosity and as far as possible to eliminate overlying bony shadows by positioning

TECHNIQUE

Introduction of opaque medium—An eustachian catheter is passed into the orifice of the tube via a previously anæsthetised nasal fossa, and a tympanic catheter is then gently pushed through this into the lumen of the tube until it meets with an obstruction An obstruction has been present in all of the 34 cases in our series, and its site has varied from 0·5 cm to 2·5 cm from the tip of the catheter It is essential at this point to confirm the position of the catheter with a postnasal mirror, and it is surprising and instructive to note how sometimes the tympanic catheter is lying altogether outside the tubal ostium above or behind the cushion. The stilette is removed and the tympanic catheter itself withdrawn so that not more than 0·5 cm of its length is projecting into the eustachian tube, 10 minims of opaque medium is then injected into the tympanic catheter under moderate pressure from a well-fitting syringe The air contained in the tympanic catheter and the excess of opaque medium escape into the nasopharynx round the tip of the catheter Occasionally the patient feels a sharp pain in the ear for a few seconds but this is not evidence of patency of the tube since it has occurred in several cases of tubal obstruction

Opaque media—We have found iodised oils to be unsatisfactory media because their high viscosity renders their passage almost impossible through the small lumen of the tympanic catheter A 10% solution of sodium iodide afforded a satisfactory shadow, but one patient developed an acute otitis media after injection so that its use was abandoned Latterly we have employed Pyelectan which has caused no untoward symptoms and gives an adequate shadow

Position—Patients appear to be least uncomfortable in an upright posture when the catheter is in situ, and fig 2 shows the positions of the skull for radiography of the eustachian tube The head is placed in the true lateral plane with the chin tilted away from the cassette at an angle of 15° The central ray passes through the angle of the *mandible* of the opposite side to that under examination The mouth is widely opened and the head inclined backwards so that Reid's base line forms an angle of 10° with the horizontal plane Fig 3 shows the situation of the shadow cast by the eustachian tube when filled with opaque medium in relation to the surrounding bony structures when the skull is in the positions described

Exposure factors—All the films were taken at 56 kV and 40 milliampere seconds Intensifying screens were used and the radiography was carried out at a distance of 33 in

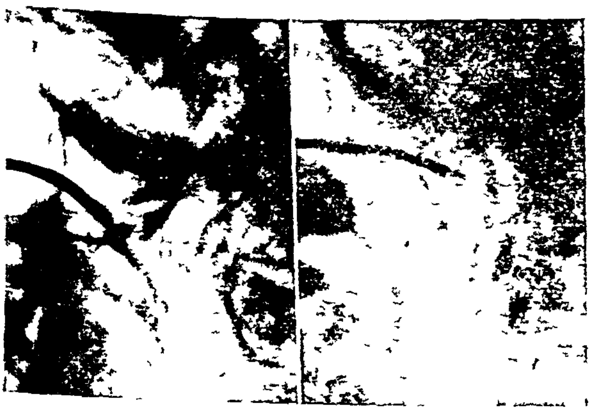

FIG 4—Typical radiograms of eustachian tube after injection of pyelectan In (*a*) cartilaginous portion of tube is filled as far as isthmus in (*b*) medium is arrested 0·5 cm from tip of catheter

RESULTS

Visualisation on the films is good as far as the isthmus. It has been impossible to make any radiological study of the osseous portion of the tube, because in all of our patients an obstruction was demonstrated in the cartilaginous segment In two cases the blockage began at the isthmus, in one at 0·5 cm from the pharyngeal orifice and in the remaining thirty-one cases at 1–2 cm. from the ostium

The shadows cast are faint in comparison with the surrounding structures so that positive reproductions give a totally inadequate representation of the definition which is actually obtained on the X-ray film For this reason only two typical radiograms are here shown (figs 4*a* and *b*)

The X-ray appearances in our series have fallen into two distinct groups When the obstruction is at or near the isthmus there is a shadow with comparatively smooth edges gently fading to a point at the junction of the cartilaginous and osseous portions This can be seen in fig 4*a* and is reproduced in fig 5*a* and *b* There is always an overflow of medium which regurgitates down the lateral wall of the pharynx and occasionally over the soft palate The most common form of obstruction occurs at 1–2 cm from the

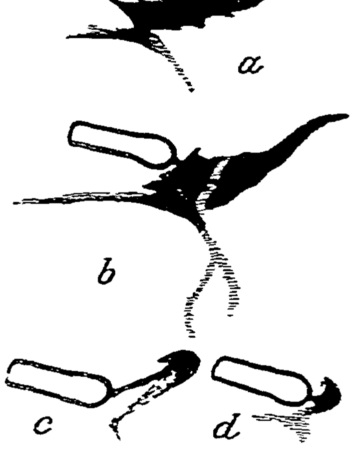

FIG 5—Tracings of typical shadows observed in cases of eustachian obstruction (*a*) and (*b*) obstruction at or near isthmus. (c) and (*d*) obstruction 1–2 cm from tip of catheter

catheter tip and in these situations pooling of the opaque medium gives rise to appearances which are typical as "mushroom-like" shadows This type is shown in fig. 4*b* and diagrammatically in fig 5*c* and *d*

SUMMARY

The technique used for contrast radiography of the eustachian tube in 34 cases of aviation "pressure" deafness is described It has not been used to elucidate any other pathological conditions of the tube, and no opinion of its use in other lesions can be expressed

Pyelectan has so far proved the most suitable opaque medium

The results show that in this type of deafness there is a definite blockage in the cartilaginous portion of the eustachian tube, but they do not reveal the extent or character of the obstruction

In two cases the stenosis began at the isthmus, in one at 0 5 cm from the pharyngeal orifice and in the remaining thirty-one cases at intermediate sites

These findings definitely dispose of the theory that there is a valve-like action of the pharyngeal orifice which, by its closure, prevents the entrance of air into the tympanum

Our thanks are due to the Commanding Officer of this hospital and to the Director General of Medical Services, R A F , for permission to publish these notes

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BRACHIAL NEURITIS OCCURRING IN EPIDEMIC FORM

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THE occurrence of a number of cases of brachial neuritis in the outpatient department of the National Hospital and elsewhere in the last few months suggests that the condition may be the result of an epidemic infection I can find no reference to any similar condition in the literature, although of course isolated cases of brachial neuritis are well known The following 4 cases are typical of a series of 42

CASE RECORDS

CASE 1 —A house painter aged 54, admitted on Dec 2, 1940 He had suffered from a number of carbuncles in the previous 6 years In May, 1940, he developed two of these in the right axilla which after incision healed in 4–5 weeks He returned to work in June, but soon began to experience weakness in lifting his right arm above the horizontal and a severe ache in the middle of the arm, accentuated by use of the limb In the course of the next 6 weeks the pain became so severe that he had to give up work and could not sleep at night The ache spread down to the elbow along the inner side of the forearm to the wrist and up to the shoulder , it was accompanied by severe stabs of pain, "like red-hot pokers being pushed down the arm," which awakened him at night Pain ceased at the wrist but began again along the lower third of the palm as a numb, swollen sensation involving the four fingers, back and front, and originating from painful spots in the pads of the hands and fingers , most severe in the region of the point of the shoulder Any attempt to put the right hand on the back of the neck caused excruciating pain Cold numbed the fingers further and accentuated the pain , warmth might relieve or greatly exaggerate it , movement accentuated it and lying still relieved it somewhat There was no evidence that the condition was due to lead poisoning

Temperature 99° F on admission Right shoulder lower than left Right arm showed slight general wasting and very defective power in all movements, especially in those of the shoulder joint, which caused great pain Tendon reflexes brisk and equal on the two sides In the area of skin supplied by the anterior primary divisions of C3–D3, including the whole arm, considerable pain was elicited by coarse handling, with slight hypo æsthesia and hypo algesia Cold objects caused a painful response running up and down the arm like an electric shock , warmth, on the contrary, felt pleasant There was great tenderness on pressure over the brachial plexus in the supraclavicular triangle, causing violent pins and needles in the whole limb Deep sensation normal No other abnormal physical signs The cerebrospinal fluid, the blood count, and a radiogram of the cervicodorsal spine were all normal Sedimentation-rate was 3 mm (200 mm tube) in 1 hour (Westergren), urine normal At first, the severity of the pain necessitated morphia injections, Antiphlogistine poultices to the arm, diathermy to the arm and neck, and a salicylate mixture by mouth In the course of a month the pain greatly diminished The temperature became normal on the second day As the pain became less, massage was begun Power gradually returned to the limb and when the man was discharged on Feb 9, 1941, the pain was only slight and localised to an area in the region of the deltoid muscle

CASE 2 —A housewife aged 30, admitted April 25, 1941 Eight weeks before, her first child had been born after a normal labour Chloroform inhalations were used during delivery but no injections except morphia Next day she had generalised aches and pains, especially across the shoulders and in the lumbar region She could not sit up unaided and her lower limbs seemed weak and "almost paralysed" All these symptoms disappeared in 24 hours and she was well until 8 days afterwards, when a burning sensation appeared in the point of the right shoulder and deltoid muscle In the next few days this extended to the elbow, became severe and kept her awake at night, but disappeared after 3 weeks, leaving her with a dull continuous ache in the region of the wrist and elbow, shoulder and lower part of shoulder blade and right side of neck This was aggravated by movement and associated with a weakness of some movements, especially raising the arm above her head to do her hair, or stretching her arm out in front of her, which provoked sharp pain darting through the shoulder region She also experienced pins and needles in the whole of the right extremity, coming and going and leaving a numb sensation behind Since the onset she had also noticed pins and needles in all her toes, reaching at times as far as the knees and often accompanied by a sensation of heat and cold The week before admission there had been a severe ache between the shoulder blades, stiffness of the neck, an ache in the left wrist and elbow like that in the right arm, and a sensation of pins and needles in this limb extending from the fingers to the wrist Suckling her child brought on the pain severely

The right arm showed no wasting, but there was much winging of the right scapula and weakness on raising the arm from the horizontal abducted position to above the head, on abduction and forward movement of the humerus, and on extension of the elbow There was slight weakness of all other movements of the right elbow, wrist and fingers , the rhomboids, trapezius and latissimus dorsi were normal , there was slight fibrillation of the triceps The left arm showed slight weakness of all movements The right triceps jerk was brisker than the left but within normal limits All other reflexes were normal In the right arm, there was hypo æsthesia to all superficial stimuli in patchy areas roughly corresponding to the segmental area of C5 These areas were interspersed with patchy areas of hyperæsthesia and other areas the touching of which caused a sensation of pins and needles, especially in the thumb and outer three fingers In fact, the segmental area of C5 was surrounded by an area above (C4) and below (C6) where a sensation of pins and needles was evoked by pinprick Deep sensation was normal In the left arm, a similar patchy area of hyper and hypo æsthesia in the segmental area of D1 and in the tips of the inner three fingers Similar hyperæsthesia and pins and needles were evoked by pinprick in all the toes Pressure over the brachial plexus in both the supraclavicular triangles caused pain, especially on the right The right serratus magnus muscle showed partial reaction of degeneration , the electrical reactions of other muscles were normal C S F , blood-count and radiogram of spine were normal

She was treated by massage and electrical stimulation, and salicylates by mouth In a month the pain and paræsthesiæ disappeared and were replaced by hypo æsthesia Considerable improvement in power had occurred and the tendon jerks were now equal on the two sides

CASE 3 —A man aged 63, a secretary, was first seen on July 7, 1941 In October, 1940, he had noticed a severe ache starting in the back of the neck and running to the left shoulder down the outer side of the arm and forearm and dorsum of the hand The pain was worse on movement or on moving the head sideways The arm became very weak but the pain and weakness gradually improved Early in April he had suddenly found that the right foot had dropped and he was unable to raise his toes from the ground At the same time he noticed numbness in the outer side of the right calf, front of ankle and dorsum of the foot This had remained unchanged There was fairly severe weakness of all muscles of the left shoulder girdle and upper limb, proximally more than distally, and moderate wasting of all muscles All tendon jerks were absent in the left arm There was no superficial sensory loss, but considerable tenderness over the cords of the left brachial plexus and ulnar nerve There was complete paralysis of dorsiflexion of the right ankle and toes, with inversion of the foot and some wasting and fibrillation Reflexes were all normal There was complete loss of sensation to all superficial stimuli in the skin area supplied by the right external popliteal nerve Pressure over this nerve at the head of the fibula caused violent pins and needles in the area supplied by the nerve There was no tenderness over the right sciatic nerve No Lasegues sign present, the lumbar spine was mobile

CASE 4—A woman of 67, seen on July 9, 1941 Three months before she had begun to get pain in the flexors of the wrist and fingers, just below the elbow, and this gradually extended up the outer side of the right arm to the shoulder and up into the side of the neck and region of the clavicle It was of a hard, constricting nature and very severe, preventing sleep The whole arm began to feel weak A fortnight before admission it passed to the left shoulder and down the outside of the arm to the elbow and also to a small area on the ball of the thumb The pain was burning and severe This arm, also, gradually became weak On examination she had moderate weakness in all muscle groups but especially in the deltoids, right more than left, and in the muscles moving the shoulder-joint There was no wasting or fibrillation All reflexes were diminished but just present There was considerable hyperæsthesia and hyperalgesia and thermohyperæsthesia over the segmental areas of C5–6 on the right and C5 on the left, but there was slight diminution to all forms of superficial sensation over C3–D1 on both sides in the areas of the anterior primary divisions There was much tenderness on pressure over the cords of both brachial plexuses, the right more than the left

SUMMARY OF CASES

I have seen in all 42 cases of brachial neuritis between December, 1940, and August, 1941 Dr J Purdon Martin has recently seen several other cases presenting paralysis of the serratus magnus or radial-nerve lesions as their chief feature and associated with sensory changes in corresponding skin segments (thus resembling case 2), which are probably related to the condition under discussion The cases show the following age-incidence

30–39 years	6 cases	60–69 years	10 cases
40–49 "	9 "	70–79 "	8 "
50–59 "	9 "		

The youngest patient was 30 and the eldest 77 The condition was fairly evenly spread out over the whole range from 30 to 80 There were 13 cases in men and 8 in women The left side was affected in 12, the right in 8, and both sides in 3 The months of onset were June, 1940, 1 case, October, 1940, 1 case, January, 1941, 3 cases, February, 1941, 3 cases, March, 1941, 3 cases, April, 1941, 6 cases, June, 1941, 12 cases, and July, 1941, 13 cases Thus the disease appeared in the winter and persisted into spring and summer

The clinical features suggest that the anterior primary divisions of the spinal nerves from C3 to D4 inclusive, in whole or in part, are involved In most cases the upper part of the plexus, and the skin segments served by C5–6 nerves, are most affected, but on careful examination there are also, in every case, sensory changes of a wider distribution In one (case 2) there were less severe changes on the opposite side and slight sensory changes in the lower limbs In most cases the motor weakness was general and in long-standing cases accompanied by wasting, but in others it was limited chiefly to one or two muscles—e g, serratus magnus and triceps Every case began with pain, often burning, and typically situated in the region of the shoulder blade The tendon reflexes in the affected limb were usually increased or decreased, the former in earlier and less severe cases The severity varied considerably from case to case, from mild cases rapidly responding to treatment to very severe cases (case 1)

The ultimate outlook is good and in the milder cases improvement soon sets in, but the more severe cases are very refractory to treatment as far as they have been followed

The occurrence, in the winter and spring, of so many cases of what is normally a relatively rare condition, is remarkable Only 13 such cases were admitted to the National Hospital between 1924 and the present outbreak The close similarity to one another, the localisation of the lesion to the anterior primary divisions of the spinal nerves, and the tenderness in the region of the cords of the plexus and over the ulnar nerve in some cases, suggest that the condition is the result of an infection, and that the site of the lesion is in the nerves themselves at a point distal to the origin of the posterior primary divisions

RELATIONSHIP TO EXTERNAL POPLITEAL LESIONS

In the last 3 months I have also seen 7 cases of lesions occurring suddenly and for no apparent reason in the external popliteal nerve An example of this is case 5 There seems to be a relation between these cases and those of brachial neuritis, they have occurred during the same period and in case 3 the two conditions occurred at the same time

CASE 5—A cobbler aged 36, admitted on May 5, 1941 In 1938 he had a severe attack of left sided sciatica and lumbago, which cleared up after 7 weeks' rest in bed Three weeks before admission, while at work, he developed sudden left foot drop, and in a few days numbness on the outer side of the calf and dorsum of the foot On examination he had complete paralysis of dorsiflexion of ankle and toes and inversion of the foot The tendon reflexes were normal There was gross diminution of all forms of superficial sensation over the skin area supplied by the external popliteal, but no tenderness over the external popliteal or sciatic nerves A radiogram of the spine and the C S F were normal The electrical reactions of the anterior tibial group of muscles were normal

He was treated with antiphlogistine poultices, massage and electrical stimulation to affected muscles, and was given a bed boot to support the foot He improved considerably after 6 weeks' treatment

DISCUSSION

What is the nature of this condition? Is it an infection by a neurotropic virus, like herpes zoster? Is it a "fibrositic" condition? This seems unlikely, since in no case were there other rheumatic manifestations Is it an allergic reaction to some infection, like the brachial neuritis which occasionally follows serum injections? Case 2 suggests that this may possibly be so, here symptoms occurred 8 days after signs of a general infection following parturition The period of 7–14 days is a common interval before allergic manifestations appear In case 1 symptoms occurred about 5 weeks after the appearance of carbuncles One case seen by Dr Purdon Martin began with severe headache and a temperature of 104° F, and examination a few days later revealed winging of the scapula Whatever the ætiology it seems to be a clinical entity, possibly the result of an hitherto undescribed infection which is appearing in this war for the first time It may be connected with a number of cases of serratus-magnus palsy with sensory changes in corresponding skin segments and of cases of foot-drop and sensory changes in the skin area supplied by the external popliteal nerve, which have also occurred lately No light can be thrown on the source of any infection In no case did a patient frequent public air-raid shelters, there was only one case in which sore throat had preceded the illness None had had serum injections, or showed any obvious nutritional defects All my cases came from London, but in Dr Purdon Martin's cases this has not been so

SUMMARY

An unusual amount of brachial neuritis was seen in London in the eight months December, 1940–August, 1941, amounting to a small epidemic

A series of 42 such cases is reported and 4 are described in detail

The cause of the condition is unknown

I wish to thank the honorary medical staff of the National Hospital for permission to publish the case reports

RESISTANCE OF INFLUENZA VIRUS TO DRYING
AND ITS DEMONSTRATION ON DUST

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RECENTLY attention has been directed to the part played by dust in the spread of disease, particularly infection due to *Streptococcus pyogenes* and *Corynebacterium diphtheriæ* * Both these organisms are known to survive drying and can be recovered from the dust of rooms inhabited by infected patients (Thomas 1941, Crosbie and Wright 1941) Under experimental conditions it has been shown that by shaking and beating blankets on which streptococci have been dried the organisms can be distributed in the air on dust particles in a virulent form (Van den Ende, Lush and Edward 1940) In other infections the possibility of spread by dust obviously depends on the ability of the causal organisms to withstand drying Although influenza is regarded as an air-borne infection, little attention has been paid to transmission by dust and it has not been determined whether influenza virus can resist drying under natural atmospheric conditions, the only data collected having been in regard to its resistance to drying in vacuo in the cold It was therefore decided to investigate the possibility that dust might be a factor in the spread of influenza and to determine the resistance of the virus to drying

SURVIVAL ON DUST

Throughout this investigation the PR8 strain of influenza A virus was used Suspensions of virus were obtained by inoculating mice, their lungs were collected three days later and after being ground up were suspended in a mixture of equal parts nutrient broth and physiological saline Tests for the presence of virus were made by inoculating batches of three mice intranasally under ether anæsthesia with 0 05 c cm of the suspension under test Animals that died were examined post mortem for the presence of influenzal lung lesions Surviving mice were killed on the tenth day and examined similarly

One experiment was carried out to discover whether, after artificial impregnation of a blanket, the virus could survive and be distributed into the air by shaking A previously sterilised strip of blanket about 20 in × 8 in was heavily impregnated with a 5% suspension of virus by means of a scent spray and was then hung up to dry Five hours later it was shaken vigorously in a closed tank of about 10 c ft capacity During shaking, and for 10 min afterwards, air was sucked out of the tank through a Wells air-centrifuge at the rate of 2 c ft per minute To collect the virus 10 c cm of broth had been placed in the rotating cylinder and this was finally tested by inoculating three mice intranasally This method for recovering suspended influenza virus particles from the air was originally described by Wells and Brown (1936) The experiment was successful and moderate-sized influenzal lesions were obtained in each of the mice

On another occasion a ferret was infected with the mouse-adapted strain of PR8 in use throughout the investigation For the two or three days during which the animal was sneezing and showing the usual symptoms of infection several Petri dishes containing small amounts of sterilised dust were left exposed in various parts of the cubicle containing the ferret in its cage At the end of this time each specimen of dust was well soaked in broth to extract any virus, centrifuged gently and the supernatant tested on mice In this way virus was demonstrated in the dust from a dish placed next to the ferret cage and 3 in away from it, but not from dishes placed further away in positions which could not be reached by direct droplet projectiles

These experiments show that influenza virus can resist drying and can be demonstrated in dust that has been infected both artificially and naturally The investigation was therefore continued, to assess quantitatively the degree of survival and persistence of the virus after drying and to examine the factors that might infl these, such as physical conditions and the nature of surface on which the virus was dried

EXPERIMENTAL METHODS

As test materials for impregnation the following were used

Two in squares of cotton sheet, 1 in squares of serge, both of which had been previously well washed and then sterilised, glass microscope slides, and sterilised household dust, sieved sufficiently to remove the large fibres The squares of sheet and serge were impregnated by allowing 0 7 and 1 c c respectively of 5% influenzal mouse lung suspension to soak into them On the glass slides 0 1 c cm of the suspension was spread as a thin film along the whole of one side The dust was placed in Petri dishes and impregnated by rubbing 0 2 c cm of the suspension into it with a spatula, so that all the fluid was soaked up In each case the samples were allowed to dry by exposing them to the air of the laboratory under the ordinary atmospheric conditions prevailing They were afterwards stored in the dark in a cupboard until it was necessary to test them

The following methods were used for extracting the active virus

The squares of sheet and serge were soaked for 15 min in 5 c cm of nutrient broth in Petri dishes, the fluid being afterwards squeezed out of them as much as possible by twisting with two pairs of Spencer Wells forceps The dust was thoroughly mixed with 5 c cm of broth and the mixture centrifuged gently to recover the broth The slides were simply soaked in 5 c cm of broth In each case the broth, and tenfold dilutions of it, were inoculated intranasally into mice to estimate the amount of virus recovered

Except from the glass slides, it did not appear likely that these methods of extraction effected a complete recovery of viable virus In order to find out the proportion recovered, control samples of the materials were impregnated in the manner described and extracted at once before drying took place With the sheet there was no appreciable difference between the amount of virus recovered and that which was applied to it Only 10% of the virus applied, however, was recovered from the serge and the dust

SURVIVAL AND PERSISTENCE AFTER DRYING

Specimens of serge, sheet, dust and glass slides were impregnated in the manner described and the viable virus extracted before and after drying It was found that between 1 and 10% of virus withstood drying on the serge and the dust and 10% or more on the glass slides When squares of sheet were impregnated with 0 7 c cm of virus suspension, an amount sufficient to saturate the square almost completely, 1% of virus survived drying, but when 0 1 c cm of suspension was applied as a drop in the centre there was survival of little more than 0 01% A similar difference in survival depending on the degree of impregnation did not occur with the serge, and the reason for the difference with the sheet is not apparent In fact, the opposite effect might have been expected, if heavier impregnation had led to slower drying, for it was found that, if a square of sheet was impregnated with 0 7 c cm and drying took place slowly because of the humidity of the atmosphere, only 0 01% of virus survived

After drying, impregnated specimens were stored in the dark in the laboratory and tested for active virus after one, three and seven days, and thereafter at weekly intervals It was found that virus disappeared rather slowly at a regular rate, the length of time during which virus could be demonstrated on a substance depended on the amount initially present when drying was complete

The largest amount of dried virus was obtained on the glass slides, and the persistence of this is shown in the table In it the results of the titrations in mice are expressed numerically, and in the last column there is an estimate of the total active virus present on the slide, obtained by multiplying the reciprocal of the highest infecting dilution by 100, since the inoculum for a mouse was 1/100th part of the volume of broth used for extraction It will be seen that after three days 10% of virus remained alive and after a week 1% After five weeks virus could still be demonstrated although there was then only 0 01% of the amount originally present The rge. and they can be summarised as follows When rying was complete there was approximately 1×10^4 I D of virus on specimens of each of these materials slight decrease might or might not be detected after hree days; at the end of a week about 1×10^3 (10% of he original amount) remained alive and after two weeks $\times 10^2$ M I D (1%) This was the least amount which ould be detected and tests at three weeks were negative

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* A review of the subject appeared in a leading article in the *Lancet* 1941, 1, 511

PERSISTENCE OF INFLUENZA VIRUS DRIED ON GLASS

Interval since impregnation	Mice inoculated with dilutions of broth extract			Estimated amount of viable virus in M I D
	1/1	1/100	1/10 000	
4 hours	5 5 5	5 5 2	2 1 0	1×10^6
24 hours	5 5 5	5 5		
3 days	5 5	3 2 2		1×10^5
7 days	5 5 5	1 1 0		1×10^4
2 weeks	5 5 5	0 0 0		1×10^3
3 weeks	3 2 1	0 0 0		1×10^2 to 10
4 weeks	2 1 1			1×10^2
5 weeks	2 1 0			1×10^2
6 weeks	0 0 0			Less than 1×10^2

Virus was extracted with broth and titrated in mice Resulting infection is expressed in terms of a numerical index Thus 5 represents death with influenzal consolidation of the lung Among survivors, killed on the tenth day, consolidation affecting three-quarters of the lung is represented by 3, half by 2 and a quarter or less by 1

Factors influencing survival and persistence of dried virus—Temperature has a considerable effect on the time for which the dried virus remains alive Squares of sheet and glass slides were impregnated with 0 1 c cm of virus suspension and dried in the usual way Half of them were kept at 37° C and half at 22° C On sheet at 22° C virus could be demonstrated on the third day and not on the seventh; at 37° C it was not detectable at the end of twenty-four hours On glass it was present in recognisable amount for four weeks at 22° C, but for less than one week at 37° C On the other hand, the higher temperature did not have the same deleterious effect during the drying process When impregnated specimens of sheet and glass were dried in the incubator at 37° C and comparison made with the amount of virus surviving drying at 22° C, it was found that on glass there was little difference and on sheet rather more virus withstood drying at 37° C This may be due to an increased rate of drying at the higher temperature leading to increased survival, on the glass the rate of drying of the thin film is probably almost maximal at 22° C

Light also had a deleterious effect on the persistence of dried virus Impregnated squares of sheet were placed in the dark as usual, and compared with similar squares kept on the bench near a window facing north In the dark virus persisted for a week, but in the light it was not detected on the third day.

In order to examine the possible effect of the amount of protein in the suspending fluid, and to mimic more closely natural secretions infected by virus, 5% suspensions of influenzal mouse lung were made in 10% horse serum broth and in normal human saliva as well as in broth-saline With each smears were made on glass slides in the usual way, allowed to dry and tested at intervals for the presence of virus The proportion of virus which survived drying and its persistence were the same for broth-saline and for serum-broth With saliva only 1% of that amount could be found after drying perhaps owing to a direct destructive action on the virus by a lysozyme-like agent such as has been described by Burnet Lush and Jackson (1939) In another experiment it was shown that reduction of the concentration of the virus by using for impregnation a 0 5% instead of a 5% suspension of lung had no effect on the proportion of virus that survived or its persistence

VIRUS DEPOSITED IN A PARTICULATE FORM

In the experiments just described impregnation was effected by wetting the test materials completely Under natural conditions, however such gross soaking with infected secretions from influenzal patients is unlikely to occur, except perhaps with handkerchiefs and from expectoration Contamination will be chiefly by droplets expelled during sneezing and coughing, and by droplet nuclei finally impinging on some surface The findings so far presented probably apply to contamination by spitting and by the larger droplets but it was considered necessary to confirm them by investigating the persistence of virus deposited as small particles or droplet nuclei It was found that when specimens of sheet were artificially impregnated with droplet nuclei 10% of the amount of virus which could be demonstrated immediately after impregnation was still alive after one week and after three weeks there was 1% On the other hand, when droplet nuclei were deposited on a smooth surface inside a closed glass bottle in one experiment no virus could be demonstrated after six hours, and in another, although virus was present after five hours, it could not be detected after twenty-four hours

DISCUSSION

It has been shown that, when certain materials are impregnated with suspensions of influenza virus, as much as 10% of the virus can withstand the process of drying and can then remain alive for days or weeks at ordinary temperatures After three days there may be little or no appreciable loss of virus, thereafter there is a steady decrease, between 1 and 10% remaining after a week. Minute dried particles containing influenza virus (droplet nuclei), such as are distributed by the coughing and sneezing of infected patients can become attached to a material like sheet and persist in a similar manner, so that 10% may still remain alive after a week These experimental results suggest that, if articles become contaminated with infective discharges from patients with influenza either directly or indirectly by means of droplets and droplet nuclei appreciable amounts of virus may survive drying and persist for at least several days In that case such articles are infective, for virus can reach a fresh host by direct contact or by the aerial transfer of dried virus on dust particles Virus has been demonstrated on dust exposed near a ferret suffering from influenza Unfortunately a similar demonstration of virus in the neighbourhood of human beings is not possible because of the low infectivity of such human strains for animals Previous epidemiological experience with influenza has not suggested that dust plays any part in its spread but further observations might be of interest in the light of these experimental findings For reasons connected with the war the experimental investigation itself has had to be interrupted

In certain other virus diseases evidence exists for believing that virus persisting in the dried state on dust and other articles may play some part in their spread Infection by psittacosis has been reported in persons handling imported feathers (see van Rooyen and Rhodes 1940) Dried epidermal scales from cases of smallpox are regarded as infective, and their aerial transfer may carry the infection to a distance With foot-and-mouth disease the results of detailed experimental investigation are available (Report 1927 1931), these show that when dried on certain materials the virus can remain alive for several weeks Hay treated with infective saliva was capable a month later of transmitting the disease to a calf which ate it Storage in the light or at 37° C had a lethal effect on the dried virus of foot-and-mouth disease, similar to that recorded here with influenza virus The time of survival of the former varied greatly according to the material impregnated. With influenza virus, however, although only a few representative test materials were employed, no such differences were noted

SUMMARY

An experiment is described showing that, after impregnation of a blanket with a suspension of influenza virus the virus survives drying under ordinary atmospheric conditions and can be distributed in the air on dust particles by shaking the blanket

Virus could be demonstrated on dry dust exposed near a ferret infected with influenza

Results are given of a quantitative estimation of the amount of influenza virus that can withstand drying on a variety of materials including household dust Between 1 and 10% was found to survive but, if drying took place slowly in a humid atmosphere, as little as 0 01% survived

The time for which the dried virus remained alive was estimated There was little depreciation after 3 days, and 10% might persist for a week and 1% for a fortnight.

Disappearance of virus was much more rapid when impregnated materials were kept at 37° C or in the light

The epidemiological significance of these findings is discussed and reference is made to other virus diseases in which a part is possibly played by dust and dried virus in the spread of infection

I am grateful to Dr M Van den Ende for helping me to finish this investigation and to Mr R E Glover for his cooperation in the experiments with ferrets

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CONTINUOUS ADMINISTRATION OF ETHYL CHLORIDE

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ETHYL CHLORIDE has been in use as a single-dose anæsthetic for over 40 years The early anæsthetists recognised its dangers, which in addition to its toxic action on cardiac muscle are mainly due to its extreme volatility, this makes control almost impossible and overdosage all too easy They regarded it as a drug whose administration required more skill and vigilance than was justified by its sphere of usefulness In 1902 Guy[1] of Edinburgh found that ethyl chloride required a smaller effective dose, and was thus rendered safer, if given in combination with nitrous oxide, and devised a simple apparatus for induction of anæsthesia by this method In 1911, Guy and Ross[2] produced another apparatus for administration of nitrous oxide and oxygen continuously, with addition of fractional doses of ethyl chloride as required This apparatus is still used in Edinburgh for dentistry Since 1911 no advance has been made, and ethyl chloride is still widely used but only in single doses

For the past 15 months I have used ethyl chloride by continuous vaporisation with nitrous oxide and oxygen The ethyl chloride was sprayed into the chloroform bottle of a Boyle or Walton apparatus in quantities varying from 5 to 20 c cm according to the anticipated duration of operation and resistance of the patient Induction was with nitrous oxide, then, if relaxation was inadequate, ethyl chloride vapour was added gradually by slowly raising the lever of the chloroform bottle (with the plunger well raised in the Boyle apparatus) When relaxation was adequate the vapour was cut down to the minimum required for maintenance Partial rebreathing was used and cyanosis avoided by adequate oxygenation Results are shown in the table By this method the anæsthesia was as easily controlled as when divinyl ether was used instead of ethyl chloride by the same technique Cough did not occur, and apnœa and laryngeal spasm, so troublesome with ethyl chloride administered alone, were rare, when they did occur they were due to too rapid increase of ethyl chloride concentration and easily stopped by cutting it down a little and adding carbon dioxide No appreciable drop in blood-pressure was noted even in patients already shocked, indeed, a sustained, mildly stimulating effect was produced in these Recovery was rapid (1–10 min, as with divinyl ether), and postoperative vomiting only very slightly commoner than with divinyl ether The period of recovery was taken as from cessation of anæsthetic to the time at which the patient could first give a coherent answer to the questions "What is your name?" and "How old are you?"

Ethyl chloride by this method is particularly useful in cases requiring frequent painful dressings where nitrous oxide is insufficient, and in these cases after-pain is notably lessened

One particular terrified refugee, aged 13, who had nine anæsthetics in her own country, was anæsthetised by this method on alternate days for 2 months No premedication was given, no after effects were seen, and the child ate a hearty meal within $\frac{1}{2}$–$\frac{3}{4}$ hr after anæsthesia on most occasions, gaining $\frac{1}{2}$ st in weight in the 2 months She had proved very resistant to ether, which caused prolonged vomiting

The quantity of ethyl chloride used varied in each case, from 3 c cm for an operation lasting 10 min in a fit adult male to 25 c cm for an operation lasting 1 hr 10 min in a similar subject, neither having had premedication The cases were mostly casualties, and a large proportion had fractures, simple or compound, lacerations of varying extent and burns The ages of the patients ranged from 4 months to 97 years Opiates were used for adults only and were either morphia gr $\frac{1}{4}$ with atropine gr 1/100, or morphia gr $\frac{1}{6}$ with hyoscine gr 1/200

The method was found to be particularly useful for ambulant casualties, who, owing to rapid recovery and absence of pain or after-effects, were able to look after themselves and go home very soon after operation, thus saving much nursing attention and couch space in a busy department It is, however, essentially a fine adjustment method, and not to be lightly undertaken by the inexperienced, to whom anæsthetics in a casualty department are too often entrusted In my view an experienced anæsthetist is especially necessary in a busy casualty department if as many cases as possible are to remain ambulant

There were 2 deaths in the ethyl-chloride series, one from septic absorption following severe burns, 6 weeks after operation, and one in an infant aged 4 months, from bronchopneumonia after laparotomy for acute intestinal obstruction, this was the only post-operative chest case in either series Four deaths occurred in the divinyl ether series, two from gas gangrene following extensive wounds, one 3 days and one 10 days after operation, and two with severe burns, one from secondary shock, 6 hours after operation and one 14 days after from toxæmia

EXPERIENCE IN 51 CASES ANÆSTHETISED WITH ETHYL CHLORIDE, GAS AND OXYGEN, AND IN 61 GIVEN DIVINYL ETHER IN PLACE OF THE ETHYL CHLORIDE

—	Duration			Incidents		Sequelæ				
	Less than 15 min	15–60 min	Over 60 min	Laryngeal spasm	Vomiting	Vomiting	Retching	Ptyalism	Headache	Noise and violence
ETHYL CHLORIDE										
No pre medication	19	11	2	1	1	6	3	1	1	5
Atropine only	2	4	0	2	0	1	1	0	0	1
Opiates	0	10	3	0	1	7	1	0	0	0
Total	21	25	5	3	2	14	5	1	1	6
DIVINYL ETHER										
No pre medication	12	9	0	0	2	5	0	2	0	3
Atropine only	5	6	0	0	0	1	1	2	0	1
Opiates	3	17	9	0	2	4	0	0	1	1
Total	20	32	9	0	4	10	1	4	1	5

SUMMARY

A series of 51 cases anæsthetised with nitrous oxide, oxygen and ethyl chloride vapour are compared with a series of 61 cases in which nitrous oxide, oxygen and divinyl ether was given by the same method The ethyl chloride (3–25 c cm according to the length of operation) was sprayed into the chloroform bottle of a Boyle or Walton apparatus, and anæsthesia was maintained for periods of 10–70 min Adults received morphia and atropine or morphia and hyoscine before induction

The patients were mainly fit, ambulant casualties, but some were shocked, with extensive injuries

Postoperative sequelæ were few and transient, and constitutional disturbance minimal

Ethyl chloride seems to be brought under control by this technique, but requires the same constant watchfulness which is necessary during the administration of chloroform

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[1] Ross and Fairlie's Handbook of Anæsthetics, Edinburgh, 1940, p 202 [2] *Ibid*, p 210

THE KONDOLÉON OPERATION FOR CHRONIC LYMPHŒDEMA

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IN a limb swollen by chronic lymphœdema the lesion is confined to the tissues above the deep fascia, and however large the limb may become there is never any œdema below this fascia The pathology of the condition is in the main unknown, but it is evident from the delay in the excretion of dye injected into these limbs that the normal channels of lymph return are choked Hence, surgical intervention has been directed in various and often ingenious ways towards establishing some form of alternative channel It is no doubt true that this is the only approach which promises any permanent good, since other methods, such as rest, massage and support, yield nothing but the most ephemeral improvement

In the attempt by surgery to develop alternative channels buried materials such as silk threads have been used, efforts have been made to drain the lower limb into the peritoneal cavity via the crural canal, and trial has been made of flaps of normal skin transplanted to form a bridge between the diseased area and the nearest normal tissues Such attempts have not made good , after a temporary improvement any benefit is lost by the formation of scar tissue Some continental writers have reported success after sympathectomy This, however, has not been our experience, and we have shown [1] that the operation of lumbar-cord ganglionectomy has failed to secure any permanent improvement in chronic lymphœdema

The sole method which today seems worth while is that associated with the name of Kondoleon Normally, as was first shown by Sappey there is no lymphatic communication across the deep fascia, and the object of the Kondoleon operation is to develop, by hiatus of the deep fascia, a free interchange between the diseased area and the unaffected intermuscular lymphatic channels The original conception is due to Lanz who, in a patient with lymphœdema of the thigh, cut long strips of the deep fascia, and leaving these attached by one end fixed the free ends into holes drilled in the shaft of the femur Kondoleon left the fascial strips attached by one end and plunged the free ends into the intermuscular septa, but the more recent practice has been to excise long and wide strips of the deep fascia together with a wedge-shaped area of the overlying œdematous tissue

It is, of course, likely that the success of the Kondoleon technique will, as in older operations, be hampered by the formation of deep scar tissue It is, therefore, the more necessary that the operation be not judged on its immediate effect, but only after a long period

With this object, we have recently examined 11 patients, 2 men and 9 women, on whom we have done the Kondoleon operation during the last 8 years In all these patients the operation was done for lymphœdema of the lower extremity We have excluded from this review a number of patients in whom the operation was done less than a year ago

Operation —An adequate Kondoleon operation implies a long incision stretching on the outer side of the limb from the trochanter to the external malleolus, and on the inner side from the level of the saphenous opening to the internal malleolus These incisions should be interrupted for 3 in at the level of the knee, and the inner incision will, of course, be planned to avoid the internal saphenous nerve and vein We have found it best to carry the incision at once through the deep fascia By everting the edges of the incision in the fascia it is possible easily to cut a wide strip of fascia and overlying tissue from each side of the incision The wound is closed with particular care to hæmostasis , no drain is necessary and the bandage should be firmly applied

RESULTS

If return to normal is expected of the operation, the results are disappointing In but 2 of our cases has this fortunate result been approached, and it is interesting to note that both cases were of post-traumatic origin, dating in each instance from a comparatively slight injury inflicted 6 years before the operation The end-results in the 11 patients do, however, show some gratifying features In all but 1 patient there has been no further increase in the girth of the limb, and it is pleasing to note that in no case has there been any further upward extension of the disease Many measurements of these limbs have been made under comparable conditions always in the mid-afternoon after reasonable exercise, and these show in 10 of the 11 patients a reduction in girth of ½–2 in In all, 7 patients state that they have been able to return to work and have lost the pain and discomfort which formerly rendered them incapable of sustained effort One says that ' although the leg may swell after exercise as much as before, it goes down ever so much more quickly " This statement is interesting as affording some evidence that the operation has succeeded in its object of securing a by-pass for the lymphatic flow

We think it fair to evaluate the Kondoleon operation as follows It will not secure a return to normal but it will, as a rule, reduce the girth of the limb by some 25–30% of its increase and, what is more important it appears to stop further extension of the disease It is likely to succeed in relieving the pain and discomfort of the heavy limb and may allow of a return to work For these reasons we think the operation is worth while It is safe and easy, and in the present state of our knowledge is the only operation which can hold out any prospect of improvement

SUMMARY

Eleven patients on whom the Kondoleon operation has been performed have been observed for periods of 2–8 years

The results show that the operation, although not likely to yield a complete cure, produces improvement which justifies its use for cases of chronic lymphœdema

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[1] Telford, E D and Simmons, H T *Brit J Surg* 1938, 25, 765

FURTHER EXPERIENCES WITH SULPHAPYRIDINE IN FILARIASIS

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SINCE the publication of a series of cases of filarial complications, successfully treated with sulphapyridine (Earle 1941a, b) some further cases have been treated and the results seem worthy of record

Lymphadenitis —The strikingly beneficial effect of sulphapyridine on the lymphadenitis complicating filariasis probably indicates that the complication is due to secondary streptococcal infection rather than to the filariasis itself No diminution in the number of microfilariæ of the blood-stream is produced by the drug

CASE 1 —A Nauruan woman aged 40 First seen on Jan 2, 1941, when she complained of fever and pain and swelling in the left popliteal space of two days duration There was a past history of several similar attacks She was a sturdy woman, with no abnormalities save enlarged tender glands of the left popliteal space The overlying skin was tense and dark red There was no enlargement of the crural, inguinal or any other lymphatic groups No septic foci were found on the left leg or foot Microfilariæ were found in the blood Local treatment produced no relief, and on Jan 6 sulphapyridine (M & B 693) was begun, being given four-hourly The first two doses were 2 g each and the remaining eleven doses were each 1 g This course was repeated The temperature fell to normal and the local pain and swelling diminished within twelve hours of beginning treatment

Cellulitis complicating elephantiasis —Devitalised elephantoid tissue is subject to recurrent secondary invasion In such conditions sulphapyridine is particularly useful, though it does not act on the elephantiasis or the underlying filariasis

CASE 2 —A Nauruan woman aged 25 First seen on Jan 6, 1941, when she complained of extreme pain and swelling of the left leg, of three days duration She was otherwise healthy except for severe elephantiasis of the left lower limb The elephantoid swelling reached up to the level of the knee

Superimposed was a severe cellulitis, extending upwards to the lower third of the thigh Microfilariæ were present in the blood at night Sulphapyridine, eleven doses (two of 2 g, the remaining nine of 1 g), was begun on Jan 6, and the course was repeated There was rapid disappearance of the cellulitis but no alteration in the appearance of the original elephantiasis

CASE 3 —*Cellulitis and filarial myositis* A Nauruan man, aged 60, first seen on Jan 4, 1941, complained of fever and pain in the right leg He was rather emaciated, with no lesions in the cardiovascular, pulmonary, alimentary or central nervous systems There was elephantiasis of both legs and the left forearm In addition, cellulitis was present in the right leg and thigh No microfilariæ were found in the blood Sulphapyridine in courses similar to those given in cases 1 and 2 produced lysis of the temperature The local inflammatory reaction subsided concurrently On Jan 14 a further swelling of the right calf was observed but this time the swelling was beneath the elephantoid tissue, in the calf muscles Sulphapyridine was again given but this time did not produce any response, even when repeated Since the pain was intolerable an incision was made and dark greenish evacuated The patient made a slow recovery

This case again illustrates the fact that, while pyridine acts rapidly on secondary infection, it is on filariasis itself The second swelling was undoubt due to a filarial myositis which is uninfluenced by sul amides In this variety of myositis the blackish pus is usually sterile (Quin 1941), thus differing from tropical pyomyositis where culture of the pus staphylococci (Hughes 1938), and in which sulphapyridine has a well-marked curative action (Earle 1939)

I wish to thank Dr B H Quin, senior Government medical officer in the administration of Nauru, for permission to publish this paper

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BIATRIAL TRILOCULAR HEART
WITH ATRESIA OF THE MITRAL VALVE

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Cor biatriatum triloculare with atresia of the mitral valve is seldom encountered Dudzus (1922) described a case and in his account of the specimen included a short summary of 11 published cases Since then only 2 further cases have been recorded (McIntosh 1926, Abbott 1932) In his Hunterian lectures on malformations of the heart, Keith (1909) did not include this type of congenital cardiac abnormality, but at one point, while discussing the occurrence of cor biloculare, mentioned that he had seen 3 cases in which the hearts, all from stillbirths, showed mitral atresia in association with extremely minute left atria Whether these cases were in other particulars similar to true cor biatriatum triloculare with mitral atresia is not made clear

CASE-HISTORY

The infant was admitted to hospital at the age of 11 weeks She was fairly well nourished but her colour was poor, lips and nose being cyanosed For several days she had been disinclined to feed and had been coughing a great deal During feeds she became very blue but attacks of cyanosis occurred independently of feeding, being followed by pallor The chest showed signs of considerable inflammatory congestion The heart was slightly enlarged, the sounds were pure and of good quality at the apex, but at the base only one sound could be heard, a tapping preceded by a short murmur The child became increasingly cyanosed and sunken looking and died aged 14 weeks 2 days While in hospital the heart-rate varied between 130 and 160 and the respirations between 30 and 60

The findings at autopsy confirmed the diagnosis of the chest condition but otherwise revealed nothing of note except in the heart, in which there were three chambers, two atria and one ventricle (cor biatriatum triloculare) The single ventricle, in which no trace of a septum could be found, communicated by a large tricuspid opening with the right atrium but no left atrioventricular opening was present Leading from the common ventricle was a single arterial stem, guarded by three semilunar cusps, on the dorsal wall of which was a well marked ridge This ridge represented the septum which normally divides the truncus arteriosus into aorta and pulmonary artery The pulmonary artery was here found to arise from the aorta on the right side of the septum, thus not only did this case show an undivided truncus arteriosus but the aorta and pulmonary artery as developed were transposed (fig 1) The coronary arteries were derived from a single vessel which arose from the aorta some distance above the origin of the pulmonary artery and descended to the coronary sulcus alongside the truncus arteriosus

The right atrium, which was of normal size, received the superior and inferior venæ cavæ and the coronary sinus, and communicated, as mentioned, with the common ventricle by a large tricuspid opening This opening seemed identical with a normal right atrioventricular valve The left atrium, also of normal size, received the four pulmonary veins, but no opening into the ventricle existed, there being complete atresia of the mitral valve The interatrial septum presented a patent foramen ovale, 3 mm by 1 5 mm, bounded by very clearly marked primary and secondary septa, and in addition a smaller foramen, 2 mm in diameter, situated below the fossa ovalis (fig 1) Numerous established cases of persistent ostium primum of Born were compared with this foramen but it does not appear to be an example of that condition,

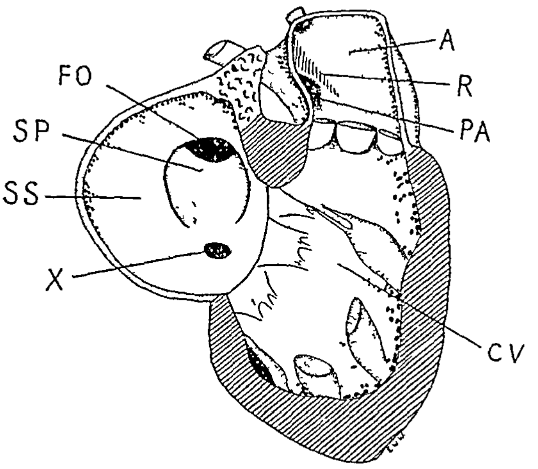

FIG 1—Heart opened from in front atrial septum shown from the right side F O = foramen ovale, S P = septum primum S S = septum secundum, X = secondary foramen, A = aorta, P A = pulmonary artery C V = common ventricle, R = ridge representing septum of truncus arteriosus

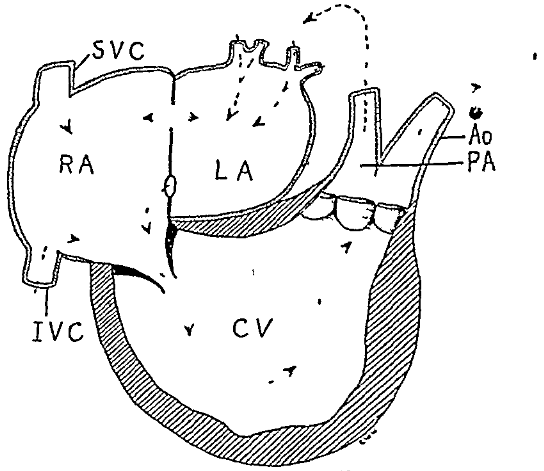

FIG 2—Presumed circulation, in the atrial septum the foramen ovale is above and the secondary foramen below S V C = superior vena cava, I V C = inferior vena cava, R A = right atrium, L A = left atrium Ao = aorta, P A = pulmonary artery C V = common ventricle

ore likely it was secondarily produced by back pressure from e left atrium owing to the mitral atresia

The circulation in this case must have been as epresented in fig 2 and that being so, survival for 3 onths is remarkable

I wish to thank Dr Mary Stevenson, in whose wards in tobhill Hospital, Glasgow, the patient was seen, and rof D M Blair for advice and criticism

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Reviews of Books

sychoanalytical Method and the Doctrine of Freud

ROLAND DALBIEZ, Dr es lettres London Longmans, Green and Co Pp 515 and 331 2 vols 40*s*

To the people—many of whom are not psycho-analysts—who admire the lucidity of Freud's style it must come s a surprise that anyone should write two volumes ecause he finds Freud incapable of presenting his hought in a convincing form or of making a clear istinction between his method and his doctrine In the irst volume Dr Dalbiez presents the theory of psycho-nalysis, and in the second expresses his own views He consistently points out the relations of Freud's views o those of other workers, and his approach is partly istorical, thus he recalls the war waged by Hughlings Jackson and Head against the anatomical theories, and heir insistence on the need to think physiologically, Freud showed that we must, in addition think psychologically Contemporary theories are also contrasted with those of Freud Janet's view centred on the negative idea of deficiency, whereas Freud insisted on the positive idea of conflict, and he took up the neurological approach to hysteria at the point where Babinski left it Since he is by training a philosopher, a pupil of Meyerson whose views are outlined in a discussion on the historical and scientific methods in psychology Dr Dalbiez regards psycho analysis as a discipline not of the type of the sciences, which explain the particular by the general, but of the type which, like history, explain an event by an antecedent event He does not consider psycho-analysis to be a philosophy in itself His discussion of Pavlov's work in relation to Freudianism shows his original perspective he concludes that the conditioned reflex can be regarded as a psychological concept and as such lends support to Freudian views on psychic mechanisms and their dynamic and unconscious nature

Most critics of psycho-analysis, he considers, fail, like Freud himself, to distinguish between method and doctrine, and the whole first volume is merely preliminary to a chapter in the second volume where the associative method is thoroughly examined He holds that the method, correctly applied, can produce scientifically accurate results, but he criticises the doctrine freely, and eventually concludes that the fundamental problems of the human soul are left untouched by psycho-analysis He accepts, however, many points in the Freudian theory Thus he agrees that *infantile sexuality must* be regarded as normal, and that there is a genetic link between this and the sexopathies, but he considers that Freud has failed to make the philosophical distinction between "accidental" and "essential" Thus for the polymorphic perversion attributed by Freud to the infant Dr Dalbiez would substitute polymorphic pervertability Elsewhere he points out the difficulty of accepting the Freudian theory of dreams

In contrasting Bergson's theories of habit and memory with Freud's Dr Dalbiez suggests new paths of inquiry The part played by memory in the Freudian method would repay close attention, especially if the dynamic nature of memory was kept in mind Plenty of clinical examples drawn from various authors are quoted in the two volumes One or two assertions are based on insufficient evidence thus Dr Dalbiez accepts Peiron's claim, which would be questioned by most physiologists, that a toxic substance—hypnotoxin—can be demonstrated in the blood and cerebrospinal fluid The work, however, is a brilliant example of Gallic logic and conciseness, and the translation is worthy of them

Tropical Tips for Troops

Lieut -Colonel E T BURKE, M B Glasg, officer commanding 40th Field Ambulance, XIII Division, 1914–19 in Gallipoli, Egypt, Mesopotamia N Persia, the Caucasus and Transcaspia London W Heinemann Medical Books Pp 63 2*s* 6*d*

Colonel Burke intended this small paper-backed booklet for the use of officers and men of our armies in those regions loosely called "the tropics"—regions which embrace among others, parts of Europe, Egypt and the Near East, and South Africa, as well as the geographical tropics The text is divided into five chapters advising on tropical kit, protection against the sun, tropical diseases, vermin and mental readjustment There are one or two unexpected omissions, for example the advantages of "long shorts" and of mosquito boots are not mentioned, while the recommendation to wear a cholera-belt may not find universal acceptance In the second chapter, the malignancy of the tropical sun is perhaps overdrawn, but the chapter on tropical diseases contains much information of value to laymen Bilharzia is not mentioned, though it is surely of even greater importance to troops in the field than plague, to which a section is devoted, relapsing fever—particularly the Central African variety—and its vectors might also have found a place The chiggoe flea, too, is a minor parasite which may assume major importance in the military field, and a few words on ticks would round off the chapter on vermin The section on mental readjustment contains much wisdom This little volume should be of considerable value to those about to embark on military expeditions abroad, and it will be in large demand

Modern Dermatology and Syphilology

S WILLIAM BECKER, M D, associate professor of dermatology and syphilology in the University of Chicago, and MAXIMILLIAN E OBERMAYER, M D, assistant professor of dermatology and syphilology in the university London J B Lippincott Co Pp 871 65*s*

THIS new textbook presents many original features The paper and illustrations are excellent while the two columns of printing to a page are restful to the eye The authors give their considered opinions in lecture form, inevitably the reader will disagree with some of these opinions, but he will find them far more stimulating than a dull recital of facts References in the text are cut down to the minimum and an adequate bibliography is to be found at the end of each section Plenty of space is given to treatment—which should appeal to the practitioner, who most often consults textbooks to find out what to do No space is wasted on obsolete methods In the treatment of syphilis the recommendation that neoarsphenamine should be given every five days must be criticised The seven-day interval has proved satisfactory and it is better for patients on a long course of treatment, particularly those attending clinics, to report at the same time each week, with five-day intervals treatment will periodically fall due at the week-end, and patients will tend to default at those times

Year Book of Public Health, 1941

J. C GEIGER, M D, Dr P H., director of public health of San Francisco Chicago Year Book Publishers, London H. K. Lewis and Co Pp 544 15*s*

THIS is one of a series of year books, on various departments of medicine, founded in 1900 and since continued annually The present volume without preface or introduction, deals with recent papers on a great variety of public-health subjects, each with a footnote by the editor The matter is extracted mainly from current American publications, but due attention has been given to important contributions to British journals The selection is guided by the importance of the papers to the progress of the science and practice of preventive medicine with a bias towards those which throw light on controversial subjects or which raise new contentions It is thus a valuable guide to the progress made in the past two years Though in some places tinctured by American laws and methods, most parts of it will have equal value all over the globe Of topical interest is the chapter on military hygiene, or more correctly war-time hygiene, since in the present war problems are mainly connected with the civil population The book should have special value to British medical practitioners who are finding that war-time restrictions on imported literature make it difficult to keep abreast of recent advances in knowledge

Medical Societies

ROYAL ACADEMY OF MEDICINE IN IRELAND

At a meeting of the Section of Obstetrics on Oct 17, with Mr **Seton Pringle** in the chair, a presidential address on

Placental Infarcts

was read by Dr N M **Falkiner** He recalled the work published in 1914 by James Young, who accurately described the red infarct and drew attention to its association with eclampsia Recently workers in America, especially Bartholomew and his colleagues have revived Young's views Careful examination of placentas from all toxæmic cases have resulted in the recognition of certain types of placental infarct in association with different clinical manifestations It has been shown that placental infarcts of the more acute types are definitely associated with the toxæmias of pregnancy, and it is possible to predict the type of infarct that will be found in the placenta from the clinical history With the experience of examining placentas as "unknowns" it has been possible to establish criteria for an exact classification of placental infarcts and their relation to toxæmia Bartholomew has put forward hypotheses with regard to the significance of hypocholesterolæmia and hypothyroidism as predisposing to infarcts in the placenta Young and Bartholomew agree as to the ætiological significance of the acute placental infarct in toxæmias, but differ in their interpretation of the causal factors producing these lesions Dr Falkiner showed sections from 20 cases of toxæmia of pregnancy and demonstrated the constant occurrence of acute infarcts in pre-eclampsia and eclampsia and that the older or more chronic infarcts are associated with nephritic toxæmias

Dr **Gibbon FitzGibbon** said he had found a few infarcts, but had more or less discounted them as causative elements in the toxæmias of pregnancy

Dr **Bethel Solomons** urged that a series of placentas from normal cases should be compared with a series from toxæmia cases He asked if autopsies have been done on cases where the uterus has been removed with the placenta in situ, for these might shed new light on the decidual circulation The relation of infarcts, and a good or bad decidual circulation, to toxæmias is, he said, still an unsolved puzzle, the general belief is that when infarcts are present with good decidual circulation the toxæmia is more severe

Dr **John Cunningham** referred to the great delicacy of the vessels in the placenta, and said that the rate of growth of these vessels is enormous When growth is as rapid as this something is bound to go wrong sometimes and this to some extent explains the development of infarcts The most interesting question is whether the toxæmia is due to the infarct or the infarct due to the toxæmia He personally thought that the infarct is due to the toxæmia In cases of chronic nephritis and vascular hypertension it is not unreasonable to expect that the new blood-vessels in the placenta will be especially affected

Prof A H **Davidson** thought the chief question was does infarction come from the maternal circulation or from the fœtal circulation? He thought that it comes from the latter During his time as master of the Rotunda Hospital a number of babies born of toxæmic mothers showed albuminuria, which suggested that they had nephritis

Dr R M **Corbet** said that if, as Bartholomew and his co-workers maintain, the fœtal vessels are primarily affected, there must be a hypercholesterolæmia in the fœtal circulation the question might also be raised why the fœtus is not always affected to the same degree as the mother Dr Falkiner suggested that when the infarction is acute the whole cotyledon is involved If this is so, the toxins liberated may not be absorbed by that cotyledon, but will be carried upwards in the maternal bloodstream to the subchorionic pool where there is little absorption and thence into the general circulation, they may be taken up by the maternal tissues before blood returns to the placenta, hence leaving the f unaffected

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The American Red Cross Harvard field hospital unit, planned for the investigation and treatment of infectious diseases under war-time conditions, is now at work Soon after war broke out Harvard University offered to send a field and laboratory unit to England to study epidemiological problems The offer was accepted, and in August, 1940, Prof J E Gordon of the Harvard medical school came here to confer on the details of organisation It was decided that a hospital should be included, and at the invitation of Harvard the American Red Cross agreed to provide hospital buildings and equipment and recruit nursing and administrative staff To assemble personnel and equipment and move them across the Atlantic naturally took time Now, however, a year after the development of the plan, transport of equipment and staff has been completed and the construction work is nearly done There are twenty-two buildings, connected by covered walks, each building having its own oil burning central heating system Beds are provided for 125 patients over 40% of them in single rooms, the remainder in two-bed rooms The hospital is affiliated with the Emergency Medical Service, and receives both military and civil patients One building is especially designed for admitting and discharging of patients, new arrivals are examined and in some instances treated in this building before being transferred to a bed in the main hospital Those ready to be discharged are brought back to this building for tub bath and return of clothing In other buildings are staff quarters, laboratories, operating theatre, X ray, laundry, kitchen, dining-room, store rooms, garage, offices and recreation-rooms The laboratories are well equipped for diagnostic procedures and research in infectious disease Personnel brought from America includes 60 nurses, 8 physicians, 6 laboratory technicians, 3 secretaries, a hospital superintendent, a dietitian and a chef Other employees are British The aim of the unit is to attack problems of infectious disease by mean sof field study laboratory investigation and clinical observations Field units consisting of physicians, technicians and public health nurses will be available for work in any part of Britain Cars and other equipment for mobile operations have been provided These units are being used to supplement local health organisations in times of need, and such help will be welcome now when local agencies are often reduced in staff and burdened with extra war duties So far as is practical the base will be used by the field unit for laboratory work and for supplies Actual projects in which the unit is engaged must of course depend largely on circumstances, but infections of the central nervous system and the pneumonias are special interests of members of the staff

THE LANCET

NDON SATURDAY, NOVEMBER 29, 1941

TYPHUS IMMUNISATION

HE war has now entered countries where exanthe- ic typhus is both endemic and epidemic and where uent and efficient delousing will be difficult if not ossible to carry out Typhus is endemic on the sian front from the Caucasus to Finland, although lemic proportions have not yet been reached. h of the disease described in the English news- ers as typhus is undoubtedly typhoid, which in man is known as typhus abdominalis Neverthe- there seems to be an urgent need for effective unisation if the history of the Serbian army in last war is not to be repeated On a later page be found a note on the precautions regarded by Ministry of Health as essential should infected reach this country

Unfortunately little is yet known about typhus munisation on a large scale The only vaccine ich has been in use for any considerable time is that WEIGL This is made from the intestines of lice ected with typhus rickettsiæ inoculated per rectum ree to four injections of the vaccine are necessary produce immunity while some hundreds of lice are quired for the immunisation of one person Apart m the delicate technique of rectal injection this ethod therefore requires a large staff of immunes on om the lice can be nourished It is thus hardly actical unless a whole institute is devoted solely to e manufacture of the vaccine as was done at Lwow der the direction of Professor WEIGL It is known at WEIGL remained when the Russians occupied is town in 1939 but nothing has been heard of his te and that of his institute since the beginning of the usso-German conflict The only other method of munisation used on a large scale has been the jection of living murine typhus rickettsiæ in Morocco d Tunis These rickettsiæ when living, un- oubtedly immunise against exanthematic typhus t often at the expense of an attack of murine typhus hich though not so deadly as the exanthematic rm is not to be despised The use of living murine ckettsiæ as a vaccine is also contra-indicated in untries where lice are widely distributed in the pulation, for then the stage is set for the possible nversion of murine into exanthematic typhus ckettsiæ by passage through the louse The possi- lity of using killed murine typhus rickettsiæ has en envisaged by RUIZ CASTANEDA,[1] who finds at in guineapigs multiple doses do produce some munity. On another page Dr G M FINDLAY ows from personal experience that the converse is so to some extent true, and that at any rate a rtial immunity is produced in man against murine phus by killed exanthematic typhus rickettsiæ dealing with exanthematic typhus, however seems far better to employ the killed homo- gous rickettsiæ, provided these can be obtained in fficient quantities Two methods have recently en put forward for obtaining antigenically rich vaccines of exanthematic typhus rickettsiæ Cox[2] has injected rickettsiæ into the yolk sacs of developing chick embryos while DURAND and GIROUD[3] have instilled rickettsiæ intranasally into mice From the yolk sac or the mouse lung, after treatment with formalin or phenol, vaccines may be obtained containing very large amounts of killed rickettsiæ To confer immunity, however it seems essential to give four or five injections Both these vaccines have been employed on a small scale in man but their actual value as immunising agents is at present unknown Cox's egg-yolk vaccine was employed during the recent small epidemic in Spain but the results are as yet unpublished It is known that laboratory workers who have been immunised by the egg-yolk vaccine have subsequently become infected with exanthematic typhus , in these cases of course there was probably a more intense infection and a longer exposure than is likely to occur under conditions in the field A drawback to the use of the mouse lung vaccine is obviously the possibility that other viruses present in the mouse lung may remain active in the presence of the disinfectant employed This possibility may be reduced by employing special laboratory-bred strains of mice

Before typhus immunisation is attempted on a large scale in the field certain fundamental questions must be answered—what is the minimum number of injections that produces immunity and the length of time for which immunity persists and what are the keeping properties of the vaccine ? In immunising large numbers of people it is not easy to ensure that all receive four or five injections at intervals of 5–7 days so that if possible the number of injections should be reduced to one or two In regard to the duration of immunity it is known that with Weigl s louse vaccine, as with the tick vaccine prepared against Rocky Mountain spotted fever reinoculation every year is essential Incidentally in testing immunity reliance should not be placed solely on the Weil-Felix reaction ; the agglutination test and the demonstration of rickettsicidal antibodies by the intradermal injection in rabbits as devised by GIROUD[4] should also be employed Finally there is already evidence that after 5–6 months in the ice-chest both Weigl s vaccine and the mouse-lung vaccine lose much of their antigenic power Presumably if kept at room temperatures their loss of antigenicity would be even more rapid

INDUSTRY'S CLAIM ON MEDICINE

THE months that lie immediately before us says the Minister of Labour, ' will be as crucial a period as that of the Battle of Britain,' and he has appealed to industry to increase its output by 30 or 40 per cent His appeal is a challenge to the medical profession, and in particular to those doctors who having appointments in factories can help to ensure optimum effort The question of optimum hours, Mr BEVIN has said, is not so much one of bargaining between trade-unions and employers as one demanding a scientific approach which takes account of all the factors involved at any given time and recognises the need for adjustment as those factors change Surely one scientific approach hygiene, since in the present war problems are mainly connected with the civil population The book should have special value to British medical practitioners who are finding that war-time restrictions on imported literature make it difficult to keep abreast of recent advances in knowledge

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[1] Ruiz Castaneda, M *Brit J exp Path* 1941, 22, 167

[2] Cox H P *Publ Hlth Rep Wash* 1938 53 2241

[3] Durand P and Giroud P *Arch Inst Pasteur Tunis*, 1940 29, 25 234

[4] *Bull Soc Path exot* 1938 29 25 31, 245

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The main obstacle encountered at the outset that the lamp supplied with the peritoneoscope an insufficient source of light, so that a very small p with a very powerful beam had to be invented ording to present technique this lamp must be oduced through a separate peritoneal opening, a trocar is being designed which will carry h peritoneoscope and light-carrier through two locks

he value of peritoneoscopy depends on the possi- ties of extending its scope Up to now it has n useful in the differential diagnosis of liver eases, in deciding whether or not to operate in es in which secondary malignant growth is suspected d in determining the nature of pelvic tumours e parts of the abdominal cavity readily seen are e under surface and anterior border of the liver, and, by tilting the patient into the Trendelenburg position, the upper surfaces of the pelvic organs, between these two regions the intestines get in the way In obscure cases of jaundice it has been possible to diagnose with certainty cirrhosis, syphilis and secondary deposits in the liver An enlarged gall-bladder may be clearly seen, but the pancreas is not in sight Tuberculous peritonitis has been correctly diagnosed, and biopsies of the omentum and of the liver have given valuable information Fibroids and ovarian cysts are readily demonstrated The differential diagnosis of ascites can be made Early leaking of blood from an ectopic pregnancy gives an unmistakable picture The advocates of peritoneoscopy say they have been able to save unnecessary laparotomies and give material aid in arriving at a prognosis in difficult cases They do not claim that this is an infallible method of diagnosis, and in fact have found it of most aid in confirming a diagnosis already strongly suspected The question remains whether surgeons in this country will think the risk and inconvenience of an exploratory laparotomy sufficient to make them adopt this alternative

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Horan, T N and Eddy, C G *Surg Gynec Obstet* 1941, 73, 273

Annotations

BACTERIA IN DISTILLED WATER

IT is important at any time to have reliable standards hen assessing the bacterial content of water, and in ar-time, when supplies may be contaminated, such andards need to be especially trustworthy Bigger nd Nelson[1] have cleared up some doubts about the ignificance of variations in coliform-bacillary counts, and ave called attention to fallacies in methods of filtration Though their experiments were primarily concerned with the technique of water examination, their findings have a direct bearing on everyday medicine Thus they note that water which is pure in other respects may acquire from rubber tubing, corks or filters traces of powdered talc, asbestos, silica or other earthy matters, and though these may be sterile and protein-free their presence makes it possible for bacteria to grow in the water as soon as it comes into contact with air These solids do not form the nourishment of the organisms, which live, it seems, on carbon dioxide, traces of ammonia and perhaps other minor gaseous constituents of air The action of the siliceous particles appears to be catalytic, in their presence distilled water—which normally will not permit contaminating coliform bacilli to multiply—becomes strongly favourable to their growth This finding throws light on the work of Knott and Leibel,[2] who reviewed the factors inducing pyrogenic properties in resh and stored distilled waters used to prepare solutions or intravenous injection Their experience suggested that a reaction in the patient was more likely to be provoked by traces of protein (often bacterial in origin and detectable by a rise in albuminoid ammonia) than by particulate or inorganic matter Yet they remarked that it was a commonplace of the preparation room that solutions showing inorganic deposits were very liable to prove pyrogenic, and if such reactions were to be avoided deposits of any kind were inadmissible The work of Bigger and Nelson seems to bring these apparently conflicting experiences into line In the absence of siliceous matter, bacterial contamination of doubly distilled water is not followed by growth of organisms, but if sufficient particles of silicate are present multiplication begins even at room temperature Both factors are thus necessary, but neither the initial contamination nor the number of particles present need be large for organisms to grow Thus small lapses from technical perfection may produce serious and far-reaching pyrogenic results No special silicate and no particular contaminating organism can be held responsible, Bigger and Nelson produced the same results with various silicates and with most of the common coliform organisms and their variants It is thus unnecessary to postulate a special strain of "distilled water bacillus," as once was the fashion, or to blame a particular bit of the customary apparatus Those charged with the preparation and care of intravenous supplies must beware of traces of catalytic silicate and of the chance coliform contaminant

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[1] Bigger J W and Nelson J H *J Path Bact* 1941 53 189
[2] Knott F A and Leibel B *Lancet* 1941 1 409

CATGUT SUTURES

CATGUT has been employed for the ligature of vessels since the time of Galen, it was not until last century that it came into use as a suture material Since then it has been almost universally adopted, for its qualities conform closely to those of the ideal suture, but it has to be used with discrimination Howes[1] points out that catgut is a foreign body and excites a tissue reaction which is sometimes accompanied by infection, particularly when it is used in the skin and mucous membranes Apparently catgut encourages infection by acting as a culture medium It is also not well tolerated by muscle and in fat, where the poor blood-supply is probably responsible for a low-grade inflammatory reaction with considerable necrosis and induration To minimise the risk of infection and the foreign-body tissue reaction, Howes advocates the employment of catgut in fine sizes arguing that in any case the strength of a sutured wound is limited by the power of the tissues to retain the suture The tensile strength of chromic catgut no 1 is about ten times that of aponeurotic tissue To employ such a size is clearly unnecessary, although allowance must be made for the weakening of the thread from absorption, its tensile strength being probably reduced by half four days after insertion Howes suggests that no size greater than no 0 is needed in suturing any tissue and that much finer gauges (0000 or even 00000) should be used in tissues which have a poor holding power for catgut If additional strength seems necessary he advises a larger number of interrupted sutures, although he points out that there is no advantage to be gained by placing them closer together than 1 cm Bowen[2] says that larger must be that of medicine as a whole, the combined wisdom of all who have the privilege of supervising the health of the workers The effects of abnormal hours on health are known , they have just been set out [1] again with authority by a select committee, but we need more observations on the effects of different work spells Admittedly, excessive overtime for a long period has a devastating effect on the human reserve of strength, both physical and mental Over short spells of a month or two, or even three as after Dunkirk, effort can be greatly intensified without collapse But over six months, the precise period mentioned by Mr BEVIN, it would be folly to drive factory workers blindly, without regard to rest and recreation Production is by no means directly proportional to the number of hours worked , the optimum hours for regular output are far less than those which can be maintained in a spurt The problem with which we are faced is to find the correct work spell for each group of workers, for each gang, for each process, for each department, and for each firm Fatigue, that scientifically vague yet expressive word used to sum up the results of overwork, can at present only be measured in terms of output , if fatigue appears in the individual, in the squad, in the gang, in the shop, then production falls And because fatigue is cumulative it follows that the national effort must decline if the rules so truly laid down by the Health of Munition Workers Committee in the last war, and amply confirmed by later experience, are not applied by those in authority

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[1] Howes E L *Surg Gynec Obstet* 1941, 73, 319
[2] Bowen A *Amer J Surg* 1940, 47, 3

How is this to be done ? The first step is to apply existing knowledge and this is now, we are assured, the firm intention of the Government as stated in the report mentioned above and summarised last week in these columns (p 648) No longer is the accumulated wisdom of the Industrial Health Research Board and its forerunners in regard to the relation of working hours to output, tested again and again and proved right every time, to be set aside by the producing departments Patriotism is not enough , we can be ruthless with materials but not with the human tools that fashion them To ensure the perfect adaptation of workers to their work would no doubt require an industrial medical service with a code and practice as elaborate as (say) that of the school medical service But, as the B M A report [2] published today insists, an adequate medical service does not necessarily involve an elaborate and expensive organisation Last year's order of the Ministry of Labour paved the way by giving the Factory Inspectorate discretion to introduce doctors, nurses and welfare officers into any factory engaged on armament work There should be, says this report, in *every* factory, large or small, arrangements for the medical supervision of the workers Before the war there were in this country some 520 factories employing a thousand or more workpeople, and 137,000 employing less than 250 It should be possible for a group of smaller firms to cooperate in appointing a medical officer who will spend his whole time in industrial medical work , and there is much to be said for having some advisory body to help the employer get the kind of medical officer who can safely be given a free hand when appointed The proper placing of workers a to their fitness, their continued supervision working conditions after return from illness, of the occupational hazards and the best way to them, a careful watch on the beginnings of neuroses—these form the background of a job might well become as attractive as that of the school famulus And to become this the medical officer must be left to develop his style hindered, with direct access to the management he needs it The Association of Industrial M Officers has also devised a training scheme which regards as practicable even in war-time, by w special university committees, including doc employers and trade-union officials shall ar courses in industrial medicine and obtain facilities entry into all kinds of factories Actually the int of the general practitioner in the subject is be much quickened these days and there is a good prospect, if the war goes on long enough, of the doctor regaining the intimate knowledge of his patients daily lives that he lost when they entered the erstwhile gloomy portals of the factory This new awareness will provide the clue to the " research " which is regarded as something apart and out of the question at present Its essential basis will be what industrial life looks like to doctors who move freely within it

PHOTOGRAPHY THROUGH THE PERITONEOSCOPE

As early as 1901 the abdominal viscera of a dog were seen through a cystoscope introduced into a pneumoperitoneum Since then the peritoneoscope has been much improved, and the latest triumph is the perfection of a method of colour photography which makes it possible to attach a coloured picture of his abdominal organs to the patient's clinical notes Yet the enthusiasts for peritoneoscopy are still few, and there seem to be three reasons for this lack of favour the procedure may be accounted unsafe , its scope may be too limited , or the alternative (usually exploratory laparotomy) may be considered so much more satisfactory that any added risk is considered worth while From published accounts the dangers of peritoneoscopy do not seem alarming GARREY [1] has reported 75 peritoneoscopies without a complication, except for slight sepsis in the abdominal wall of one case His patients were, on an average, 36 hours in hospital He discusses the experience of other observers, notably of RUDDOCK, who has completed 1500 examinations, and concludes that peritoneoscopy has only a fraction of the mortality of laparotomy, while it saves money and hospital beds The first part of the operation is the induction of a pneumoperitoneum An area in the midline of the abdominal wall about 5 cm across, just below the umbilicus, is anæsthetised by procaine infiltration An incision 1 5 cm long is made through the skin, and a small blunt trocar and cannula are inserted through which the pneumoperitoneum is induced The larger cannula which is to act as the sheath for the optical instrument is introduced through a nick in the anterior fascia GARREY gives as the essentials for the patient's comfort during the procedure gentleness in all movements—no jolting and no touching of visceral surfaces by the instrument He ion must be the means by which society perpetu-is typical patterns the means by which it forms a l circuit and precludes criticism of its basic assump-n, and one of these assumptions is the validity of stitution of war as a means of settling differences een states No scientific view of war says he, can rmine our conviction of being morally justified we fight against wrongful aggression, just as we need doubt our moral right to defend ourselves or our biding neighbours against robbery with violence though a detailed analysis may convince us that established institutions are responsible for producing inals In a now forgotten book "The Science of er" Benjamin Kidd showed how our social institu-s depended upon a social heredity. and although le through the centuries are capable of rapid and cal change which can be consciously directed. Mr ding indicates means by which our social heredity d be altered towards integration An international ority to enforce peace, he points out is domination the grand scale He would have us recognise that inant behaviour is an institution which our culture devised and perpetuated just as the neurotic person created his incapacitating illness Prophylaxis must end on psychological security for the individual elimination of those family and social traditions ch preclude criticism of society s basic assumptions first requirement could partially be met by ological changes. the second, he thinks, calls for widespread application of individual analysis, parti-arly of child analysis. The proposition thus to alter social life is alarming he admits, our impulse is to se a firmer clutch on what we already have, even ough what we already have includes war A similar action of insecurity to any invitation to change even small matters, stands in the way of all integrative haviour

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[1] Statement relating to Production, being the 25th report of the Select Committee on National Expenditure H M Stat Office 6*d*

[2] Report of Committee on Industrial Health in Factories B M A House Pp 43 6*d*

[1] Garrey, W E *New Engl J Med* 1941, 225, 180

This summary of his views cannot do justice to the lance of the book, or to its careful study of the mental ocesses involved in the warlike spirit To follow the thor all the way, however, would call for a detachment hich few of us can achieve in these times though perhaps e Chinese could approach it Their custom of allowing defeated enemy to save his face is fundamentally sound, oted in common sense But to put down Mr Harding s ok and pick up a daily paper is to pass into another orld not to be measured by his standards and values ll the more satisfying is it that such a work can be blished at this stage Whether the author s conclu-ons are right or wrong the mood in which he handles is the most pressing problem mankind has ever faced, the only one reaching towards a solution.

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EXPECTORANTS

At this time of the year shrouded in November fog our island home becomes once again a land flowing with ipecac and ammon carb The use of expectorants to increase and liquefy the sputum is firmly established by tradition, and the futility of medical treatment—as distinct from skilled nursing—in the management of exacerbations of chronic bronchitis is probably the main reason for the routine prescribing of these drugs. it is not that they have been proved to be of value but that they are as good a placebo as anything else The physio-logical basis for the use of expectorants is perfectly sound the output of secretion from the bronchial mucosa can be increased by vagal stimulation, and the same effect can be produced reflexly by irritating the vagus endings in the stomach mechanically or by means of drugs It is well known that nausea and vomiting due to gastric irritation are accompanied by increased bronchial and salivary secretion and not infrequently a cold sweat provides additional evidence that the enhanced activity of the cholinergic fibres has spread far afield in the vegetative nervous system But no convincing evidence has yet been produced to show that these physiological observations can be usefully applied in therapeutics The only exception to this is that emetics are occasionally administered to children suffering from acute bronchitis in order to promote transient bron-chorrœa with the object of flushing viscid secretion from the respiratory tract Few indeed are the patients with chronic bronchitis who would submit frequently to the depressing experience of parting with their gastric contents in exchange for the fleeting and sickly pleasures of profuse expectoration Nevertheless, it was probably the efficacy of this form of treatment in children which led to the unjustifiable assumption that subemetic and even subnauseating doses of drugs of the ipecacuanha series would produce the same effects on the bronchial secretion as emetic doses It is remarkable that so little attention has been paid to the time of administration of expectorants in relation to meals Only a small minority of people experience nausea when they take average therapeutic doses of these drugs on an empty stomach, and it therefore seems highly improbable that such doses can excite reflex effects by stimulating the gastric mucosa when the interior of the stomach is protected by food-stuffs and the mucoprotein of the gastric juice By clinical observations on patients suffering from chronic bronchitis Alstead[1] has shown that no significant change occurs in the output of sputum when patients receive maximum therapeutic doses of the expectorants in common use Perry and Boyd[2] by experiments on rabbits and cats, have confirmed Alstead s findings in so far as it is possible to apply to man observations made on animals Using a dose of ammonium chloride corresponding on a body-weight basis to that of Alstead, they could detect no increased output of respiratory-tract fluid This is particularly interesting in view of the substantial dosage of ammonium chloride which Alstead s patients received—gr 80 daily The rest of the paper by Perry and Boyd will make a stronger appeal to the pure experimentalist than to the practising doctor, for the doses of the drugs under investigation were so large that the results cannot be applied to man Thus an sizes of catgut are actually digested more rapidly and lose their thread strength earlier than finer ones, because of the greater tissue reaction produced by the larger sizes and the more certain impregnation of the smaller gauges of chromic catgut during manufacture Howes maintains that the incidence of wound infection is reduced and healing hastened by paying attention to these points These views are supported by previous experimental work Bates[3] points out that the edges of a healthy wound do not adhere firmly for the first four days but thereafter the strength of the junction rapidly increases until by the tenth day it approaches normal The ideal suture must therefore retain its strength during the first ten days of healing Bates's experimental studies showed that the finer sizes of chromic catgut (000) retained an adequate tensile strength for a fortnight, and that healing was rapid when they were used, whereas larger sizes (3) had little to do after a week, although the wounds were poorly healed even at this stage Plain catgut of all sizes was even more rapidly absorbed and accompanied by inflammatory reaction and delayed healing Bower, Burns and Mengle,[4] from experimental work on dogs, reached similar conclusions regarding the healing of intestinal wounds and laparotomy incisions They have applied their experimental findings clinically with success Unabsorbable suture materials have been growing in popularity in recent years, particularly in America Those who advocate their use have emphasised the disadvantages of catgut Whipple[5] points out that among the factors influencing wound healing the use of fine needles and sutures is important, in order to avoid trauma and foreign-body tissue reaction He therefore advocates the employment of silk, but it seems that when catgut is used in suitable sizes most of the objections to it disappear

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[1] Macleod D *Brit J Urol* September 1941 p 135

[1] Alstead S *Lancet* 1939 2 932 1941 1 308

[2] Perry W F and Boyd, E M *J Pharmacol* 1941 73 65

VAGINAL EXAMINATION DURING LABOUR

So much has been written about the potential dangers of making a vaginal examination during labour that in the ranks of the extremely cautious this procedure has been totally vetoed and replaced by the routine employment of the rectal route for diagnosis and prognosis A vaginal examination in labour undoubtedly carries with it a small but ever present risk of introducing infection from the perinæum and the lower reaches of the vagina into the cervix and uterus or further, such an infection may be endogenous from the patient herself or exogenous from the examiner's hand or person, especially his nasopharynx Whatever precautions are taken there still remains a small risk Such precautions include the intelligent use of an impervious mask to cover mouth and nostrils, the exclusion from the labour ward of all personnel harbouring any form of nasopharyngeal infection, however mild, not forgetting the common cold and the seasonal sore throat, the employment of complete surgical asepsis for the examining hand and the use of a dry sterilised glove, careful toilet of the area of examination, and the generous exhibition of some reliable antiseptic, such as Dettol cream If all these precautions are faithfully observed we have at least given as few hostages to fortune as we can But the determining factor is not only the method but still more the number of examinations One or two vaginal examinations carry but a small risk, but every repetition increases the danger, especially if the repetition involves a number of different people, such as the outside practitioner, the admitting midwife, the pupil midwife or medical student, the resident house surgeon and perhaps as a final court of appeal the consultant These multiple vaginal examinations constitute a real danger and should always be discouraged, since universally accepted figures show that the morbidity-rate rises in direct proportion to the number of antepartum examinations, and m a contra indication to cæsarean section sh ultimately advisable

On the other hand there is no doubt that examination is the only certain method of assessing the degree of dilatation of the os in cases—for example, when the presenting part is by a thin membrane of undilated cervix and dilatation is diagnosed on rectal examination It the only accurate way of diagnosing the p when this is masked by œdema of the pr and the rectal findings are equivocal The supporters of the rectal route claim that as information can be obtained by this as by examination, but they admit that practice and are essential, and they are mostly prepared to vaginal examination when in difficulty or doubt dangers of the rectal approach are that it leads to of false security and therefore too frequent by too many different people on any one case and antiseptics are apt to be neglected and the method of examining the rectum readily haphazard, thus the inadequately sterilised thumb be placed on the introitus Erving and Meister[1] whether a finger in the rectum which rubs the dirty posterior vaginal wall into the cervix and presenting part is any less risky than a properly carefully performed vaginal examination They port the limited use of the vaginal route with convincing figures In 1000 cases consecutively delivered in the maternity unit of the Millard Fillmore H Buffalo, 97 5% of whom were examined vaginally average of 1 4 times, there were no maternal deaths, the corrected fœtal mortality was 2 7%, 4 5% of mothers were febrile according to the League of standard In extenuation of even this small mor rate, it must be noted that Erving and Meis cases were largely complicated and 75% were deliv operatively, a fact which in itself accounts any sepsis The conclusion to be drawn is that carefully conducted vaginal examination, done once twice only, is no more dangerous than a rectal exa nation, while its diagnostic exactitude renders it gre preferable

WHY DO MEN MAKE WAR?

War, says Mr D W Harding in "The Impulse Dominate" (London Allen and Unwin Pp 25 *7s 6d*) is a social institution, sanctioned alike by the aggressor nations and ourselves During the periods between wars the ordinary citizen has no for war, but he has acquiesced in the principle domination or submission as the rule in private life confronted with dominant intentions on the other (as the citizens on both sides feel sure they are) he see nothing for it but resistance Now come in kinds of exacerbating influences innate impulses, propaganda, and rumour—directed spontaneous—aided by that process of rational which leads even the most intelligent to ma reasons for their emotional responses, and by citizen's dim understanding of international a The author notes the view that psychological th belittles efforts to exclude war, but he maintains the human nature we know is institutionalised nature, not the biological product that an reading of psycho-analysis would suggest If the p analytic view is correct it means that the emotio leading to war are "neurotic," for the greater influence of repressed impulses in determining behav the more neurotic it is

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[3] Bates, R R *Ibid*, 1939 43, 702
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Special Articles

GENERAL MEDICAL COUNCIL

PRESIDENTIAL ADDRESS

NING on Tuesday the 154th session of the council L EASON began with a word of regret that they not sit in their own home as he had hoped in May again therefore the council was availing itself of enerous hospitality of the Royal Institute of British tects He recalled the death since last session of Robert Briggs Wild, who represented Manchester ersity on the council 1922–27 The pharmacopœia mittee had greatly benefited by his special knowledge experience in pharmacology and therapeutics ingham University had chosen its medical dean, L G Parsons, to fill the place vacated by Mr gee after fifteen years of varied service on the examon, executive and curriculum committees which all profited by his terse and pointed observations also welcomed Dr Thomas Fraser, lately president he British Medical Association, elected in May to fill place of Sir Norman Walker as direct representative Scotland, and Prof W J Wilson, medical dean Queen's University Belfast, as successor to Professor ry, now sitting on the council as a Crown nominee

DEFENCE REGULATION 32B

r Eason pointed out how this regulation debarred ctor from temporary registration unless he could show t he was by law entitled to practise in some territory part of it) outside the United Kingdom to which the ulation had been applied The Order in Council laid vn that an applicant must show to the satisfaction the council "that he holds a medical diploma or lomas," and after consultation with representatives the Home Office, Department of Health for Scotland, d British Medical Association, the regulation was nended, in September by adding after "holds" the ords "or is duly qualified to obtain"

Effective applications for temporary registration could herefore now be made by persons who are by law ntitled to practise in any place outside the British Islands, or, though not so entitled, hold (or have held) a medical diploma granted in any such place, or have passed examinations qualifying for it

The new order, Mr Eason remarked also extends acilities for entry into civil practice by deletion of the vords "not involving medical attendance on patients n their own homes" Applicants may now enter employment as assistants to practitioners whose names ppear (other than temporarily) in any of the three ections of the Medical Register These amendments, he aid, will greatly relieve the responsibility in deciding difficult and doubtful cases, at the same time greatly ncreasing the responsibility for securing a guarantee hat every applicant has the requisite knowledge and kill for the efficient practice of medicine, surgery and midwifery Happily in these matters he had been able o rely upon the experience and information of the onjoint Examining Board

THE MEDICAL STUDENT'S SCIENTIFIC GROUNDING

The council will have noticed, said the President, the evival of interest both in the medical and in the lay ress in the preliminary and early scientific education f the intending medical practitioner No doubt the ducation committee would take these comments, riticisms, and suggestions into careful consideration, hough the problems raised were carefully considered y the curriculum committee and the council before the 930 resolutions on professional education which came nto operation in November, 1938 Every medical student should, he said, have a thorough general education s well as the grounding in the basic sciences without which he cannot expect to profit by his later professional tudies The difficulty is that a complete general education would make a medical training so long as to be lmost impracticable for the average student to spend the ime or afford the cost Some compromise between xtreme views was therefore essential, although it might ail to satisfy those whose interest was concentrated upon a particular part of the curriculum

FLOWERING OF A HEALTH SERVICE

HEALTH AND MEDICINE IN THE U S S R

Virchow, in the last century, said "Medicine is a social system" With this as his text Dr A W Lipmann-Kessel, speaking at Aylesbury on Nov 20, told of the origin, between 1917 and 1922, of the present health organisation of Russia It began, he said in a country devastated by war, revolution and counter-revolution, and the enemy at that time was the louse Typhus was spreading so rapidly that by 1919 Lenin knew that either socialism must defeat the louse or the louse would defeat socialism Dr Semashko had been appointed as the first people's commissar of public health, and an account of the problems he had to face in those early years appeared in our columns in 1920[1] The slogan chosen to launch the new health programme was this "The health of the people is the task of the people themselves"

As early as 1918 the programme of the U S S R included a comprehensive series of health and sanitary measures Mayakovsky and a group of young fellow poets left their verses to chalk health slogans on walls all over Russia They set the pace during that early period of the health revolution, and their inspiration has carried over into these days Dr Lipmann-Kessel told how he had visited a mother and child welfare clinic in Moscow in recent years Young medical women were taking the mothers round and explaining the anatomy and physiology of maternity to them with the aid of fine charts and models In the midst of them was a group of Red Army soldiers receiving a lecture from a woman doctor on the same topic, paternal responsibility in Russia includes education in the hygiene of maternity Respect for health is taught early In the schools the children covet the post of health inspector Two children in each class are appointed to this position and they not only make sure that the windows are open and that each child brings a clean handkerchief to school, but have charge of a health register which they keep up to date If any child stays away the children health inspectors visit his home, find out why, and carry a report back to the health officer at the school There are also health conferences for children, and they are taught public health as part of their curriculum

Every kind of medical treatment is given free of cost to every citizen who needs it The basis of the service is not, as with us, the general practitioner working alone, but the health centre, staffed by a group of doctors, specialists and nurses and equipped with facilities for diagnosis Health centres are placed in the factories, the suburbs, the collective farms or anywhere else where they are needed In Moscow, at the Stalin motor works, which employs 35,000 workers, there is a network of first-aid posts, as well as six visiting centres which those with minor injuries and disabilities can attend for treatment For those with more serious troubles there is the central polyclinic, staffed with 124 whole-time doctors and 18 dentists, who are responsible for the health of the workers This accent on health is no polite fiction, in Russia promotion of doctors depends on the standard of health among workers in their charge, and on a falling level in the time lost at work The graphs plotted to show progress are of health achieved, not of sickness overcome, and the polyclinic is responsible for the prevention, diagnosis and treatment of all disease within its area

Between 1919 and 1923 the probability of sickness in Russia was high · most of the people were ill or likely to become ill They were impoverished, famine stricken and disease ridden, and on this foundation of a sick population one of the greatest experiments in health services was built It is meaningless, Dr Lipmann-Kessel believes, to compare the number of hospital beds available in England with the number in Russia, per head of population we still have the lead in beds But a more significant figure, he suggested, was the threefold increase of beds in Russia during the last ten years In the same period the number of doctors has been nearly doubled A Russian institution which we should do well to copy at once, he thought was the night sanatorium Between full incapacity and full capacity there is often a transition period when a man is not fit to do a whole increase in bronchial-tract secretion was reported in rabbits when the animals received a gramme of powdered ipecacuanha per kilo body-weight On this basis, a man weighing 75 kg would get a dose of 75 g (gr 1125) of the drug, which is 562 times the maximum pharmacopœial dose of powdered ipecacuanha, and equivalent to 2½ pints of the tincture When it is recalled that a wine glassful of tincture of ipecacuanha administered to the human subject almost invariably results in vomiting accompanied by bronchorrhœa, salivation and sweating, the only conclusion that can be drawn from the experiments reported by Perry and Boyd is that rabbits and cats are extraordinarily tolerant of this and other emetics No reference is made to the occurrence of vomiting among the cats, but the passiveness of the rabbits is partly accounted for by the inability of these rodents to vomit There is, of course, the additional factor that all of the animals were under a general anæsthetic during the experiments We are not likely to make much progress in investigating the clinical value of expectorants if research is carried out on laboratory animals instead of patients with respiratory diseases The physician who is in daily contact with his patients is soon made to realise that he must concern himself only with subnauseating doses of expectorants Measurement *of the output of sputum in wide graduated test-tubes* does not entail much trouble and is sufficiently reliable if the intelligent cooperation of the patient can be relied on Bronchial fistulæ discharging measurable amounts of secretion from the respiratory tract would provide excellent experimental conditions, and the opportunities offered by patients suffering from gunshot wounds of the chest should be seized in order to throw more light on the efficacy of expectorants

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[1] *Lancet*, 1920, 2, 519

RUBBER DERMATITIS

RUBBER is a popular constituent of footgear because of its hard wearing properties, its cheapness and the protection it offers against damp Some people, however, may become hypersensitive to rubber, responding with dermatitis of the feet to the use of rubber-soled shoes, or even shoes in which the insole has been impregnated with rubber This hypersensitivity has long been recognised, since dermatitis is specially prevalent in the rubber trade P V Marcussen, who has carried out an investigation[1] in Denmark, recalls recent work showing that the chemical accelerators used in the hot vulcanisation of rubber may be responsible for such sensitisation, and mentions the finding of P Bonnevie that in a series of factory cases the accelerator causing the trouble was invariably mercaptobenzothiazol Marcussen himself tested for rubber sensitivity all cases of dermatitis of the feet attending the skin department of the Copenhagen Finsen Institute over a period of 5 months The patients were first examined for mycotic or trichophytic infections, after which a patch of warm vulcanised rubber was applied to the right leg If there was no reaction similar tests were carried out with material from the patient's own shoes and with various chemical accelerators used in the rubber trade Of 102 patients with dermatitis of the feet, 11 (10%) were hypersensitive to rubber and the history was similar in many of these cases One boy of 12 for example, had three attacks of dermatitis between 1938 and 1940, all of which were associated with the use of rubber shoes The first attack had been treated as impetigo bullosa, caused by wearing plimsols and had disappeared in a fortnight in the second attack he was treated for epidermophyton interdigitale,' the trichophytin reaction at that time being strongly positive but the mycotic test negative, this also cleared in a fortnight, but three months later he had a more severe attack in which warm vulcanised rubber gave a strongly positive reaction The eruption became worse when the dressings included sheeting and improved as soon as this was oiled silk Another patient, a woman of 51, irritation due to a pair of rubber garters before She had replaced them with another rubber—and had had no further trouble until before she was examined, when she had cheap shoes, apparently made of leather, which much irritation of the feet She had worn sl time and the irritation had cleared up, but aft spent a few hours in rubber boots, on washing rash broke out, this failed to improve on which included a rubber bandage, and she gave a reaction to hot vulcanised rubber The soles of shoes turned out to be made of a mixture of rubber—a favourite combination, it seems, of cheap shoes She subsequently had attacks wore shoes with rubber-impregnated insoles, over low-cut shoes, or shoes with an elastic gusset strap, she gave negative results to trychoph mycosis tests throughout A third highly s case developed an attack after standing for a moments on a rubber mat after a bath The appear to be commoner in summer, either because footgear is then in more general use or because the of accelerator substance present in the rubber are re more freely at higher temperatures Age and sex to make no difference to incidence, there is no of family predisposition and as a rule no history of prev ous intolerance to rubber In 8 of the 11 cases attack appeared within 1–7 days of contact with rubber, in only one patient was the interval as 3 weeks Previous attacks, numerous in some had occurred in 5 and had lasted 3–6 weeks The toe affected in all cases and in 5 there was also spread to dorsal, and in 5 to the plantar, surface of the foot, heel was affected in one case An eruption also app on the hands in 6 cases, and one had generalised titis Thus the site of the lesions does not help in differential diagnosis between rubber dermatitis, myc and epidermophytosis In 7 of the 11 cases epider phytosis had actually been diagnosed in attacks, the series does not indicate whether a prece attack of epidermophytosis has any significance in ætiology of rubber dermatitis, but the fact that myc tests were always and trichophyton tests negative suggests that any connexion of the kind unlikely The incidence of rubber dermatitis is rare comparison with the prevalence of rubber soled foo But the patients affected, though few, are at a disadvantage, Marcussen thinks, partly because diagnosis may be missed and the shoes causing trouble may not be discarded, or the condition may aggravated by the use of dressings containing and partly because prophylaxis is difficult in women's shoes often have insoles containing rul or held in position by rubber solution, and this may overlooked or give rise to fresh attacks

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[1] *Nordisk Med* Sept 6, 1941 p 2507

Mr F C BARTLETT, F R S, professor of psychology in the University of Cambridge, has appointed a member of the Medical Research Council succession to the late Prof A J Clark

The latest list of subscriptions to the Medical Relief Fund brings the total amount contributed to £35,000 Up to last September the distribution mittee, of which Sir Hugh Lett is chairman, had out over £8000 (*not £5000 as stated in* THE LANCET Nov 22)

On Wednesday, Dec 3, at 3 P M, Sir David Munro, medical officer of the Ministry of Supply, will open a medical department at the Longbridge works of the Motor Company of the pen So far as we can see all future board- may cease at the end of any week with no notice at t it often happens that two-thirds of our working s taken up by it and we must regulate our other ties accordingly We cannot, of course make the st guess at our income for more than a week ahead udgeting is out of the question "C'est la guerre," y sadly but in our hearts we fear it is only bureau-

We wonder whether a member of the Amalgam- Society of Bottle Washers or of any profession less up to meekness and longsuffering than our own, l be used quite like this by an elected government whether this is a fair sample of the promised golden of state medical service, but either from citizenship ome less noble motive we keep our complaints to elves and come and go as bid When peace comes oubt the Ministry will go to the Heralds' College for a of arms Meanwhile how would this do *Azure, a hercock revolvant or* with motto, *Varium et mutabile er?*

edical boards, 1939–41 as thousands of young men hundreds of doctors now know, are run on the Ford moving-belt system The candidate and his docu- nt pass down a row of four cubicles, each containing octor who does his bit, records his observations and his nion of the bit he has done and hands them on mber four not only does his own bit but reviews the k of those before him, considers the candidate as a rt of manhood, records his notion of a suitable grade, , with an "over to you over," sends him across the m to the chairman The chairman rapidly surveys the recorded facts and opinions and the candidate mself reaches a decision and records it If he finds mself differing substantially from other members of the ard he consults with them and endeavours, usually th success, to reach an agreed decision He and the ole board work according to instructions which are some matters extremely precise, in others quite definite As to the bits, those who first allotted them em to have had it in mind that the members of the oard would be what are termed "physicians-and- rgeons" and should accordingly be treated each to a crap of medicine and a scrap of surgery How other- ise would the astonishing assortment of ears and hearing, urine and belly have fallen to number four? Experience has led to a more logical grouping of functions etween the members and finality may not yet have been eached, but it has all along been true that only number our and the chairman have either the duty or the oppor- unity of considering their man as a whole

When therefore, the eager doctor starts out for two onsecutive sessions of medical board widely different xperiences may lie before him He may spend the reater part of five hours in the rapid examination of amples of urine for albumin and sugar, relieved by ntervals for the terse and vivid description of every ariety of hair, complexion, eye, mole and scar He ay keep his joints supple by 30–60 performances of "up in the morning early" exercises vis-a-vis the same umber of mildly astonished recruits He may take istories, test vision and assess mentality against time, r he may make a rapid general medical survey and enjoy e sport of seeing if he can catch his colleagues out It ay occur to him that some of these occupations scarcely quire for their efficient performance the discipline of e medical curriculum and the experience of practice, , of course, he may find them a pleasant relief from ore responsible work On some days the number and ality of the candidates make the work easy for every ember of the board; on others it is laborious for all, ery laborious for some and quite impossible to get it one in anything like the allotted time Regarding the atter more broadly it is hard to know whether this Ford ethod is in the circumstances the best way of doing the ob Three good clinicians, one being chairman, with an nqualified assistant to weigh, measure, test urine and cord the police description, and with a proper allowance f time, could almost certainly do it better especially they were told how their assessments worked out when he men got into the Services But they too would have o divide the examination of the man and they might not nd it easy to devise an efficient and satisfying plan he present method does assure for each recruit a reason- bly complete examination, approximating to a prescribed standard, capable of rapid performance and as little dependent as may be on the personnel of the board, but those who do the work have almost no means of guessing whether their assessments do in fact conform to the needs of the Services There is at present no liaison between chairmen or members of boards and commanding officers or medical officers of Service units and it is obvious that there ought to be

From the point of view of the medical profession it is certainly worth noting that this is the manner in which the state in 1941 finds it natural to tackle a clinical problem It does it by what it would call a team of doctors, of whom at least three are employed in work which makes minimal demands on clinical skill judgment or experience—work far below the standard of which any good doctor is capable The notion that the board is a team is, of course, an illusion Three doctors round a table may form a team Four doctors in a row of cubicles working against time with a chairman at a table noting their findings and making a final decision may constitute a good little machine for rapid examination but is not and cannot be a team

What of the recruits and the clinical aspect of the work? Experience of the samples of the population seen in one corner of outer London over a period of eighteen months is obviously not enough for any large pronouncements, but it does amply justify the assertion that we have a large number of most admirable young men There are days when almost without exception the candidates fall obviously into the first class, and one comely, upstanding, muscular young man after another passes smoothly down the board, cheerful, alert, manifestly keen to be passed fit and making the least of any defects he may have These young men follow a great variety of trades, but the best, as might be expected are those who work with eye and hand out of doors—dockers, lorry drivers, builders of various kinds skilled artisans and their labourers Clerks are far less uniform as specimens of good manhood but the best of them are excellent, surpassing sometimes even the manual labourer No "C3" class of young man has passed under my eye, and I have seen no trace whatever of widespread malnutrition It would be ludicrous to suggest that these almost perfect physical specimens whose only common blemish is some degree of neglected dental caries were not, or had not as children been, well and sufficiently fed Among those in sedentary trades some even under thirty, are fat and flabby and no doubt their diet is at least in part to blame, but the undersized and the thin, the clinically "ill-nourished," are conspicuously rare Sometimes, however, the mysterious net which dips into the population, enmeshes its draft and pours it out before us, delivers the most astonishing assortment of what can only be called mixed duds, and on a bad day the collective impression can be most depressing These bad patches seem to have nothing in common except that the men are probably over thirty and have something amiss Bad sight, running ears, deafness, valvular lesions, chronic bronchitis, duodenal ulcers, malunited fractures, old poliomyelitis, deformities of the feet (congenital or acquired), varicose veins epilepsy parkinsonism, anxiety neurosis, mental defect—anything and everything that can unfit them for life and for military service they have and it is not clear why they all come at once It is like one of those car journeys when at each succeeding crossroads the lights turn red as you approach. No doubt some combination of occupation-group and age-group is the real answer, yet their occupations recorded on their papers seem varied enough What is very clear, and somewhat alarming, is the startling difference between the round-twenties and the near-forties on the one hand and the realisation that some poor, outworn old man of thirty-nine is twelve years younger than the examining doctor, who feels, and hopes he looks, still young and vigorous Life has used some of them very hard Putting war aside, is the same fate in store for "the many men, so beautiful"—those young fitters, bricklayers and lorry-drivers' mates that we saw yesterday, or is the contrast a witness to one of the small waves of progress on the ebbing tide of our civilisation?

Sociology apart there is good exercise in rapid diagnosis to be had by those members of the board who are free to survey the man as a whole and daily lessons in the curiosities and unsolved mysteries of medicine and in that day's work or a heavy job but when he would be the better for doing something In the U S S R the man returning to work is examined at the factory clinic and allocated to a suitable job, for a suitable number of hours daily After work he goes to the night sanatorium where he is under the care of doctors and nurses and is given the food he needs Tests to estimate his response to return to work can be carried out, and his work is graded to meet his recovery

The casualty service in Moscow is also fully organised An emergency hospital serves an entire region, taking in every urgent case The telephone calls reporting cases are taken by a highly skilled member of the medical staff who, on the strength of what he is told, decides whether to send the emergency ambulance, which is express, or one of the ordinary ambulances If the express ambulance is sent, its moment of departure is recorded by the breaking of a light beam and its return is checked in the same way Every week the times taken on calls are analysed and any unexplained delay is investigated The young doctor who goes out with the ambulance is expected to make a quick diagnosis and to record it in a book His diagnoses are checked against the hospital findings, and the man who perpetually makes wild diagnoses can thus be detected

Dr Lipmann-Kessel reminded his hearers of the service Soviet research into the storage of blood had been to us in this war, and recalled Russian work on blood taken from the cadaver Russians have also perfected a technique of blood-transfusion for use in the front line , and their use of aerial transport for the wounded saved many lives in the Finnish campaign He described an ambulance tank which can be taken on to the battlefield and manœuvred to cover the wounded man, who is then lifted in through a sliding panel in the floor Thus the wounded can be retrieved without danger to stretcher-bearers

Pavlov spoke of Russia as the only country in the world where research could be carried on unfettered by economic ties This principle is carried into medical education , medical students are chosen only from among the best students , they receive free education and free books, and are paid during training like any other worker in the Soviet

SCOTLAND

EDUCATION OF CRIPPLES

Dr G J I Linklater, school medical officer for Edinburgh, speaking at a recent meeting of the Cripples Welfare Association said that the surgeon could now work wonders with the crippled child, but after he had done his best the child was put into the world with other children who had had full facilities for education The crippled child had been losing each year and education must be provided to bring him up to as high a scholastic standard as possible Muscles which had been altered by surgery must also be re-educated, and children who were unable to follow ordinary pursuits and exercises must receive psychological education Unless the inferiority complex were counteracted it would follow the child into life, with the further development of the timid person afraid to compete with his peers, the recessive person who would not establish social contacts, or the unlovable person who tried to overcome his limitations by over-compensation Dr Linklater drew attention to an obstacle which arose in relation to occupational therapy, when people who had been trained were not accepted by trade-unions because they had not served an apprenticeship Although they were competent workmen they had great difficulty in obtaining employment The visiting teacher was a great stimulus to the children who learned to read, write and make contact with the outside world They were taught to use their hands, and their attention was taken away from their disability Unfortunately this had ceased with the war but he hoped it would begin again

PART-TIME MISSIONARY

Dr F M Graham, who died in Edinburgh on Nov 17 at the age of 71 was for many years a medical missionary in India He took the Scottish triple qualification in 1890, his F R C S E in 1895, and the M D of Durham in 1906 For some time he acted as tutor in clinical surgery and clinical assistant in the medical department of the Edinburgh Royal Infirmary physician to the Cowgate Dispensary He examiner in anatomy to the Royal College of of Edinburgh At the end of last century he India where, working as a free lance, he medical missionaries in the winter and in the hot practised in the hill stations But his health robust and he was forced to return to this country ever he followed the same plan of working, in Britain during the summer and in the Church Society's hospital in Old Cairo in the winter D last war he worked as a civilian doctor in France and for his services was created chevalier Legion d'Honneur Dr Graham's wife died a few

In England Now

A Running Commentary by Peripatetic Corresp

STRUCK down by a virulent organism which on me unnoticed, I was dispatched to a certain Defence Sick Bay. Surrounded by comfort and attention I made a quick recovery and soon critical stage, by which I mean the stage when the begins to criticise his treatment The only could raise was that I was aroused at a quarter to in the morning As insomnia was a feature of the the point was an acute one It was only slight tion to recall that in previous experiences of general Service hospitals and nursing-homes the h had been still earlier Discussions with the sister duced the familiar arguments that everything had to be cleaned up before the doctor came, and unless an start was made the work would never be done , it was the traditional hospital practice I stonily unconvinced As a physician it matters to me whether a hospital patient has had his face before I call or not A rearrangement of organ could ensure that the work could be completed if it started later It is unjustifiable to assume (as is done) that a tradition is ipso facto good Like another I customarily go to bed between 12 and 1 and about 8 Surely the average patient, and more culararly the sufferer from insomnia, does not derive special benefit from such a drastic change of habit wh puts out the lights at 9 o'clock and rouses him at even earlier I have always held the view that patie were more important than physicians in the although such an opinion may seem heterodox in quarters I have even thought (though I would not to say so without the blessed cloak of anonymity) the H P was really more important than the honor At least, he does the bulk of the work, although of it is under direction All this being so there does ground for re-examining the position, and as a final a personal experience might be quoted In several instances when my patients could not sleep, I have that screens should be put round the bed and that should not be disturbed in the morning under any cumstances until he awoke This " eccentricity" mine was singularly unpopular with the ward sister, the results for the patient were so satisfactory insisted and persisted

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Those of us who formerly practised and must still and support our families in the morally devastated of London once known as " good residential neigh hoods " cannot but be grateful to the Ministry of and National Service for employing us usefully on medical boards and paying us for our work , but we sometimes that we could have a little friendly talk the minister about the way his ministry orders its and ours Some matters are so curiously or The most curious is the wildly irregular incidence boards The vagaries of the weather, the whims women and the arrhythmia of auricular fibrillation nothing to it There was a time last year when for se weeks on end a weekly routine was actually but those days are gone, we suppose for ever, and we accept, like good children, three days' notice of week's sessions—which may vary from six or eight one or none—and are not unduly put about when, nine sessions actually allotted us are cancelled at

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What of the recruits and the clinical aspect of the work? Experience of the samples of the population seen in one corner of outer London over a period of eighteen months is obviously not enough for any large pronouncements, but it does amply justify the assertion that we have a large number of most admirable young men   There are days when almost without exception the candidates fall obviously into the first class, and one comely, upstanding, muscular young man after another passes smoothly down the board, cheerful, alert, manifestly keen to be passed fit and making the least of any defects he may have   These young men follow a great variety of trades, but the best, as might be expected are those who work with eye and hand out of doors—dockers, lorry drivers, builders of various kinds, skilled artisans and their labourers   Clerks are far less uniform as specimens of good manhood but the best of them are excellent, surpassing sometimes even the manual labourer   No "C3" class of young man has passed under my eye, and I have seen no trace whatever of widespread malnutrition   It would be ludicrous to suggest that these almost perfect physical specimens whose only common blemish is some degree of neglected dental caries were not, or had not as children been, well and sufficiently fed   Among those in sedentary trades some even under thirty, are fat and flabby and no doubt their diet is at least in part to blame, but the undersized and the thin, the clinically "ill-nourished," are conspicuously rare   Sometimes, however, the mysterious net which dips into the population, enmeshes its draft and pours it out before us, delivers the most astonishing assortment of what can only be called mixed duds, and on a bad day the collective impression can be most depressing   These bad patches seem to have nothing in common except that the men are probably over thirty and have something amiss   Bad sight, running ears, deafness, valvular lesions, chronic bronchitis, duodenal ulcers, malunited fractures, old poliomyelitis, deformities of the feet (congenital or acquired), varicose veins, epilepsy, parkinsonism, anxiety neurosis, mental defect—anything and everything that can unfit them for life and for military service they have and it is not clear why they all come at once   It is like one of those car journeys when at each succeeding cross-roads the lights turn red as you approach   No doubt some combination of occupation-group and age-group is the real answer, yet their occupations recorded on their papers seem varied enough   What is very clear, and somewhat alarming, is the startling difference between the round-twenties and the near-forties on the one hand and the realisation that some poor outworn old man of thirty-nine is twelve years younger than the examining doctor, who feels, and hopes he looks, still young and vigorous   Life has used some of them very hard   Putting war aside, is the same fate in store for "the many men, so beautiful"—those young fitters, bricklayers and lorry-drivers' mates that we saw yesterday, or is the contrast a witness to one of the small waves of progress on the ebbing tide of our civilisation?

Sociology apart there is good exercise in rapid diagnosis to be had by those members of the board who are free to survey the man as a whole, and daily lessons in the curiosities and unsolved mysteries of medicine and in that day's work or a heavy job but when he would be the better for doing something In the U S S R the man returning to work is examined at the factory clinic and allocated to a suitable job, for a suitable number of hours daily After work he goes to the night sanatorium where he is under the care of doctors and nurses and is given the food he needs Tests to estimate his response to return to work can be carried out, and his work is graded to meet his recovery

The casualty service in Moscow is also fully organised An emergency hospital serves an entire region, taking in every urgent case The telephone calls reporting cases are taken by a highly skilled member of the medical staff who, on the strength of what he is told, decides whether to send the emergency ambulance, which is express, or one of the ordinary ambulances If the express ambulance is sent its moment of departure is recorded by the breaking of a light beam and its return is checked in the same way Every week the times taken on calls are analysed and any unexplained delay is investigated The young doctor who goes out with the ambulance is expected to make a quick diagnosis and to record it in a book His diagnoses are checked against the hospital findings, and the man who perpetually makes wild diagnoses can thus be detected

Dr Lipmann-Kessel reminded his hearers of the service Soviet research into the storage of blood had been to us in this war, and recalled Russian work on blood taken from the cadaver Russians have also perfected a technique of blood-transfusion for use in the front line, and their use of aerial transport for the wounded saved many lives in the Finnish campaign He described an ambulance tank which can be taken on to the battlefield and manœuvred to cover the wounded man, who is then lifted in through a sliding panel in the floor Thus the wounded can be retrieved without danger to stretcher-bearers

Pavlov spoke of Russia as the only country in the world where research could be carried on unfettered by economic ties This principle is carried into medical education, medical students are chosen only from among the best students, they receive free education and free books, and are paid during training like any other worker in the Soviet

SCOTLAND

EDUCATION OF CRIPPLES

Dr G J I Linklater, school medical officer for Edinburgh, speaking at a recent meeting of the Cripples Welfare Association said that the surgeon could now work wonders with the crippled child, but after he had done his best the child was put into the world with other children who had had full facilities for education The crippled child had been losing each year and education must be provided to bring him up to as high a scholastic standard as possible Muscles which had been altered by surgery must also be re-educated, and children who were unable to follow ordinary pursuits and exercises must receive psychological education Unless the inferiority complex were counteracted it would follow the child into life, with the further development of the timid person afraid to compete with his peers, the recessive person who would not establish social contacts, or the unlovable person who tried to overcome his limitations by over-compensation Dr Linklater drew attention to an obstacle which arose in relation to occupational therapy, when people who had been trained were not accepted by trade-unions because they had not served an apprenticeship Although they were competent workmen they had great difficulty in obtaining employment The visiting teacher was a great stimulus to the children who learned to read, write and make contact with the outside world They were taught to use their hands, and their attention was taken away from their disability Unfortunately this had ceased with the war but he hoped it would begin again

PART-TIME MISSIONARY

Dr F M Graham, who died in Edinburgh on Nov 17 at the age of 71 was for many years a medical missionary in India He took the Scottish triple qualification in 1890, his F R C S E in 1895, and the M D of Durham in 1906 For some time he acted as tutor in clinical surgery and clinical assistant in the medical department of the Edinburgh Royal physician to the Cowgate Dispensary He examiner in anatomy to the Royal College of of Edinburgh At the end of last century he India where, working as a free lance, he medical missionaries in the winter and in the hot practised in the hill stations But his health robust and he was forced to return to this ever he followed the same plan of working, in Britain during the summer and in the Church Society's hospital in Old Cairo in the winter last war he worked as a civilian doctor in France and for his services was created chevalier Legion d'Honneur Dr Graham's wife died

In England Now

A Running Commentary by Peripatetic C

STRUCK down by a virulent organism which on me unnoticed, I was dispatched to a certain Defence Sick Bay. Surrounded by comfort and attention I made a quick recovery and soon critical stage, by which I mean the stage when begins to criticise his treatment The only could raise was *that I was aroused at a quarter to in the morning As insomnia was a feature of the* the point was an acute one It was only slight tion to recall that in previous experiences of Service hospitals and nursing-homes the ho had been still earlier Discussions with the sister duced the familiar arguments that everything had to cleaned up before the doctor came, and unless an start was made the work would never be done, it was the traditional hospital practice I stonily unconvinced As a physician it matters to me whether a hospital patient has had his face before I call or not A rearrangement of organ could ensure that the work could be completed if it started later It is unjustifiable to assume (as is done) that a tradition is ipso facto good Like another I customarily go to bed between 12 and 1 about 8 Surely the average patient and more par cularly the sufferer from insomnia, *does not derive* special benefit from such a drastic change of habit puts out the lights at 9 o'clock and rouses him at even earlier I have always held the view that were *more important than physicians* in the ho although such an opinion may seem heterodox in quarters I have even thought (though I would not to say so without the blessed cloak of anonymity) the H P was really more important than the hon At least, he does the bulk of the work, although of it is under direction All this being so there does ground for re-examining the position, and as a final a personal experience might be quoted In instances when my patients could not sleep, I have that screens should be put round the bed and should not be disturbed in the morning under any cumstances until he awoke This "eccentricity" mine was singularly unpopular with the ward sister, the results for the patient were so satisfactory insisted and persisted

* * *

Those of us who formerly practised and must still and support our families in the morally devastated of London once known as "good residential nei- hoods" cannot but be grateful to the Ministry of and National Service for employing us usefully medical boards and paying us for our work, but we sometimes that we could have a little friendly talk the minister about the way his ministry orders its and ours Some matters are so curiously The most curious is the wildly irregular incidence boards The vagaries of the weather, the whims women *and* the *arrhythmia* of auricular fibrillation nothing to it There was a time last year when for weeks on end a weekly routine was actually but those days are gone, we suppose for ever, and we accept, like good children, three days' notice of week's sessions—which may vary from six or eight one or none—and are not unduly put about when nine sessions actually allotted us are cancelled at eech Jones and Dr Morgan Apparently however, well as 'that very distinguished Colonial servant Hailey" is presiding over a committee dealing post-war colonial problems and so, presumably the er can be left in his hands In which case Medicus lined to ask why is he not appointed colonial secretary instead of Lord Moyne?

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Our Colonial Responsibilities

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Mr G H Hall, parliamentary secretary for the colonies, aid that at the beginning of the war we were approaching a critical period in colonial history, and while the war had in one sense delayed the crisis, in another sense it had hastened it The public conscience had been awakened to the need to take a more constructive nterest in the social, economic and spiritual welfare of he colonial peoples who were now solidly behind us in our war effort Our duty was to improve their lot to develop their resources so as to raise their standard of life, and to enable them to take an ever-increasing responsibility in ordering their own affairs

Agricultural Returns

On Nov 19 Mr R S Hudson, the minister of agri-ulture, said that the output of cereals and straw this year will be at least as much again as in peace-time The total area of crops resulting from the ploughing-up policy is about 45% above peace-time level The yield from the ploughed-up land has been extremely satisfactory, and the latest estimates of the production of root crops promise a good harvest, well above the average for the last ten years The production of potatoes will be just short of double the peace-time amount Farmers have almost maintained our pre-war milk-supply In 1938 they produced 1076 million gallons, this year we have 1053 million gallons But liquid milk consumed has gone up by 200 million gallons

QUESTION TIME

Health of the Nation

Dr Russell Thomas asked the Minister of Health if he would examine the standard of nourishment, housing, physical training and working conditions of the nation, with a view to satisfying himself as to whether they were sufficient to promote adequate natural resistance to major and minor diseases —Mr E Brown replied I do not think that general inquiries of this kind would usefully add to the continuous work of the Ministry The health of the nation and the resistance of the people to disease has up to now been good—even I can say unexpectedly good in view of the added risks brought about by war time conditions I have no doubt this is largely due to the improvements in social conditions since the first World War and our efforts to maintain and add to them will be sustained

Increase of Tuberculosis among Women

The latest available figures comparable with prewar years are those for 1940, when mortality among women from all forms of tuberculosis showed an increase of 11% over 1939 The highest incidence was in the age group 20–24, where the increase was 18% (Mr Brown replying to Mr James Griffiths)

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Provision of School Meals

In answer to a question, Mr R A Butler, president of the Board of Education, said that 24 local education authorities in Wales provide school meals and 3 9% of the children attending public elementary schools in those areas receive meals at school There remain six areas—Radnorshire, Llanelly, Neath, Pembroke borough, Port Talbot and Pontypridd—in which no meals are yet being provided, but in all of them provision will shortly be ready or is under active discussion.

In answer to a further question, Mr J C Ede, parliamentary secretary to the board, replied On a single day in October midday dinners were provided for 21,729 children in the area of the West Riding of York authority This figure is an increase of 59 9% over the number provided on a day in February last

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Captain J D Profumo asked the parliamentary secretary to the Ministry of Food to what extent the original recommendations with regard to national wheatmeal bread, made by the Medical Research Council, were accepted, and on what grounds any of them were turned down.—Major G Lloyd George replied No recommendation made by the council with regard to national wheatmeal bread has been rejected All have been acted upon with one exception That is still being examined

Captain Profumo Is it not a fact that a standard as to the contents of the national wheatmeal loaf has never been laid down by the ministry—in regard to the amount of bran, &c —and are not the public being misled into thinking they are eating something of great value?

Major Lloyd George I am advised that a specification for the wheatmeal loaf has been laid down

Captain Profumo I believe the minister will find that that is not the case

Infection in Labour Camps

Sir Percy Hurd asked the Minister of Health what action he had taken upon the report sent to him last month by the still neglected science, clinical physiology What is the real explanation of that quiet mitral stenosis which we cheerfully dismiss as rheumatic, though no faintest history of rheumatism, chorea, scarlet fever or any illness whatever can be dragged from the victim even by leading questions ? Why do holes in the ear-drums and mess in the middle ear, let alone solid plugs of wax in the auditory meatus, affect the hearing so little ? What is the truth about the plantar arches ? Why did anyone ever suggest that there is a normal systolic blood-pressure between 110 and 160 or a normal pulse-rate between 48 and 120, and why, when we are listening to the blood-pressure noises, is there sometimes a point when they cease (which we then call the diastolic pressure) and sometimes none (when we say nothing about it) ? How very little cardiac efficiency is affected by valvular defects ! And did you know that one leg was so often shorter than the other ? Why do albuminuria and sometimes glycosuria come and go in such an extraordinary fashion, and why are quite athletic-looking young men unable to stretch out one foot without falling over ? Does the expansion of the chest vary inversely with the excellence of the physique or is it self-consciousness ?

In fact if you are lucky in your place on the board, and are not too violently pressed for time, the work has many compensations , but why, oh why, in the absence of Western Front battles or invasions can it not run steady for a fortnight on end ?

* * *

I wonder if others have this form of fantasy It might be termed " The Parliament of the Genes," and with me it sits when I am having a hot bath or early morning tea It is a huge parliament, about 2000 members on each side but is dominated by the front benches, the back-benchers being mostly mute The Government are parsons lawyers and farmers, while the maternal or opposition party are more commercial—shopkeepers, in trade or industry, a sailor or two There is also a small and noisy independent party whom I suspect of being mutations They have strange methods, this assembly , sometimes they talk in blank verse or rhyme, or rock like a Greek chorus , sometimes somebody says a line or two, and then they all sit for many baths and cups of tea and never say a word, just ruminate about it The subjects they discuss are rather vague and diffuse—for instance, for the last twenty years or so they have been arguing on and off whether it is better for a boy to have natural history hobbies or, as most modern children prefer, mechanical ones and this often broadens out into Agriculture *v* Industry An excerpt from Hansard might run like this

The P M (a clerical figure with a white stock, in a Gregorian chant) Are not the works of the Lord greater than those of Armstrong Whitworth, white mice than Meccano ? Moreover, if wheels do your work, the best that is in you will not be developed by muscle and sinew

A very old Opposition back bencher We heard that old story before, when arboreal man from a cleft in a stick first threw a stone at a tiger, or again in a later debate on the first bow and arrow Yet, see where they got us !

P M (continuing) The man in machines is half drowned by the grime and the greed of his calling , his lights and fertility wilt in the stench of their rapid explosions

Independent member Are mice the most scentless of beasts and pigs without their aroma ?

The Opposition break into a chorus This is a mechanistic age and he who would get on must mechanistic be, And on mechanics must his mind be set That is the quickest way to L s d , And to Debrett

Independent member The limitations of your L s d are 1 wife, 1 house and 3 square meals per d , Children to taste The surplus is pure waste

P M The happiness that comes from natural things is greater far

Leader of the Opposition Is happiness our goal ? Like cows and cabbages, should man too seek content and rest from searching ?

A sailor sitting next to him Searching the surface of this earth of ours, searching its inner core, its outer skies, with all five senses, banded, making more, to scour the firmament that yonder lies beyond this speck of planetary dust

Independent member Come off it, Jack, we've heard that speech before—you gave it at the last Rotarian lunch

The debate continues—and probably will till I die

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

THE list of contents on the outer cover of Hansard for Nov 19 begins, as usual, with Questions, then goes on to Mr Speaker's Golden Wedding Congratulatory Tributes and ends with King's Speech (Fourth Day) Agriculture Nevertheless, in rising to congratulate the Speaker the Prime Minister apologised for committing " an irregularity " No speaker of the House as far back as 1653 has ever reached his golden wedding while in office And before 1653, Mr Churchill pointed out, occupants of the chair " held their tenure for shorter and more precarious periods " The Prime Minister spoke of the affection of the House for the Speaker and his family, of their belief in his impartiality and of his kindliness and courtesy to members of all parties, and gave notice of a presentation to be made by a delegation of members headed by the Father of the House, Mr Lloyd George, later in the day Mr Pethick-Lawrence spoke for the Labour M P s, Sir Percy Harris for the little Liberal group, Mr Will Thorne as the oldest member in age, and Mr Maxton as the leader of the smallest minority in the House The best speech, almost the perfect speech in the old Parliamentary manner, was made by Mr Maxton, himself a professed rebel The Speaker's reply was equally gracious and ended as it was bound to do, for it is the sacrosanct formula in opening the day's business " The Clerk will now proceed to read the Orders of the Day "

* * *

The forms of the House continue but the change in the content of discussion in the House is very great indeed Some of this takes place outside the House, in public statements by ministers and others, as it always did Mr Maisky for Soviet Russia, and Mr Eden for the British Commonwealth, speak of close cooperation after the war—and a revolution in thought is accomplished which would have been inconceivable as practical politics up to a few months ago Our cooperation with the United States, involving the surrender of cherished colonial rights in the West Indies, Central America and elsewhere had, even before the Atlantic Charter, opened up an unknown new road into the future The days when Mr Chamberlain could refer to Czecho Slovakia as being " far off " are difficult to understand in days when the road from Burma to China is an objective of urgent consideration to the Government sitting in London

But while conceptions are bigger than in the past and new horizons have opened, many of the old conceptions of government and preconceptions of the position of this country vis-à-vis others remain The debate on colonial affairs on Nov 20 showed this very clearly It was opened by Mr Noel Baker in a speech reminiscent of the days of 1919 when, as he said, " we were drafting the Mandates " at the Paris peace conference Sir Ronald Ross said that the suggestion that the mandatary system was a success " rather shook " him and called it " as good escapist literature as it is possible to find " Mr Baker's speech was a great deal more than that, as it gave a big-scale survey of some of the main colonial problems, although Dr Morgan said its optimism rather perturbed him Dr Morgan, however, came down to earth and said we should put the Colonial Office in the dock The indictment was severe and presented by a man who was brought up in the West Indies and knows the country Failure to make constitutional changes of a democratic kind was important inasmuch as " these voteless, helpless people " (of Barbados) " cannot do anything themselves to change their conditions, because they have not the power to introduce any legislation to change their social or economic conditions " To do anything in the West Indies it was necessary to " throttle the private land monopoly " and get down to subsistence agriculture instead of concentrating on export agriculture

Mr George Hall, under-secretary for the Colonies, replying, uttered some platitudes about the need for " a far greater and more constructive interest in the social, economic and spiritual welfare of the colonial peoples," but failed to reply to the criticisms of Mr Noel Baker, Mr Creech Jones and Dr Morgan Apparently however, all is well as "that very distinguished Colonial servant, Lord Hailey' is presiding over a committee dealing with post-war colonial problems and so, presumably the matter can be left in his hands In which case Medicus is inclined to ask why is he not appointed colonial secretary instead of Lord Moyne?

This kind of "waffling" is no good to the House and does not interest the House—often only about 15 members were present during the debate It is a grave weakness of the procedure that this should be possible, for the acid test of our belief in democracy will be our treatment of the Colonies and India—and that is another story

FROM THE PRESS GALLERY

Our Colonial Responsibilities

In the fifth day of the customary debate on the Address which was devoted to colonial affairs, much stress was laid on nutrition for as Mr J A E de Rothschild pointed out, vitamins and protein are equally necessary to black and white Yet the malnutrition in parts of our Empire is still our greatest social folly Mr Noel Baker thought that we had made progress but in too many colonies there was still too much poverty, ignorance and preventable diseases Exploitation of labour and of national resources were not only a social crime but also a social waste, and the Colonial Development and Welfare Act passed last year was our first effective step to check the waste He was glad that the Colonial Office was planning for the future but there were urgent tasks lying to hand The tsetse fly in Africa was one, and he suggested that we should cooperate at once with our Free French and Belgian allies put up a sum of money from our Colonial Development Fund, and call in the health section of the League of Nations to organise research and make a start on practical work Dr H B Morgan, who was brought up in the West Indies, raised a medical storm with his speech on conditions there As a doctor, he said he had seen too many people playing with bandages rather than dealing with the general conditions which underlie the sores, and he was pessimistic about any benevolent policy unless the people on the spot were given a chance, with whatever reservations were necessary, to have some say in the control of local affairs He inveighed against a system which exported produce and imported heavily taxed food while income-tax remained as low as 3*d* to 2*s* 6*d* in the £ When he visited Barbados in 1939 the people were living in a black cesspool of disease—yaws hookworm, syphilis, malaria and tuberculosis The Rockefeller Medical Commission had found instances of hookworm in two or three parishes in Trinidad amounting to 80–90% of the agricultural population The doctors in the West Indies are blamed for a medical policy with which they *have nothing* to do, instead of a unified medical service a doctor may not move from one parish to another, while some of the hospitals he had seen were a disgrace Mr Creech Jones deplored the decision of the Colonial Office not to publish the reports of the colonies and said that our knowledge of their economic and social problems was hampered by a lack of vital statistics He urged the need for an expansion of the social services department of the Colonial Office and said he would like to see a larger number of expert women with understanding and drive brought into it He too stressed the need for the exhibition of greater vigour in the whole field of preventive medicine

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Infection in Labour Camps

Sir Percy Hurd asked the Minister of Health what action he had taken upon the report sent to him last month by the

Wiltshire public health committee that the committee had been called upon to provide facilities for cases of vermin, scabies, venereal disease and advanced pulmonary tuberculosis among the imported labourers, especially from Ireland, for employment on Government contracts, and whether steps would be taken to ensure a strict medical examination before importation —Mr **Brown** replied Local consultations have taken place with all concerned regarding medical arrangements at the labour camps referred to The county council's medical officer is giving valuable assistance and the necessary measures are in train The point raised in the last part of the question is being considered in conjunction with the Ministry of Labour and National Service

Sale of Horseflesh

In reply to a question, Major **Lloyd George** said that shops selling horseflesh for human consumption require to be licensed Those selling horseflesh for consumption by animals do not at present require to be licensed but will be so required under the Meat Foodstuffs Order 1941 from a date to be announced

Answering a question to the Minister of Health, Miss F **Horsbrugh** said that under the Food and Drugs Act 1938 the business of slaughtering animals, including horses, for human consumption, requires a licence granted by the local authority Further, it is an offence not only to sell, but to have in possession for sale, or to consign to any person for that purpose, any food, including horseflesh, intended for but unfit for human consumption Officers of local authorities have full powers to inspect such food and if necessary seize it with a view to condemnation

Milk for the Elderly

Sir **Frank Sanderson** asked the parliamentary secretary to the Ministry of Food whether he was aware of the hardship which was being experienced by elderly people, say over 75 years of age, in not being able to secure adequate milk supplies, and would he consider granting them an extra ration on a basis equivalent to the increase to be granted to young children —Major **Lloyd George** replied The comparative needs of different groups of people for liquid milk have been most carefully considered in conjunction with the food rationing (special diets) advisory committee of the Medical Research Council In view of the supply position it has been possible to grant priority of supply only to those whose needs are greatest, and the ministry's expert advisers do not put elderly people within this category

American Doctors

Sir **Ernest Graham Little** asked the Minister of Health to what services the medical practitioners, who were coming from the United States of America to take up work in this country, were being allotted to what body their original selection and ultimate distribution was entrusted, what remuneration was offered to them, and what remission of the rate of income tax imposed on British subjects was accorded to these American practitioners on the salaries paid to them in this country in respect of such service —Mr **Brown** replied The doctors referred to are being allotted either to the E M S or to the R A M C according to their own choice The selection of the doctors, so far as their professional qualifications are concerned, is carried out in America through the National Research Council, the American Medical Association and other professional bodies Medical examinations and interviews are arranged in America on behalf of H M Government Doctors who choose the E M S are posted to hospitals by the director general The remuneration offered to them is the salary of medical officer in the E M S —£550 a year plus board and lodging, or £100 a year in lieu thereof I understand that this remuneration is subject to British income tax in the ordinary way, but the amount of the tax is repaid to the doctors by my department, subject to the deduction of a sum equivalent to American income tax at current rates The distribution and remuneration of those doctors who elect to serve in the R A M C are matters for the Secretary of State for War

National Medical Register

Mr T E **Groves** asked the Minister what efforts, apart from an announcement in the *British Medical Journal*, the Central Medical War Committee had made to maintain the national register of the medical profession up to date, and why had not other medical organisations and journals been approached to assist —Mr **Brown** replied I am informed that the Committee obtains information for the maintena of the register from the local medical war committees, pitals and various other sources, and that it avails itself the assistance of such other medical organisations channels of communication as seem most likely to be eff

Home Guard Medical Officers

Mr **Groves** asked the Secretary of State for War w he would raise the age of enlistment for Home Guard me officers, since over age doctors who were still in practice necessarily be employed but could not benefit from cl of instruction, &c, unless they were actually enrolled in Home Guard —Captain H D R **Margesson** replied C of this kind are considered on their merits In general upper age limit is not strictly enforced for practitioners ing to enrol as medical officers in the Home Guard, pro that they are fit

Mr **Groves** Was it the considered policy of his ment that zone medical advisers of the Home Guard be appointed from among the whole time servants local authorities, and, if so, would he give an as that such officers had sufficient time for the duties would be imposed upon them ?—Captain **Margesson** avoid undue interference with the medical organisation of locality, no medical practitioner may be enrolled in Home Guard unless previous permission has been given the local medical war committee, which is aware of the fessional commitments of practitioners in its areas T should ensure that Home Guard appointments are not sistent with the fulfilment of a practitioner's existing ob tions

Medical Board Delays

Sir **Irving Albery** asked the minister if he was aware the long delay which occurred in obtaining a medical bo and subsequent discharge, by men on home stations w were believed to be incapacitated for further service Captain **Margesson** replied Steps have recently been ta to simplify and accelerate the procedure for bringing sold before a medical board and carrying out their discharge order to prevent delays of this kind Revised were issued on Nov 1

Sir **Irving Albery** Will the minister consider whether would not be better to send these men to the depots ? Captain **Margesson** That is the effect of the new instru

Hospital Accommodation at Slough

Sir **Ernest Graham Little** asked the Minister Health whether he was aware that there was no gen hospital nearer to Slough than Windsor, where the acc modation was overtaxed, and whether, in view of special circumstances, he would authorise the reception civilian cases by the E M S hospitals in Slough, where th was unused accommodation which the medical profession Slough urgently needed Mr **Brown** replied I am aw that there has been considerable pressure on the beds at th general hospital at Windsor, and I arranged facilities time ago for reducing the waiting list by transfer of cases emergency hospitals within reach of the area It rests wi the hospital to take full advantage of those arra The emergency hospital at Slough is in the county council' institution While it is essential to keep a certain num of beds available there for air raid casualties and oth emergency cases, it has always been made clear that th council can and should admit in the normal way cases needin urgent hospital treatment who cannot get it elsewhere

Spectacles for the Troops

Answering a question, Captain **Margesson** said that eve soldier who requires spectacles is supplied with two pairs that it should rarely happen that he is not in possession of a least one serviceable pair There is now no delay in th initial supply of spectacles to soldiers, and adequate arrangements have also been made for the replacement of damage or lost spectacles in any theatre of war where British troop are serving

Medical Referee for Notts

Mr **Bernard Taylor** asked the Home Secretary on whose advice Dr F S Airey, of Leicester, was appointed medical referee for Nottinghamshire, and was he aware that there was a decided objection by the Nottinghamshire miners attending Leicester —Mr **Herbert Morrison** replied Following a decision to appoint a specialist medical referee for cases of dermatitis arising in this area efforts were made in nsultation with the county court judge, to obtain the ser- ces of a suitable dermatologist in Nottingham but without ccess The vacancy was then advertised Dr Airey was e only applicant, and on the recommendation of my medical lvisers he was appointed I appreciate that a medical referee t Nottingham would be more convenient for the Nottingham- ure miners, but there does not appear to be a suitable ermatologist there who would be willing to accept the ppointment at the present time

Fifth Valuation of Approved Societies

In reply to a question, Mr BROWN stated that a short eport by the Government Actuary, incorporating such atistics of the results of the fifth valuation of approved ocieties as it is practicable to furnish in present circum- tances, will be available early next year

Public Health

Damaged Food

IT was only comparatively late in the last war that ttention was directed to the urgent need for adequate teps to prevent food spoilage and to conserve what was tilisable At that time it was possible to visit many ports and find large stacks of tinned sweetened milk set aside as unsound and often they were all of one brand The history of that brand is interesting. It came from the United States and in their endeavour to supply the English market some plants were put into operation and run not by experienced packers, but by people comparatively new to the trade In this case the promoters were unfortunate, for the site selected for the new factory was a disused brewery Since the commonest agent causing sweetened condensed milk to become "blown" is yeast fermentation and since a brewery normally swarms with yeasts, it was not unnatural that a large proportion of each consignment became unsound But it had its serious side—it was bad economy to use limited shipping space for food which was condemned as soon as it reached this country It is important that we should not make similar mistakes in this war, when the problem of shipping space looms even larger It is disquieting to read in the *Evening Standard* of Nov 13 that the Southwark authority applied for the destruction of 38 cwt of cooked pressed meat from Eire on the ground that it was unfit for human food because it was infected Mr Bernard Campion the magistrate, said this was the third lot of meat from Eire which he had been asked to condemn, while the medical officer of health, Dr William Stott mentioned that there were large quantities of this meat being imported No precise bacteriological information is given as to the nature of the unsoundness but the whole of this particular consignment is said to have gone putrid 24 hours after being taken out of cold store Probably there was no evidence of specific contamination with food-poisoning bacilli, but inadequate care resulted in putrefaction Apart, however, from bacteriological considerations it is obvious, particularly in these days, that practical measures must be applied to preserve our food, whether it is imported or whether it is produced and prepared in this country The present system of centralised slaughter-houses was devised and operated from the point of view of distribution, the requirements of adequate supervision and inspection were secondary considerations Those responsible for meat supervision were not consulted as to the suitability of these centralised slaughter-houses or even as to whether they were the best available in the area In fact a number of them are most unsuitable although improvements have been made Being placed in one local area the whole of the burden of meat inspection is thrown on the food inspector (almost always the sanitary inspector) of often quite a small town, without regard either to his experience in meat inspection or the multiplicity of his other duties No provision has been made for him to be assisted by the other food inspectors in the area served although voluntary assistance has been given in some cases Some premises are so unsatisfactory that adequate supervision is particularly difficult There is evidence from various sources that the number of food-poisoning outbreaks has increased All this, with revelations such as those at Southwark suggests that the Government needs to pay more attention both to the control over food and to the application of all practicable measures to prevent food becoming unsound If food is found unfit for human consumption, there is still the possibility that it could be heat-treated and made available for manufacturing purposes or fed to animals These problems seem to fall within the purview of two ministries—of Health and of Food—and possibly they sometimes fall between the two There is plenty of expert advice available if outside help is required As an example of what can be done the following instance may be mentioned A very large consignment of tinned herrings in tomato sauce was imported recently into this country and on inspection a small proportion of the tins were found "blown," while a higher percentage showed the slight unsoundness called in the trade "springers" The question of condemnation arose, but instead the local medical officer of health consulted the county M O H, who with the aid of the county laboratory was able to establish the soundness of all except the definitely blown tins The advice given and taken was to keep the whole consignment for a month and after rejection of the definitely unfit to pass the rest unless the holding disclosed a different state of affairs In this way almost the whole of this large consignment was used without risk

Tuberculosis in Lancashire

Dr G Lissant Cox offers a precis of the work of his department for 1940, but all the records are available for reference In a county population estimated at 1 900,870 there were on the dispensary registers 7533 patients suffering from tuberculosis (4324 pulmonary, 3209 non-pulmonary), and of these 19 9% were children under 15 During the year 1394 new cases of pulmonary tuberculosis were reported an increase of 105 over 1939, and 751 new cases of non-pulmonary tuberculosis 39 less than in 1931 Among young women aged 15-35 there were 386 new notifications of pulmonary tuberculosis (336 in 1938 and 377 in 1939) 1064 persons died from tuberculosis during 1940, giving a rate of 0 55 per 1000 of the population, and this was an increase of 0 01% on the 5-year average

The county has been able to maintain all its beds, the monthly average in occupation being 942 An increasing amount of thoracic surgery is being done and of the 4324 pulmonary patients 978 received some form of surgical treatment During 1940 the tuberculosis officers have examined and X rayed 656 recruits referred to them by the civilian medical boards and the council have agreed that recruits for the women's auxiliary services may have the same facilities

Infectious Disease in England and Wales

WEEK ENDED NOV 15

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever, 1352 whooping-cough 2066 diphtheria 1043, paratyphoid, 30, typhoid 9, measles (excluding rubella), 671, pneumonia (primary or influenzal) 997, puerperal pyrexia 136, cerebrospinal fever 104, poliomyelitis, 21, polio-encephalitis 1, encephalitis lethargica, 5, dysentery, 204, ophthalmia neonatorum 78 No case of cholera plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Nov 12 was 1307 including scarlet fever, 181 diphtheria 250 measles 38 whooping-cough 475 enteritis 43 chicken pox 40 erysipelas 24 mumps 5 poliomyelitis 8 dysentery 25 cerebrospinal fever 10 puerperal sepsis 11 enteric fevers 34 other diseases (non infectious) 87 not yet diagnosed 76

Deaths —In 126 great towns there were no deaths from enteric fevers or scarlet fever, 2 (0) from measles, 8 (2) from whooping-cough, 43 (1) from diphtheria, 37 (3) from diarrhœa and enteritis under 2 years, and 38 (4) from influenza The figures in parentheses are those for London itself

There were 12 deaths from diphtheria at Liverpool 4 at Birmingham and 3 at Sheffield Manchester reported 5 deaths from influenza

The number of stillbirths notified during the week was 195 (corresponding to a rate of 38 per thousand total births), including 22 in London

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The M B E has been awarded to Lieutenant G D Eccles M B Home Guard (Dawlish), for "conspicuous gallantry in carrying out hazardous work in a very brave manner

Letters to the Editor

HYPERTENSION

SIR,—The article by Dr Richardson and Dr Smart in your issue of Nov 15 is of great interest in that it records two further examples of fall in blood-pressure following the removal of a diseased kidney It would however be wrong not to challenge the assertion in their penultimate paragraph that "all cases of chronic hypertension should have a complete urological investigation" In accord with contemporary practice we may perhaps promote Hypertension to the rank of Captain of the Men of Death It is an extremely grave, common and intractable disease and any clue as to a means of treatment, requires careful examination The recent work of experimental pathologists, beginning with Goldblatt and his collaborators and reaching a culmination in the recent work of Byrom and Wilson, at last throws some light on a situation of tragic obscurity But if this work demonstrates that hypertension can be produced by reducing the renal circulation through one or both kidneys it in no way suggests that it is usually produced by a unilateral lesion We know full well that in the vast majority of cases any demonstrable disease is bilateral and that in an even greater number nothing at all can be shown to be wrong with the kidneys during life

I would submit that a complete urological investigation of such cases would be a waste of time and money for a horde of unfortunate patients calling for very different treatment In point of fact each of the cases described in the article had localising signs from the very outset

Middlesex Hospital, W 1 T IZOD BENNETT

COMPRESSED LIMB RENAL FAILURE

SIR,—In conformity with modern thought—which shows little sign of regressing, of considering any other view—the renal failure following limb compression in bombed dwellings has been imputed to a "toxin" derived from the damaged part A better, a more reasonable, a more helpful view is that the renal failure begins, advances and ends as the result of an "active congestion of the kidney" (Maitland, A I *Brit med J.* 1941, 1, 570, *Lancet*, 1941, 2, 446)—the cause of which, however, is arterial in origin Induced by reflexes elicited during the burial period—the Loven reflex, the skin response to cold, and reflexes arising from pain and fear—it is advanced by the transfusion given to combat shock Indeed, so marked is the effect of tranfusion on the kidney in these cases that it almost seems that the "nephrotoxin" must exist in the blood or plasma administered to the patient But on the one hand cases of shock, unassociated with limb compression, treated by transfusion, do not develop renal failure (Bywaters, E G L and Beall, D *Brit med J* 1941, 1, 432), on the other hand a case of limb compression treated by infusion to induce diuresis, shock being absent, resulted in anuria (Mayon-White, R and Solandt, O M *Brit med J* 1941, 1, 434) It is thus clear how the transfused blood acts, it acts mechanically, increasing the mass of the circulating blood The signs of shock disappear, but the arterial congestion of the kidney, diminished by the state of shock, is reinforced, the patient dying of renal failure

How explain the shock? Recently I wrote that "the idea that shock is due to a toxin is a myth" Consider the evidence pointing the other way—it is colossal But if shock, in these or in any other cases, is due to a "toxin," we must suppose that the blood transfused, since it cures the patient of shock, must contain an antitoxin to shock—which is absurd The blood transfused, as we have seen, acts purely mechanically, it is thus not surprising to find that mechanical measures, other than that of increasing the blood mass, can combat shock—e g, placing the patient in the Trendelenburg position A patient of mine, of a different sort, with a falling blood-pressure was placed in the Trendelenburg position, by raising on chairs the legs at the bottom of the bed In spite of that, the patient got worse, the systolic pressure in the brachial artery fell below 40 mm Hg—the reading was confirmed by the resident medical officer who said "we must do something" We did do something we raised the foot-end of the bed on lockers, which with a small rectal saline resulted in complete recovery

Shock in these bombing cases is predisposed to by the dehydration, and precipitated by the œdema, watery parts of the blood exude into the compressed and damaged limb, increasing its volume but by so much diminishing the volume of the circulating blood After admission, the placing of the patient in a warm bed and the application of heat, by attracting blood to the skin, facilitate the appearance of shock Shock, which must diminish an arterial congestion of the kidneys, as a rule does not last long enough to relieve the renal block which the arterial congestion has caused, with a praiseworthy zeal it has been met with immediate transfusion—to the undoing of the patient In the same way fluids have been pressed when they should have been restricted Something seems wrong It is, I think, that laboratory experiments, thought to mimic nature, are often a gross caricature, and that the life of man is regarded as a series of biochemical reactions rather than as a sequence of biophysical events

Rugby R H PARAMORE

BLAST INJURY OF THE LUNGS

SIR,—Dr Osborn states that no real pathological or clinical distinction has been shown to exist between cases of pulmonary concussion from (*a*) mechanical causes such as road accidents, (*b*) bomb explosions, and (*c*) depth charges This last is outside our experience Clinically, our cases did not resemble cases of mechanical injury There was not the slightest risk of overlooking the lung damage, which Dr Osborn says may easily happen in cases of mechanical injury Even the milder cases showed symptoms and physical signs which no-one with any experience of chest conditions could miss In almost all Dr Osborn's cases blast and mechanical injury appear to have been associated, whereas it is our contention that the effects of blast and mechanical injury should be studied separately at present until it can be shown that they are identical

The translation of Dr Osborn's term "predisposition" into the phrase that blast lesions are "best marked in the phrenico-costal sinus," may not have been a happy one, and we regret it if we have misinterpreted him In our experience a phrenico-costal sinus pneumonia, separate from one involving the bulk of the lower lobe, developed only once (case 3, fig II) In addition this man had lesions diffused through the whole of both lung fields This patient had had severe abdominal blast Only one other case with severe abdominal blast developed pneumonia (case 7), and this involved the whole lower lobe Five other cases without abdominal symptoms developed pneumonia involving the whole lower lobe In four severe cases, and in all the milder ones, there was no evidence of phrenico-costal pneumonia and no grounds were found for directing special attention to it

J N O'REILLY
London Chest Hospital, E 2 S ROODHOUSE GLOYNE

A STATE MEDICAL SERVICE

SIR,—Those who put forward schemes for the improvement of medical practice are performing useful work but must be prepared for criticism Quite apart from the vested interests of medicine, from which quarter Dr Thompson appears to expect opposition, it seems likely that many of his colleagues in the public-health service are hoping that he will reconsider the ideas he has put forward in your issue of Nov 15 (p 613) Although the framework of the scheme does not greatly differ from others which have already been put forward, it proposes to deal a death blow to the present preventive health services of the local authorities Dr Thompson's Utopia is to emerge from a national service of insurance practitioners who will take over the work of the maternity and child-welfare and school medical services which in his own words "would disappear" From the chief medical officer of a welfare authority this is indeed a surprising suggestion and it is difficult to believe that its implications have been realised

Since the maternity and child-welfare movement began enormous strides have been made in the care of mothers and young children The work done by the welfare councils in the past has been followed by a dramatic fall in the infant death-rate and later in the maternal mortality figures But the supervision of infant feeding and child care generally demands a knowledge of pædianics while the prenatal clinic is of little use if the doctor s not a competent obstetrician These are specialist obs, and while I fully appreciate the excellent work of N H I practitioners it must be questioned whether they would be willing to take over the educative and preventive work in these subjects in addition to their clinical duties In any case they would not have the time, and the urgent calls of the sick would have to take precedence over the routine examination of the presumably healthy

No form of state service would be possible without the inclusion of the general practitioner, and it is for us all to ensure that the status and working conditions proposed will be suitable and calculated to maintain the high traditions of the profession But in any national scheme it is hardly conceivable that the educational side of preventive medicine—the maternity and child-welfare and school medical services—should not form the basis of all medical work The framework of these services now in existence is perfectly satisfactory , their efficiency depends on their degree of development and on the quality of the personnel Some areas are still behind others but that is no reason why their services should not be improved Surely the foxes with no tails might try to grow them instead of advising others to cut theirs off

Welbeck Street, W 1 VIOLET RUSSELL

LIGATION OF PATENT DUCTUS ARTERIOSUS

SIR,—I have read with interest Mr Mulvany and Sir Maurice Cassidy's comments on our article It remains clear, however, that (1) in the two cases reported by us the ductus arteriosus was patent and infected, (2) neither before, during or after operation was there any evidence of the presence of any other congenital cardiac defect, (3) the patients have remained in good health and without symptoms for over a year now, (4) no other treatment of infected endocarditis or arteritis has in my experience yielded two successive cures in two successive cases, and (5) the percentage of spontaneous cure is less than 1%

I agree with Sir Maurice that it is yet to be seen whether ligation could be justified as a prophylactic measure, for even after ligation a local dimple must persist at the site of the tied ductus, and this might provide a nidus for future infection But I do not agree that the fact that spontaneous remissions may occur is sufficient to justify us in withholding from a patient a proved therapeutic measure which may have risk attached to it The risk of the measure must be balanced against the risk of non-intervention, and the chances of remission in infected congenital cardiac defect are very minute

Queen Anne Street, W 1 GEOFFREY BOURNE

WHEN TO TIE THE CORD

SIR,—Is there not a tendency to stray from essentials in the consideration of this matter? As far as I am aware, Nature made no provision for adventitious aid in arresting the circulation through the cord This phenomenon occurs spontaneously, and it does not seem unreasonable to take the cessation of pulsation in the cord as the sign that the placental circulation has in fact been arrested This arrest may actually be established before all pulsation ceases, as the only fact that we are entitled to assume from the presence of pulsation is that the vessels are patent between the heart and the point at which the pulsation is felt This consideration does not, in my opinion, affect the main issue

Accepting the evidence for oxygen lack being the prime stimulus to respiration in the newborn infant, is it too much to assume that this lack is brought about by normal physiological mechanisms, and should not depend on the arbitrary application of some external obstruction to the vessels of the cord? It is, after all, a commonplace of practical observation that in the vast majority of normal deliveries the child starts to breathe shortly after birth, and before any outside mechanical interference with the cord has been undertaken It seems to me that as labour proceeds a time must come when the placenta is unable to adapt itself to the changed size and shape of the uterine placental site, consequent on the reduction in size of the uterus This must lead to a progressive separation of the placenta that would be sufficient to initiate the requisite oxygen lack

Dr Chisholm has suggested that the newborn baby is in danger of bleeding into its own placenta and possibly from placental tears Some light on these risks might be obtained from records of precipitate births involving spontaneous rupture of the cord and the consequent possibility of hæmorrhage from the main umbilical vessels In any event it would seem that to stress the propelling action of the heart as the sole motive power in the placental circulation after birth is to neglect entirely the suction effect that must be exerted by the increase of negative pressure in the thorax that accompanies the child's first inspiratory effort An immediate ligature of the cord, as advised by Dr Chisholm, may well prevent this suction mechanism from coming into play, and for this reason and in view of the considerations outlined above I would end with a strong plea on behalf of those whose practice it is to defer such an operation until at least " the cord has ceased pulsating "

Baldock, Herts J H MOYNIHAN

IMMUNISATION AGAINST TETANUS

SIR,—In your last issue Dr Evans makes a comparison between the antitoxic response following two inoculations of tetanus toxoid and that noted subsequent to a third injection administered 10 months after the original doses It is noted that there is a rapid, and in many instances a profound, increase in antitoxic titre as a result of this further stimulus of the immunising mechanism In consequence of this observation it is suggested that it might be worth the added administrative difficulties to give this third injection

It may be of interest to note that some time prior to my relinquishing the direction of the pathological services of the Army five months ago an instruction was issued to the effect that a third injection of tetanus toxoid was to be given 12 months after the original inoculations As, no doubt, you are aware active immunisation against tetanus by the two dose method was introduced as a routine procedure in 1938 in the British Army Such information as we have at present lends colour to the view that it has had an influence on the prevention of tetanus amongst the battle casualties sustained in the Belgian campaign It is probable that the third injection now given will so increase the antitoxic level that this protection will still further be enhanced

The present heavy fighting in the Western Desert should yield some data relevant to this method of prophylaxis Information on this subject will, therefore, be awaited with interest

Walton on Thames H MARRIAN PERRY

SIR,—In your opportune leading article of Nov 22 you do not mention that simultaneous passive immunisation with antitoxin and active immunisation with tetanus toxoid is provided for in United States Army and Marine orders The British Army gives two doses of toxoid six weeks apart A wounded British soldier will at once receive one emergency dose of antitoxin If his record then shows that he was previously immunised, nothing further will be done, but if he is not already actively immunised he will get, I understand, three weekly injections of antitoxin as at the end of the last war The U S Army gives—not only to those who so opt, as in the British Army, but to all personnel—an " initial immunisation " of three doses of toxoid three weeks apart followed by a " stimulating dose " of 1 ml at the end of the first year or prior to departure for war, if the departure occurs more than six months after the first yearly dose (*War Medicine*, May 1941, p 426) An " emergency stimulating immunisation " is given for battle wounds or secondary operations Antitoxin is not used except for the treatment of clinical tetanus If those who have not been previously immunised are wounded they receive a single dose of antitoxin and a dose of toxoid plus two further doses as in initial immunisation The U S Army and the U S Marines bestow their affections where they will—one prefers the air-cooled airplane engine, the other the liquid-cooled The Army uses toxoid, the Marines use the insoluble alum-precipitated tetanus toxoid, and give to all personnel two doses of alum-precipitated toxoid four weeks apart A further 1 ml is injected about a year later or in the event of a severe battle or non-battle wound or burn, or if a secondary operation becomes necessary Antitoxin is used for the treatment of clinical tetanus or for inade-

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Middlesex Hospital, W 1 T Izod Bennett

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The translation of Dr Osborn's term "predisposition" into the phrase that blast lesions are "best marked in the phrenico-costal sinus," may not have been a happy one, and we regret it if we have misinterpreted him In our experience a phrenico-costal sinus pneumonia, separate from one involving the bulk of the lower lobe, developed only once (case 3, fig II) In addition this man had lesions diffused through the whole of both lung fields This patient had had severe abdominal blast Only one other case with severe abdominal blast developed pneumonia (case 7), and this involved the whole lower lobe Five other cases without abdominal symptoms developed pneumonia involving the whole lower lobe In four severe cases, and in all the milder ones, there was no evidence of phrenico-costal pneumonia and no grounds were found for directing special attention to it

J N O'Reilly
London Chest Hospital, E 2 S Roodhouse Gloyne

A STATE MEDICAL SERVICE

SIR,—Those who put forward schemes for the improvement of medical practice are performing useful work but must be prepared for criticism Quite apart from the vested interests of medicine, from which quarter Dr Thompson appears to expect opposition, it seems likely that many of his colleagues in the public-health service are hoping that he will reconsider the ideas he has put forward in your issue of Nov 15 (p 613) Although the framework of the scheme does not greatly differ from others which have already been put forward, it proposes to deal a death blow to the present preventive health services of the local authorities Dr Thompson's Utopia is to emerge from a national service of insurance practitioners who will take over the work of the maternity and child-welfare and school medical services which in his own words "would disappear" From the chief medical officer of a welfare authority this is indeed a surprising suggestion and it is difficult to believe that its implications have been realised

Since the maternity and child-welfare movement began enormous strides have been made in the care of mothers and young children The work done by the welfare councils in the past has been followed by a dramatic fall in the infant death-rate and later in the maternal mortality figures But the supervision of infant feeding and child care generally demands a knowledge of pædia-

Hospital Saving Association

Despite war-time difficulties the number of contributors to this association on July 31, 1941, was almost 1,690,000 and the income for the year was £970,000 This year the association has paid the London hospitals *9s* for each inpatient day and *7s 6d* for each outpatient, except when these figures exceeded the 1939 statistical cost But fewer of the association's contributors have been ill, only 3% compared with 6% in 1938-39, while the outpatients had fallen from 20 to 11 2%

Naval Honours

The D S C has been awarded, for courage and resolution in operations in Mediterranean waters, to Temp Surgeon Lieutenant E R L Davies, M R C S, R N V R, H M S *Manchester*, Temp Surgeon Lieutenant C J Vaughan, M B Dubl, R N V R, H M S *Forster*, and Temp Surgeon Lieutenant E J Yates, M B Manc, R N V R, H M S *Fearless*

Harben Lectures

These lectures, which are delivered under the auspices of the Royal Institute of Public Health and Hygiene, will this year be held in Canada On Dec 1, 2, and 3, at 4 P M, E V McCollum, Sc D, professor of nutrition at Johns Hopkins University, will give them at the University of Toronto, and he has chosen as his subject nutritional science and public health

Pituitary Extracts

The supplies of pituitary extract issued by the Ministry of Health for use in E M S hospitals and first aid posts carry the expiry date of Oct 26, 1941 But the Medical Research Council have tested samples and report that where supplies have been kept under ordinary conditions at normal room temperature they may be used with safety for a further twelve months

Anglo-Soviet Medical Committee

The Anglo Soviet Medical Committee appeals to all who have any surgical instruments which they can spare to send them as soon as possible to the secretary of the Joint Committee for Soviet Aid, 171 St Stephen's House, Cannon Row, Bridge Street, London, S W 1 The need is urgent, for the manufacturers can supply only a limited number Instruments which require to be re plated or repaired will be accepted with gratitude and will be restored to good condition before being forwarded to the U S S R

Among the instruments wanted at once are

Artery forceps of every description
Record syringes and needles (international standard pattern)
Needles of all kinds (including intravenous, blood transfusion, hypodermic and spinal)
Scissors of every description
Towel clips
Dissecting forceps
Aural forceps
Bullet or swab forceps
Aneurysm needles
Surgical needle holders
Bone forceps
Scalpels and amputation knives
Plaster cutters
Tracheotomy tubes
Abdominal retractors
Volkmann retractors
Sterilisers and autoclaves
Dental instruments

Dusting Powder for Babies

The Board of Trade in consultation with the Ministry of Health have agreed to allow manufacturers of toilet preparations to supply dusting powder for babies under the name of "baby powder," without the addition of any other words It must be sold as packed by the manufacturers and must not contain perfume, essential oil or colouring matter It must be composed of the silicates of magnesia and alumina and may also contain a small proportion of boric acid. The powder will be distributed only to hospitals, medical practitioners and registered pharmacists and may be supplied only to people who really need it

Communal Meals in Stirlingshire

On Nov 14 Mr Thomas Johnston, M P, Secretary of State, opened the fourth feeding centre for the county at Stirling Centres are already open at Falkirk, Kilsyth and Grangemouth, and almost 12,000 meals a week are served to school children The Stirling centre will be able to serve every day 3000 meals to children and 3000 meals to adults In a short time Stirlingshire will have seven centres with a daily output of 10,400 meals for school children and 9400 for adults Hot meals will be distributed by insulated containers to all schools in the county and to selected centres where there is likely to be a demand, and the director of education for the county, who is in charge of these feeding arrangements, hopes to be able to supply the mining community in districts where no facilities for pit head canteens exist

Notes, Comments and Abstracts

NURSES CONSIDER THEIR PROFESSION

THE inaugural meeting of the Nursing Reconstruction Committee, under the chairmanship of Lord Horder, was held on Nov 24 at the Royal College of Nursing This body is composed half of delegates appointed by the college and representing different aspects of nursing, and half of delegates from kindred associations including the British Medical Association, the Society of Medical Officers of Health, the Nuffield Trust, King Edward's Hospital Fund for London (Nursing Recruitment Centre), Local Authorities' Nursing Services Joint Committee, the Medical Women's Federation, the British Federation of Business and Professional Women the National Association of Administrators of Local Government Establishments, the Trades Union Congress, the Incorporated Association of Hospital Officers, the Hospital Matrons Association, the Queen's Institute of District Nursing and many others The delegates are to consider ways and means of implementing the recommendations of the Athlone Committee and to recommend such further adjustments as the present situation and post-war reconstruction may demand It is stimulating to see this extremely practical approach. It is easy—or relatively easy—to make recommendations for amending the nursing profession, since many defects in the terms of service are as widely known as they are of long standing But to settle down to convert opinion into action is a different and worthier task In welcoming the delegates Lord Horder reminded them that even in the short interval since 1939, when the interim report of the Athlone Committee appeared, important developments had occurred, among them the setting up of a division of nursing at the Ministry of Health, but there was much to be done He pointed out that recruitment falls short of demand, education of nurses is cramped by the economic needs of the training institutions, prospects are too poor to attract women of ability, and conditions of service are not everywhere what they should be The profession looks for the establishment of negotiating machinery on the lines of the Whitley Councils to bring such conditions into line The new committee has a great work before it and we wish it well

TUBERCULOSIS IN SOUTH AMERICA

ELEVEN of the Spanish-American countries took part in the fifth Pan-american Congress for tuberculosis held at Buenos Aires and Cordoba at the end of last year In his presidential address Prof G Sayago said that these new countries had a common geographical, racial, economical and social background, and the statistics submitted to the congress showed that at any rate in their rural districts they were faced with common problems in the control of tuberculosis In the larger cities of South America the problems connected with the disease were more comparable to those of the older nations In the towns the incidence of the disease is high and as rural districts become industrialised they are exposed to infection, its spread among children is disquieting But the congress did not consider that heredity was an important factor and infection by the placenta was rare Non-pulmonary tuberculosis does not show the same clinical picture as in Europe, for surprisingly often it is associated with active or incipient pulmonary infections These patients should be treated in special sections of the hospitals The next congress will be held in Habana in 1943 and the subjects for discussion will include the value of BCG vaccination, initial stages of tuberculous infections, and the treatment of pulmonary cavities

At the congress it was emphasised that the number of beds available in South America was insufficient for the number of tuberculous patients To implement her share of the campaign against the disease the Argentine Government has set up a national committee, working under the department of health, which will coordinate the work of sanatoriums and laboratories receiving grants from the government, and establish new sanatoriums in rural districts in the interior According to official figures there are only 5000 beds available in the republic and these can accommodate only a third of the patients, but the results achieved so far have been quately immunised men, to whom a dose of tetanus alum toxoid is given at the same time, and the second dose a month later The American Army and Navy thus both aim at passive plus active immunity at the same time The factors are not the same as those described in the *British Medical Journal* of Nov 20 (p 717) by a group of investigators studying the immunology of diphtheria If antitoxin and toxoid are given at the same time, the toxoid cannot act much while the antitoxin is present Until it is got rid of there is a dangerous interval, the individual is exposed to infection if in contact with a carrier before the toxoid can act and produce active immunity But in tetanus the man is not exposed during this time to external infection

In passing, I would guess that the excellent American *War Medicine* has not yet gained full currency here Among other items, a recent number tells that the American fighting man will have his blood-group marked on his card, as in the Australasian Army

X

SCIENCE OR ART?

SIR,—In your issue of Nov 15 Professor Plesch stated that " we have lost confidence in our intuitive abilities and do not use or rely on our five senses sufficiently, this is regrettable because medicine must always remain an art to which science is only the servant " He then goes on to state that " our judgment must depend partly on imaginative intuition, and we can only pass on to the student the method of making the bricks from which he must build the diagnosis " I feel myself that we have rightly lost confidence in our intuitive abilities Intuition is subjective and should be distrusted by the scientific mind I disagree that medicine must always remain an art to which science is only the servant It would be better both for the practitioners of medicine and those practised on that it should be primarily a science and secondarily an art For some thousands of years medicine was an art, it was only when it tended to become a science that it began to command respect from intelligent minds A teacher can pass on to his students a scientific attitude of mind which will ultimately benefit medicine and benefit his patients

Gorseinon, Swansea G E DONOVAN

PARADOXICAL CEREBRAL EMBOLISM

SIR,—I am interested in the case recorded by Dr Porter in your last issue but venture to dispute his diagnosis It seems to me much more probable that the case was one of cerebral thrombophlebitis I have published a comparable case (*Brain* 1937, 60, 531) in which following thrombophlebitis in the left leg symptoms of increased intracranial pressure developed which were presumed to be due to thrombosis of the superior longitudinal sinus Thrombophlebitis even if widespread is not necessarily accompanied by fever, nor is the lung often involved when thrombophlebitis arising in the lower part of the body subsequently affects the cerebral veins Indeed in the puerperal cases pulmonary involvement appears to be the exception rather than the rule The spread in such cases is probably by mural thrombophlebitis, along the intravertebral veins, as Purdon Martin has suggested (*Brit med J* 1941, 2, 537) The experimental work of Batson (*Ann Surg* 1940, 12, 138) upon which this suggestion was based strengthens the belief which I have held for some time that many cases of hemiplegia which in the past have been attributed to arterial embolism, thrombosis or hæmorrhage, have in reality been due to cerebral thrombophlebitis I would add that the rapidity of recovery in Dr Porter's case is an additional argument in favour of the diagnosis of cerebral thrombophlebitis as opposed to cerebral embolism

Oxford C P SYMONDS

LONDON HOSPITAL—An award of the Hutchinson triennial prize will be made in 1944 for a dissertation on the investigation and treatment of sciatic pain Candidates must be full students of the hospital, but not necessarily of the medical college, and they must have registered as students not more than ten years ago Dissertations should be submitted to the secretary of the hospital medical council by Oct. 31, 1944.

Medical News

Royal Society

The King has approved the recommendations made council of this society to award a royal medal to Prof Kennaway, F R S, for his investigations on prod cancer by synthetic substances

The Copley medal has also been awarded to Sir Lewis, F R S, for his experimental researches, in the and the laboratory, on the heart and the circulation and disorders, and the Davy medal to Dr H D Dakin, F for his work as a pioneer in biochemical research and es because of his fundamental contributions to the study of mediate metabolisms

Royal Society of Medicine

There will be a general meeting of the fellows of this on Tuesday, Dec. 2, at 3 30 P M On Dec. 3, at 2 45 P the section of history of medicine, Mr Charles F R I B A, will read a paper on hospital building present and future At 2 30 P M, on the same day, at section of surgery, Dr E G L Bywaters and Mr Belsey will open a discussion on the effects on the kidney trauma to parts other than the urinary tract including syndrome The section of laryngology will meet at 10 A M, on Dec 5, to discuss the effects of flying on the nose ear The opening papers will be read by Wing J F Simpson, Group-Captain E D D Dickson, Leader D B Fry, Squadron-Leader J E McGibbon Squadron-Leader R H Winfield At 2 30 P M, on the day, Dr Z Mennell and Dr Ronald Jarman will open a cussion at the section of anæsthetics on the present position ether

Health Films in America

The American Film Center, 45, Rockefeller Plaza, N York, has opened a section on films in health education medicine, to which the Rockefeller foundation has promised three year grant Dr Adolf Nichtenhauser, who is in cha of the section, has been working on educational cinemat graphy for many years and before joining the centre he wa on the staff of the National Tuberculosis Association and New York Tuberculosis and Health Association The section will be a clearing-house and information centre on use and production of medical films for laymen and It will from time to time publish lists of recommended fil and it will develop a production programme with other agencies

General Practitioners of West Ham

The practitioners of West Ham met on Nov 19, to the necessity for united and sustained action to meet requirements of general practitioners as a body, in view of possible alterations in medical practice due to changing economic conditions Dr Robert Poots was in the chair and 83 doctors were present Dr Poots discussed the raising of the income limit for N H I, the medical care of dependants of members of the Forces, the inadequacy of the recent addition to the N H I capitation fee, the fact that less than 5% of the population earned more than £500 per annum, the effect of increasing income tax burdens on the patient, and how these factors must influence the future of medical practice

Dr Philip Inwald, of Islington, told the meeting what had been done in his district and in the City area in organising the practitioners Dr H C Boyde welcomed the awakening professional interest in social and economic problems affecting medical practice The B M A had suggested it was desirable to form discussion and study groups, to plan future medical progress Dr M J Murphy thought extension and modification of the existing system might give a possible solution Other speakers stressed the need for organisation among general practitioners, to make the wishes of the largest body of medical opinion in the country operative through the leading medical organisations The following resolution, proposed by Dr H A Hannon was carried unanimously, and practitioners from East Ham who were present associated themselves with it

> That a coordinating committee be elected by the general practitioners of West Ham, to link up with other practitioner coördinating committees throughout the country, to watch over the interests of general practitioners by every accepted means to formulate their requirements and forward them to the Medical Planning Commission

A committee of twelve practitioners was elected, instructed to get to work as soon as possible, and report progress at the next meeting, which will be held at an early date

ORIGINAL ARTICLES

FROSTBITE AND KINDRED ILLS *

RAYMOND GREENE, D M OXFD,
PHYSICIAN, E M S MEDICAL OFFICER TO THE KAMET EXPEDITION
1931 AND EVEREST EXPEDITION 1933

IN time of peace, doctors in England need no knowledge of frostbite The disorder occurs so rarely that many never see it In war it becomes an important military factor, either in its classical form or as the closely allied condition of trench-foot It was a major cause of Napoleon's retreat from Moscow, during which it was described by the surgeon Larrey Should the Germans in Russia be forced to dig in this winter, frostbite may be once more a potent weapon against Russia's enemies Frostbite crippled thousands and killed many in the Balkan wars which immediately preceded the war of 1914–18 but the lessons these cases taught were not learned in time by our own army, despite the efforts of Colonel Max Page (1914), though frostbite is almost always preventable, 84,670 cases occurred in the British Army alone In the week ending Dec 16, 1916, 3104 frostbitten men were admitted to medical units in France and Flanders, and 2521 of these were sent to the base The blizzard of November 1915, caused 15,900 cases in Gallipoli and 998 in Serbia (Mitchell and Smith 1931) Thanks to a few officers of the R A M C and a few commanders who were prepared to accept their advice, there were some units in all theatres of war which suffered little, if at all In the North Russian campaign between September, 1918, and September, 1919, only 48 men were frostbitten A number of cases occurred early in the present war, chiefly in the R A F, but adequate clothing and the heating of aeroplanes soon reduced the incidence to very small figures Nevertheless it is always possible that the British Army may be called upon to fight in conditions of cold and damp and in mountainous countries, where only awareness of the danger and knowledge of its causes and treatment will prevent numerous casualties

In the present war, two other conditions have been recognised which are in close relation to frostbite and trench-foot These are "shelter-foot," often seen among shelter dwellers in London in the winter of 1940–41, and "immersion-foot," commonly observed in those who, after shipwreck, have been forced to spend long periods in water-logged boats

TRUE FROSTBITE

The onset of true frostbite may be sudden or gradual

Sudden frostbite can be studied in comfort by anyone who will take the trouble to squirt ethyl chloride at a friend's nose Dermatologists often produce it by applying a stick of carbon-dioxide snow firmly to the skin In more natural surroundings it develops in exceptionally cold weather, especially in a high wind, or when the exposed skin is brought into contact with cold metal such as an ice-axe, a rifle, a spoon, or the shutter-release of a camera A sting like that of a wasp is usually felt, but sometimes it is painless The skin is white and crystalline If it is observed at once and a warm hand clapped on it, no harm may be done During thawing, a red area appears around the frozen patch which gradually invades it The surroundings gradually return to normal, leaving the patch red and sharply defined Shortly afterwards itching and swelling begin The weal may take many hours to subside, or blistering may follow and even deep gangrene of the skin The flush is due to the opening up of arterioles by the release of H-substance from the damaged area (Lewis and Love 1926)

Gradual frostbite may occur on exposed skin or on well-clothed parts The burning sensation of extreme cold dies away and a pleasant numbness takes its place At this stage the skin may appear normal or may be white and waxy If freezing continues, there is destruction of tissue, blood-vessels give way, œdema and hæmorrhage develop and the vitality of the tissues is destroyed—a course of events which may occasionally be delayed by cold so extreme that the normal contour of the part is preserved as in marble In either form, thawing usually begins before extreme damage has been done, and is itself responsible for the ultimate damage This is the danger period As in sudden freezing, a flush surrounds the frozen area and gradually invades it, till the normal or white skin becomes red Swelling begins when transudation takes place from the damaged vessels In extreme cases whole blood may escape into the tissues and the skin become darkened or purple, blisters then form, the blebs containing straw-coloured fluid or whole blood The true severity depends on the depth of freezing and—more important—the amount of transudation In most cases the damage is only skin deep or involves only the terminal phalanges The appearance is always unduly alarming to the inexperienced A frostbitten hand may have precisely the appearance of a hand in which the main arteries have been blocked by embolism, but arterial pulsation can usually be felt and recovery with but little tissue loss is the rule if sepsis is avoided During the stage of aseptic recovery the unviable tissues become black, hard and painless, and finally—sometimes after weeks—strip off, leaving healed skin beneath The viable but affected tissues gradually recover their normal appearance, but may be hypoæsthetic, or paræsthetic and hyperæsthetic for months Even in a mild case with little or no tissue loss, these disturbances of sensation may occur, and interference with the blood-supply to the nail-bed may result in temporary cessation of nail growth and loss of the old nail some months later Many years may pass before nail growth becomes normal again

TRENCH-FOOT

Larrey was the first to describe trench-foot, which in previous wars has been the most important form of frostbite, he observed that it was less common at extremely low temperatures than when the temperature varied about freezing-point so that the ground though always cold was usually muddy In "The Medical History of the Crimean War" (1858) it is stated that a large proportion of the casualties from this cause occurred when the temperature was above freezing-point It was realised even at that time that in addition to cold other factors were involved, especially damp, constriction and stagnation of the circulation, fatigue, malnutrition and scurvy The author wrote

> The labours and guards of the trenches were those which more especially involved that severe and protracted exposure which was favourable to the occurrence of gangrene The men in the trenches and advanced parallels were so much restricted in their movements and were for the most part so little able, in the presence of a vigilant enemy, to walk about or in any other way to assist the circulation of the blood that they were under the necessity of remaining quiet in the least exposed position, and frequently this position happened to be the bottom of a trench knee deep in mud and water or half-filled with snow

Yet, despite this clear warning, we lost thousands of soldiers in the winters of the last war One contrite colonel, formerly of the R A M C, has told me how at first he forced men with sore feet to return to the trenches He realised his error, but many never did

Trench-foot is almost identical with gradual frostbite There are variations in the mode of onset but the main features are the same numbness followed by swelling and ultimately considerable pain It is important to remember that the feet may be almost free from pain until the boots are removed, when transudation and swelling take place rapidly and the pain may become intense Some men, slightly affected, found that after a few days pain and swelling disappeared, and that they could return to the trenches, only to succumb later to attacks of steadily increasing severity Others were too severely crippled to return

SHELTER-FOOT

In November of last year, Knight (1940) drew attention to swelling of the feet in people who had spent the good, and in Buenos Aires the death-rate from tuberculosis has fallen from 3 14 per thousand in 1938 to 2 79 in 1929

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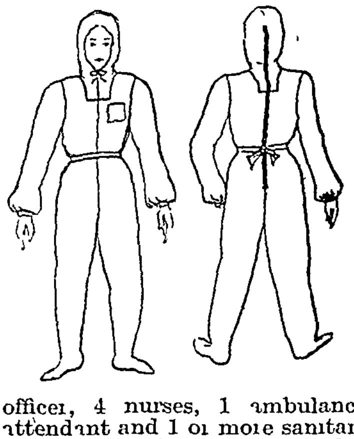
* Based on a lecture delivered at the British Postgraduate Medical School on Feb 6, 1941 Reference is occasionally made to experiments to be published fully later conducted with the aid of a grant from the Medical Research Council, to which my thanks are due

The miraculous remedy against tuberculosis has once more been discovered This time by Jesus Pueyo, a Spanish medical student For a time he did research work in the laboratory of microbiology in Buenos Aires and he claims to have discovered a new vaccine, which was announced in the lay press in a sensational manner The minister of the interior urged him to demonstrate its preparation at the National Institute of Bacteriology, but Pueyo made conditions which were unacceptable to the scientists The faculty of medicine also tried to examine the vaccine, but this also came to nothing as Pueyo refuses to permit animal experiments and insists on being allowed to try his vaccine on human beings The use of the vaccine has therefore been forbidden in Argentina and Pueyo has been fined for its unauthorised distribution

TO DEFEAT THE TYPHUS-BEARING LOUSE

THE Ministry of Health (memo 252/Med) puts us on our guard against the possible arrival of louse-borne *typhus in this country in company with refugees*, prisoners of war and returning travellers The body-louse and the head-louse are both probable vectors Diagnosis depends on the sudden onset, high temperature the appearance on the 4th or 5th day of a rash which spares the face, and a torpid or maniacal mental state The Weil-Felix reaction can be obtained by the end of the first week and sometimes earlier A strong reaction in a dilution of 1 in 80 or 1 in 100 obtained by a naked-eye reading, may be taken as positive, and during the later stages of the disease the titre rises to 1 in 1000 or even higher At the other end of the scale, any increase in the agglutinating power of the serum, established by examinations at 2-day intervals, is significant even at a titre of 1 in 50 A vaccine against infection is available but its value in the field has not been tried It is to be used at present only by those working on typhus teams and is to be given in three doses of 1 c cm at weekly intervals If typhus does reach this country it is most liable to break out in crowded areas Several of the large cities have been asked to organise typhus teams each of which is to include the medical officer, 4 nurses, 1 ambulance driver, 1 ambulance attendant and 1 or more sanitary inspectors and trained disinfectors The team should be duplicated so that absentees can be replaced



All team members are to be provided with protective clothing consisting of a one piece garment with a hood fastening down the back, preferably with a Zipper A tape runs round the face aperture of the hood and ties under the chin, and tapes and elastic draw the sleeves closely round the wrists Gum boots and long fabric gloves are also to be worn, and masks if desired Protective clothing is absolutely necessary for members of the team, since any of them may come into contact with typhus infected lice During removal to hospital the patient should be enveloped in a large sheet, and should travel in a vehicle which is easy to free from lice The staff engaged in admitting the patient to hospital are particularly exposed to danger, and the greatest care of all should be taken during this time The patient must be admitted to a special bathroom, stripped, deloused and clad in hospital clothing before being taken to a ward set aside for the purpose Delousing must include not only complete disinfestation of the patient's clothing but careful delousing of his person, close cutting of the hair, shaving where necessary and careful bathing He must be thoroughly soaped all over and cleansed in such a way that all lice are destroyed In the hospital a room must be provided where the staff can change into protective clothing After use the clothing must be left there for disinfection, the staff must pass next to a bath room and finally to the room where their ordinary clothing is kept

Officers with experience of typhus in the medical department of the Ministry of Health or in the L C C will help to advise on diagnosis, and arrangements have been made for a mobile team from the American Red Cross—Harvard Field Hospital Unit—to give help in diagnosis and control in any part of England or Wales Medical officers of health are advised to arrange for beds to be available in the larger isolation hospitals The origin of infection must be carefully traced and all those who have been exposed to risk must be deloused and kept under observation for three weeks Heavily infested people may have to be deloused a second time after an interval of ten days to ensure destruction of lice hatched from surviving eggs

INCIDENTS AND GAS

HANDBOOKS to prepare the peaceable against the demands of war are the fashion just now, and a good thing too No one can say "Why wasn't I told?" Three such warning messengers have lately been launched by Jordan and Sons Mr W F F Shearcroft's 24-page booklet (War Gases Learn and Live 6*d*) deserves a wide sale It includes all the man in the street need know about gas, and by means of excellent little illustrations and apt descriptions paints as vivid a picture of a gas attack as you can hope to get for sixpence Mr T E Browne's 48 pages (Conduct of A R P Incidents, 1*s*) contain little that will be new to doctors, but the book may have uses for incident officers So will the folded card (Duties of an Incident Officer, 1*d*), by Mr R D Wormald and Mr J M Young, but this again does not aim at instructing the casualty services

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LIQUEMIN HEPARIN—Roche Products Ltd have changed this solution which is now about 2½ times as strong as the old solution The potency of the new solution will be stated in terms of Toronto units, viz, 1,000 T U per 1 c cm, or 5,000 per 5 c cm phial

Births, Marriages and Deaths

BIRTHS

COPE—On Nov 18, at Ongar, the wife of Major R W Cope, R A M C—a daughter

KERR—On Nov 16, at Inverness, the wife of Dr England Kerr, —a daughter

SHAW—On Nov 21, at Berkhamsted, the wife of Dr C Carter Shaw —a son

SMALLEY—On Nov 17, at York, the wife of Captain C S Smalley, R A M C—a son

TEMPLETON—On Nov 22, at Leicester, the wife of Major William Templeton, R A M C—a son

WILLIAMS—On Nov 15 at Oxford, to Joyce Beverley Williams, M B, wife of Squadron Leader Denis Williams, M R C P, R A F V R—a daughter

MARRIAGES

SYMON—MOORE—On Nov 20 at Quainton, David Symon to Jocelyn Moore, F R C S R A M C

DEATHS

BLACK—On Nov 23, at South Croydon, Thomas Anthony Black, M B N U I

CHIDELL—On Nov 18 at Hythe, Claude Churchill Chidell, M B Lond, first superintendent of Pinewood Sanatorium

GOFF—On Nov 21, at Ventnor, Isle of Wight, Bruce Edward Goff, M B Glasg late of Ovington Gardens London

LINNELL—On Nov 18, at Northampton, Alfred Linnell, M R C S, aged 80 years

PILKINGTON—On Nov 21, at Parkstone Dorset, Frederick William Pilkington M R C S D P M, aged 83

SMYTH—On Nov 23, at Bognor Regis Ernest Jackson Smyth, M D Lond

SANDEMAN—On Nov 22, at Hertford, Muir Sandeman, M B Edin, aged 75

WEST—On Nov 20 at Queen Mary's Hospital, Carshalton, Henry Owen West, M D Lond, F R C P

Appointments

CLINE H R, M B N U I D L O surgeon to the ear nose and throat department of the Mildmay Mission Hospital, London

HODGES W V A, L D S dental officer for Dorset

MAWSON EDWIN L M D Lpool temp asst T O for Bristol and R M O at Frenchay Park Sanatorium

PHILLIPS H I, L D S dental officer for Dorset

SHAW, DAVID M D Lond, M R C P temp L C C specialist at Sutton Emergency Hospital

Dawson did not produce real frostbite by cold alone without the assistance of damp or constriction I am at present investigating this point afresh The two investigations agree in this, that the tissue damage is wrought by vasodilatation and exudation and not by vasoconstriction, which is a transitory phenomenon only. While the vessels are constricted little transudation takes place, especially if the venous return is free and capillary pressure therefore low When, by destruction of the arteriolar walls by cold or by the passing off of the constriction as the tissues thaw the vessels dilate, exudation and damage follow. This conception is confirmed by the observations of Lewis and Love (1926) and by my own recent unpublished experiments

Warmth —After the primary effects of cold the most dangerous causal element is warmth during the time of thaw That great heat is dangerous has been recognised at any rate since the time of Larrey (1812) and is part of the folk-knowledge of the Eskimos It is curious that the natives of the Himalayas have not learned this I have more than once forcibly prevented Tibetans and Nepalis from roasting or boiling their chilled feet That even slight degrees of warmth are dangerous is not realised by many even today Smith, Ritchie and Dawson (1915) showed that when the tissues of the feet have been damaged by cold water at only 37° C causes a rapid œdema or a rapid increase in œdema already present Lewis and Love (1926) showed that this œdema is excessive and injurious and went so far as to suggest the temporary obstruction of the arterial supply to frostbitten limbs My own experiments show that gentle warmth greatly increases the amount of tissue lost after freezing

Damp —It has already been pointed out that, in the presence of cold mud at temperatures even above freezing-point, a form of frostbite develops which is different only in the slowness of its onset from gradual frostbite due to greater cold alone This is in part due to the fact that water is a much better conductor of heat than air Further it has been shown by Lewis and Love (1926) that variations exist in the freezing-point of human skin between the extremes of – 2 2° C and – 25° C These variations occur not only between individuals but in the same individual at different times They are due to the phenomenon of super-cooling—the capacity of a substance to go below its ordinary freezing-point without solidifying Supercooling does not harm the tissues; freezing does The capacity to supercool may be abolished by soaking the skin in water, and skin which does not supercool may be induced to do so by leaving it unwashed for a week or by rubbing in oil an observation which explains the efficacy of whale oil as a prophylactic

Circulatory stagnation —Obviously the maintenance of a brisk circulation is an important preventive of cold feet Larrey, in the Napoleonic wars, made his men take brisk exercise in the cold The Crimean war observations have already been quoted Nevertheless, exhausted men will often forget so simple a fact and in the trench warfare of 1914–18 constant vigilance was required, but not always shown, by platoon commanders to prevent men from standing for long periods slumped motionless against the parapets of the trenches The venous return from the legs depending largely on muscular activity it is necessary that this activity should be maintained if increased venous pressure, increased capillary pressure and consequent œdema are to be prevented Active obstruction of the venous return is still more dangerous and may arise from clothing such as tight boots, tight garters and even tight gloves or socks, though puttees have at last been discarded It may arise also from compression of the popliteal space In the last war men were apt to sit for long periods, often to sleep, with the sharp edge of the fire-step compressing their thighs, just as in this war shelter-dwellers have compressed their thighs with the edge of deck-chairs The same factors are undoubtedly at work—venous stagnation, caused by uneasy sleep on hard chairs cold, and often damp, with resulting rise in capillary pressure, transudation, and, in the rare severe cases tissue damage Smith Ritchie and Dawson (1915) showed that slight constriction of the legs of their rabbits by rubber bands greatly increased the destructive effects of cold

Wind —The cooling effect of wind, increasing the evaporation of sweat and blowing away the layer of warm air about the body is of great practical importance Frostbite does not occur in New York in the absence of wind until the temperature falls to – 13 3° C (Brahdy 1935)

Anoxia —Persons suffering from anoxia from any cause are more liable than others to suffer tissue damage from the effects of cold The anoxia may be anæmic as in the anæmic diseases, poisoning with nitrites or carbon monoxide, or after severe hæmorrhage, stagnant, as in heart failure and wound shock; histotoxic, as in cyanide poisoning and under general anæsthesia; or due to reduction of atmospheric oxygen pressure The first three are chiefly important because men suffering from hæmorrhage and shock are likely to be subjected in winter air-raids to severe cold If such a man must be given an anæsthetic—which not only renders him almost poikilothermic but depresses his tissue oxidation by interfering with the reduction of cytochrome —great care should be taken to protect him from cold The presence of frostbite may well tip the balance in favour of transfusion. Blood should be used rather than plasma, in order that the oxygen-carrying capacity of the blood should be increased The fluid balance must be carefully watched, and any temptation to overdo it, and thus risk increased œdema, strongly resisted

Anoxia due to reduced pressure of atmospheric oxygen is important because patients suffering from emphysema, pneumonia, blast injury to the lungs or the shallow breathing of neurasthenia are very vulnerable; and because of the association of low temperatures with great altitudes At such altitudes, anoxia produces its effects not only by depriving the tissues of oxygen but by its effects on the circulation Acute anoxia first causes an apparent increase in the force of the heart, but the effect is only temporary. The heart muscle is depressed the blood-pressure falls and the minute-volume is reduced (Doi 1921, Schneider 1921, Barcroft 1925 Barcroft Bock and Roughton 1921) When the supply of oxygen is deficient, the skin bears the brunt, the blood being shunted to more important organs Thus the skin is more liable to frostbite not only because the blood carries less oxygen but because it gets less blood The warming effect of oxygen at great altitudes is most obvious and its effect in incipient frostbite extremely valuable (Greene 1934 and 1940a)

Nutritional deficiency —" The Medical History of the Crimean War " (1858) drew attention to defective nutrition and concurrent disease such as fever or scurvy as predisposing factors in the production of frostbite Captain R F Scott's ill-fated polar expedition was crippled by frostbite, though experienced arctic and antarctic explorers are rarely so severely smitten The diet of the party was certainly scorbutic a fact of which Scott had been warned The relationship is easy to understand The main feature of scurvy is hæmorrhage, which may show itself in any organ of the body but which is especially noticeable in the skin The various features of the complete syndrome are becoming gradually associated with deficiency of a variety of vitamins Thus the night-blindness often present is now recognised as a symptom of hypovitaminosis A while evidence is emerging that the increased capillary permeability may be a combined effect of lack of vitamins C and P, lack of the former producing ecchymosis and of the latter petechiæ (Scarborough 1940) However this may be it is clear that a deficiency of one or other of these vitamins is capable of increasing that exudation from the blood-vessels which is the most important damaging factor in frostbite and trench-foot

In starvation, too, œdema already present may increase the damage due to frostbite It is thought that the low protein intake results in a low concentration of plasma proteins and a consequent transfer of fluid osmotically to the adjacent tissues, but the relative importance of this factor and of the vitamin deficiencies associated with starvation has not been determined

Trauma —Age-old tradition demands that a frostbitten limb should be rubbed with snow Many of those who have discarded the snow which is probably harmless have continued the rubbing As I have already explained (Greene 1940b), the skin of a frostbitten limb is in a most delicate state, and the gentlest rubbing may night in a sitting position without compensating rest in a horizontal position during the day The condition was further described in a leading article in THE LANCET of Dec 7 1940 (p 722) Beginning in the feet, the swelling extended up the leg , it was painless at first, but afterwards became painful and in some cases the skin became shiny and red Knight observed that the condition did not arise in wardens who though exposed to the same degrees of cold and damp were frequently on their feet and that most of his patients had used deck-chairs, the wooden bars of which had exerted prolonged pressure on the popliteal fossa That pressure was an ætiological factor was shown by the observation that those who sat with one leg crossed over the other developed swelling in the lower leg only Knight described the appearances of this ailment as reminiscent of trench-foot I saw one of these patients in consultation with him

CASE 1 —A middle aged baker Both feet were very œdematous, the swelling extending a short way above each ankle and gradually fading into the thickness of the calf The skin of the feet and the lower half of the legs was covered with a very fine petechial rash On applying Gothlin's test to the arm, it was found that the patient's general capillary permeability was greatly in excess of normal, and, in the absence of *any other discoverable abnormality, the question* of dietary deficiency naturally arose The patient had "studied all this diet nonsense" and come to the conclusion that it was "all a doctor's racket" He particularly resented the efforts of doctors to suppress the white loaf, which he considered the only bread fit to eat He disliked green vegetables, but ate them occasionally to please his wife He never ate fruit of any kind He worked 18 hours a day and developed the swelling *of the feet after a night spent sitting* on a hard chair in his bakery

Clinical research outside hospital is notoriously difficult Patients who are not under one's eye disobey instructions or disappear at important moments, often never to return Further investigations on the baker were not possible and all that is known is that after a change in his diet and his chair he made a complete recovery Four other patients were afterwards seen

CASE 2 —A woman, who also had an increased capillary permeability Estimation of her urinary excretion of ascorbic acid by the method of Harris and Abbasy (1937) showed deficiency of vitamin C Treatment with ascorbic acid, 50 mg t d s,, was followed by a rapid recovery and the return of her capillary permeability to normal

CASE 3 —A woman who had spent every alert sitting in a shelter, was found on inquiry to be eating a diet apparently deficient in vegetables By Harris and Abbasy's test she did not appear to be deficient in vitamin C She was given vitamin P in the form of hesperidin, 1 g daily Her legs and capillary permeability returned to normal

CASE 4 —A woman who had been sitting up in her dining-room during alerts for 3 months and was taking a diet which seemed to be deficient in vitamin C Her capillary permeability and ascorbic acid excretion test were normal, however, and an opportunity to try vitamin P did not occur Her after-history is unknown

CASE 5 —A woman in whom only one leg—that over which she normally crossed the other—was affected was living on a diet deficient in vegetables Her capillary permeability was increased Advice on diet was followed by recovery and return to normal capillary resistance

These cases suggest that in shelter-foot the most potent causative factors are venous stagnation and increased capillary permeability Whether the latter is due to deficiency of vitamin C or vitamin P or to some other cause remains doubtful, but it is likely that as in the Crimean war dietetic deficiency played a part in the foot troubles of the battle of Britain The shortage of citrous fruits (the main source of vitamin P in modern diets) may conceivably be important We know of no action of vitamin P other than its effect of reducing capillary permeability A deficiency in normal times might well pass unnoticed only to be brought to light by the abnormal habits of war

IMMERSION-FOOT

I have never seen a case of immersion-foot, and for its adequate description we must await the reports of those whose war experience has brought them greater opportunities of observing it I gather that clinically it is almost identical with trench-foot and that the are the same In recent experiments I have succeeded in producing in the tails of mice immersed for long periods in sea-water a condition histologically indistinguishable from trench-foot and it therefore seems that prevention and treatment of the two conditions should be by the same means

CAUSES

Cold —Many of the effects of cold are too well known to need more than passing reference Chilling of the body generally is counteracted mainly by endocrine and reflex nervous mechanisms, both perhaps controlled by the hypothalamus Cold stimulates the adrenal glands with a resulting constriction of skin vessels and diminution of heat loss With a heat debt of less than 900 small calories per kg the adrenaline reaction is sufficient At the same time the thyroid is stimulated,-cellular metabolism is increased and more heat is produced With greater heat debts this mechanism is aided by reflex shivering (see Cramer 1928) Were this the whole story general chilling would be an even more potent cause of frostbite than it is, but the general contraction of the blood-vessels of the skin may be locally overcome by mechanisms which have been elucidated by Sir Thomas *Lewis and his associates Freezing of the skin results* in the release of H-substance from the damaged area which causes local vasodilatation (Lewis and Love 1926), a mechanism which can be observed in the colour changes of sudden frostbite An increased blood-flow through the extremities is also produced by the opening of arteriovenous anastomoses in the skin (Grant and Bland 1931) It is of great clinical importance that local vasodilatation may fail if the whole body is severely chilled (Lewis 1931)

The effects of cold with special reference to frostbite were studied by Rischpler in 1900 He froze animal tissues by the application of ice and salt and investigated the results microscopically at various intervals Degeneration occurred early in the cells of the vessel walls with swelling of the connective tissues, and vacuolation of the muscle-fibres in the media There was œdema, but no sign of thrombosis His findings were confirmed with less severe freezing by Smith, Ritchie and Dawson (1915), who showed that the chief, and only important effect of cold short of total destruction of the tissues is on the vessels These show dilatation of the lumen swelling of the intima and vacuolation in the media , there is no thrombosis In other tissues, the effects depend on œdema—in other words, on transudation from the blood-vessels The initial contraction of the blood-vessels due to cold is rapidly supplanted by dilatation of the damaged vessels An excessive amount of fluid is poured out into the tissues and there may even be rupture and hæmorrhage The fibrous bundles of the connective tissues are separated by fluid and become swollen and disintegrated Other surrounding tissues share this fate in varying degree According to these workers, the effects of mild wet cold differ only in degree from those of severe dry cold short of actual freezing Their conclusions are of the more importance because they succeeded in producing in the feet of their rabbits conditions closely similar to some forms of frostbite in man

In 1917, Lake, in a beautiful series of experiments with a large variety of tissue-cultures of man and other animals drew a hard and fast distinction between degrees of cold which solidified tissues (sudden frostbite in clinical terminology) and lesser degrees His critical temperature was − 6° C both in cultures and in tissues in their normal relationship with vessels and nerves It is interesting to compare the observation of Brahdy (1935) that men working in the streets of New York are not frostbitten even in a high wind till the temperature falls to − 14° C Below − 6° growth of Lake's cultures ceased, blood was hæmolysed, and destruction of intact skin occurred Above it tissue-cultures retained their functional and vegetative vitality, blood-cells survived, and only a transient hyperæmia occurred in the intact human skin At first sight these findings appear to contradict those of Smith, Ritchie and Dawson who found quantitative differences only between the effects of prolonged mild cold and short exposures to extreme cold Further consideration shows that the two results are not necessarily incompatible for Smith, Ritchie and

Dawson did not produce real frostbite by cold alone without the assistance of damp or constriction. I am at present investigating this point afresh. The two investigations agree in this, that the tissue damage is wrought by vasodilatation and exudation and not by vasoconstriction, which is a transitory phenomenon only. While the vessels are constricted, little transudation takes place, especially if the venous return is free and capillary pressure therefore low. When, by destruction of the arteriolar walls by cold, or by the passing off of the constriction as the tissues thaw, the vessels dilate, exudation and damage follow. This conception is confirmed by the observations of Lewis and Love (1926) and by my own recent unpublished experiments.

Warmth.—After the primary effects of cold the most dangerous causal element is warmth during the time of thaw. That great heat is dangerous has been recognised at any rate since the time of Larrey (1812) and is part of the folk-knowledge of the Eskimos. It is curious that the natives of the Himalayas have not learned this. I have more than once forcibly prevented Tibetans and Nepalis from roasting or boiling their chilled feet. That even slight degrees of warmth are dangerous is not realised by many even today. Smith, Ritchie and Dawson (1915) showed that when the tissues of the feet have been damaged by cold, water at only 37° C causes a rapid œdema or a rapid increase in œdema already present. Lewis and Love (1926) showed that this œdema is excessive and injurious and went so far as to suggest the temporary obstruction of the arterial supply to frostbitten limbs. My own experiments show that gentle warmth greatly increases the amount of tissue lost after freezing.

Damp.—It has already been pointed out that, in the presence of cold mud at temperatures even above freezing-point, a form of frostbite develops which is different only in the slowness of its onset from gradual frostbite due to greater cold alone. This is in part due to the fact that water is a much better conductor of heat than air. Further, it has been shown by Lewis and Love (1926) that variations exist in the freezing-point of human skin between the extremes of − 2.2° C and − 25° C. These variations occur not only between individuals but in the same individual at different times. They are due to the phenomenon of super-cooling—the capacity of a substance to go below its ordinary freezing-point without solidifying. Supercooling does not harm the tissues; freezing does. The capacity to supercool may be abolished by soaking the skin in water, and skin which does not supercool may be induced to do so by leaving it unwashed for a week or by rubbing in oil, an observation which explains the efficacy of whale oil as a prophylactic.

Circulatory stagnation.—Obviously the maintenance of a brisk circulation is an important preventive of cold feet. Larrey, in the Napoleonic wars, made his men take brisk exercise in the cold. The Crimean war observations have already been quoted. Nevertheless, exhausted men will often forget so simple a fact and in the trench warfare of 1914–18 constant vigilance was required, but not always shown, by platoon commanders to prevent men from standing for long periods slumped motionless against the parapets of the trenches. The venous return from the legs depending largely on muscular activity, it is necessary that this activity should be maintained if increased venous pressure, increased capillary pressure and consequent œdema are to be prevented. Active obstruction of the venous return is still more dangerous and may arise from clothing such as tight boots, tight garters and even tight gloves or socks, though puttees have at last been discarded. It may arise also from compression of the popliteal space. In the last war men were apt to sit for long periods, often to sleep, with the sharp edge of the fire-step compressing their thighs, just as in this war shelter-dwellers have compressed their thighs with the edge of deck-chairs. The same factors are undoubtedly at work—venous stagnation caused by uneasy sleep on hard chairs, cold, and often damp, with resulting rise in capillary pressure, transudation, and, in the rare severe cases, tissue damage. Smith, Ritchie and Dawson (1915) showed that slight constriction of the legs of their rabbits by rubber bands greatly increased the destructive effects of cold.

Wind.—The cooling effect of wind, increasing the evaporation of sweat and blowing away the layer of warm air about the body, is of great practical importance. Frostbite does not occur in New York in the absence of wind until the temperature falls to − 13.3° C (Brahdy 1935).

Anoxia.—Persons suffering from anoxia from any cause are more liable than others to suffer tissue damage from the effects of cold. The anoxia may be anæmic, as in the anæmic diseases, poisoning with nitrites or carbon monoxide, or after severe hæmorrhage; stagnant, as in heart failure and wound shock; histotoxic, as in cyanide poisoning and under general anæsthesia; or due to reduction of atmospheric oxygen pressure. The first three are chiefly important because men suffering from hæmorrhage and shock are likely to be subjected in winter air-raids to severe cold. If such a man must be given an anæsthetic—which not only renders him almost poikilothermic but depresses his tissue oxidation by interfering with the reduction of cytochrome—great care should be taken to protect him from cold. The presence of frostbite may well tip the balance in favour of transfusion. Blood should be used rather than plasma, in order that the oxygen-carrying capacity of the blood should be increased. The fluid balance must be carefully watched, and any temptation to overdo it, and thus risk increased œdema, strongly resisted.

Anoxia due to reduced pressure of atmospheric oxygen is important because patients suffering from emphysema, pneumonia, blast injury to the lungs or the shallow breathing of neurasthenia are very vulnerable; and because of the association of low temperatures with great altitudes. At such altitudes, anoxia produces its effects not only by depriving the tissues of oxygen but by its effects on the circulation. Acute anoxia first causes an apparent increase in the force of the heart, but the effect is only temporary. The heart muscle is depressed, the blood-pressure falls and the minute-volume is reduced (Doi 1921, Schneider 1921, Barcroft 1925, Barcroft, Bock and Roughton 1921). When the supply of oxygen is deficient, the skin bears the brunt, the blood being shunted to more important organs. Thus the skin is more liable to frostbite not only because the blood carries less oxygen but because it gets less blood. The warming effect of oxygen at great altitudes is most obvious, and its effect in incipient frostbite extremely valuable (Greene 1934 and 1940a).

Nutritional deficiency.—"The Medical History of the Crimean War" (1858) drew attention to defective nutrition and concurrent disease such as fever or scurvy as predisposing factors in the production of frostbite. Captain R. F. Scott's ill-fated polar expedition was crippled by frostbite, though experienced arctic and antarctic explorers are rarely so severely smitten. The diet of the party was certainly scorbutic, a fact of which Scott had been warned. The relationship is easy to understand. The main feature of scurvy is hæmorrhage, which may show itself in any organ of the body but which is especially noticeable in the skin. The various features of the complete syndrome are becoming gradually associated with deficiency of a variety of vitamins. Thus the night-blindness often present is now recognised as a symptom of hypovitaminosis A, while evidence is emerging that the increased capillary permeability may be a combined effect of lack of vitamins C and P, lack of the former producing ecchymosis and of the latter petechiæ (Scarborough 1940). However this may be it is clear that a deficiency of one or other of these vitamins is capable of increasing that exudation from the blood-vessels which is the most important damaging factor in frostbite and trench-foot.

In starvation, too, œdema already present may increase the damage due to frostbite. It is thought that the low protein intake results in a low concentration of plasma proteins and a consequent transfer of fluid osmotically to the adjacent tissues, but the relative importance of this factor and of the vitamin deficiencies associated with starvation has not been determined.

Trauma.—Age-old tradition demands that a frostbitten limb should be rubbed with snow. Many of those who have discarded the snow which is probably harmless have continued the rubbing. As I have already explained (Greene 1940b), the skin of a frostbitten limb is in a most delicate state, and the gentlest rubbing may well destroy its chance of survival. The tail of a mouse frozen and then gently rubbed suffers damage as severe as if it is warmed before the fire, a practice recognised as harmful. It is clear, too, that rubbing must increase the risk of infection, a complication greatly to be feared. Andrews (1941), after a trial of my methods, agreed that gentle methods give the best results.

These factors—cold, warmth after cold, damp, venous stagnation, wind, anoxia, nutritional deficiency and trauma—may all play a part in the production of the various forms of the ailment. Thus in true *frostbite*, the immediate cause is cold, aggravated often by wind and anoxia and occasionally by the other factors. In trench-foot and immersion-foot, damp is probably the most important factor, associated usually with cold and venous stagnation and often by the others. In shelter-foot, venous stagnation is apparently the primary cause, perhaps with dietetic deficiency as a partner and certainly often with cold and damp as assistants. Though the causes vary in relative importance from case to case, they act through a common channel—transudation from damaged blood-vessels. The prevention and treatment of the four variants can therefore be discussed together.

PREVENTION

Frostbite is usually preventable. Nowadays among experienced explorers and mountaineers it seldom occurs severely, and then only in circumstances which are beyond their control. Despite the severe conditions in various theatres of the last war, some units were almost untouched. Experience gained then should make trench-foot a rarity now, and consideration of the principles which I have outlined should greatly lessen and, indeed, have already greatly lessened, the incidence of both sudden and gradual frostbite. In the winters 1914–18, it was found that long rapid marches were dangerous, the men arriving in the trenches with feet sodden with sweat, probably swollen by their exertions and often rubbed by ill-fitting boots. Whenever possible, then, the last march should be a short one. The importance of dry socks was recognised in a number of Army orders. In an order of the First Army in January, 1915, it was laid down that every man was to carry in his pack an extra pair of socks and was to change them at least once in 24 hours. Careful attention should be paid to the construction of trenches. In many districts proper drainage will keep trenches dry even in wet weather. When this is impossible, duckboards must be provided. The men should wear gum-boots. These should not be used for long marches because they are impermeable and retain sweat. In many places in the last war, a boot store was kept just behind the front line. Men going to the trenches took off their own boots, which were marked and stored, and were supplied with dry gum-boots. On leaving the trenches they exchanged these for their own boots. The gum-boots were dried by passing into the toes a rubber tube attached to a six-foot length of iron pipe. To the other end of the pipe was fixed a hand bellows. The pipe was laid across a brazier and a stream of hot air pumped into the toes of the boots. Whenever possible, the period of duty in the trenches should not exceed 24 or at the most 36 hours, and it should be remembered that the transfer of a man from a muddy trench to a billet does not end the danger if he continues to wear wet socks and boots. Some medical officers of the last war were able to arrange that at least once a day a pair of clean dry socks should go up with the rations to every man in the trenches. These rations should be hot; carriers working on the hay-box principle make this possible, and the supply of "Tommy's cookers" should be large.

Officers should watch for habits in their men likely to lead to trench-foot. It is dangerous to sleep sitting with the edge of the seat or fire-step compressing the back of the thigh. Whenever possible men should sleep lying down with their feet up, wearing their overcoats and as many blankets as possible. They should not stand still, but should move about, raise themselves on their toes, and in general keep the muscles of the legs in constant activity. They should be warned of the danger of touching bare metal on very cold days. Boots should be unlaced at every opportunity.

Clothes should be loose and in many layers. Two thin layers are warmer than one thick one, for the chief warmth lies in the imprisoned air. The outside layer should be of light windproof material like Grenfell cloth. Two pairs of socks should be worn, but only if the boots are large enough to take them easily. Tight socks are as dangerous as tight boots. Darned socks are dangerous because they make blisters. Boots must be kept supple with grease or heavy oil, especially at the flexure of the uppers. The gloves should be of wool, but an outer waterproof glove should be worn also, for wool is neither windproof nor waterproof. Gloves are of special importance in the R.A.F., air-gunners being particularly exposed to frostbite. Their work cannot be done in large and cumbersome gloves, but these should be carried on a string round the neck. The hands can then be protected when not in use but instantly removed when needed. It is in this way that mountaineers protect their hands during the periods of waiting on difficult climbs. Thin silk gloves worn continuously, and thus reinforced when possible, are a valuable protection if they can be kept dry. Hot packs † are dangerous. They are good protectors, but may be most harmful if frostbite has already developed. Perhaps it is a good thing that at very high altitudes they cease to function. *Foot drill is necessary in cold trench warfare.* It should be carried out before going into the trenches, if possible once a day or more while in the trenches, and again when leaving. During the winter of 1917–18 foot-drill centres were established, one for each brigade, near the front line.

At such centres the men sit in pairs, facing each other. Each man removes his companion's boots and socks, and if water is available washes his feet and carefully dries them. Any sores or abrasions are immediately reported to the medical officer and the man is relieved from duty till the skin is healed. It may seem that a very large number of men would be off duty for this cause for long periods, but in fact it is found that the number of casualties from foot troubles is greatly reduced. Each man then rubs into his companion's feet by a process of gentle massage a quantity of whale oil. It is no use just putting the oil on the feet; it must be rubbed in until it has disappeared. The quantity needed is 10 gallons per day per battalion. Dry clean socks are then put on.

Despite the difficulties of trench warfare and the opposition at first of many commanding officers, foot drill was carried out regularly in many units. It was popular with the men, and the drop in casualties from trench-foot finally convinced the sceptics. I recommend this Army experience to the notice of the senior service and to all who go down to the sea in ships, collapsible boats or Carley floats.

TREATMENT

If, despite all care or because of its lack, cases occur, treatment depends on the stage at which it is undertaken, not on the clinical type of frostbite. The premonitory symptom may be a white patch on the face, for which men in very cold conditions should be trained to watch. This can usually be cured by the immediate application for a few seconds of a warm ungloved hand. If feet or hands become numb no time must be lost. Boots and socks or gloves must be instantly removed and the limb warmed by placing it inside another man's clothes. *Gentle massage may be used,* but it should not be continued for more than a few minutes. Rubbing the affected parts, with or without snow, is extremely dangerous. Either the tissues are dead, in which case they are beyond care, or they are still alive. If they are still alive, the application of the most gentle warmth, never greater than that of the human body, will quickly restore the circulation; *friction can only harm delicate* and perhaps brittle tissues, and by increasing exudation increase damage. If these measures fail to restore warmth, the affected part should be thoroughly but gently cleaned, painted with an active antiseptic such as proflavine, wrapped in sterile dressings and in many layers of wool, and given complete rest. A man with only slightly frostbitten feet is a stretcher case. A frostbitten hand must be carried in a sling. Antitetanus serum should be given, for tetanus after frostbite is common and very fulminant (Andrewes 1923). The patient should be given hot food and drinks and extra clothes and removed as quickly as possible to a place of comparative warmth and security. If the frostbite has occurred at a height above sea-level, whether in an aeroplane or on a mountain, pure oxygen should be given either with the B L B mask or with the simpler face-piece of my design (Greene 1934b) until sea-level is reached. Thereafter, a policy of masterly inactivity should be pursued unless sepsis develop, in which event it should be treated like sepsis from any other cause. Excessive warmth should be avoided throughout, hot cradles being specifically forbidden. Between the part irretrievably doomed to gangrene (if such there be) and the part never endangered there is probably an area striving for life in a state of anoxia. Heat to this part will increase its metabolism and its oxygen requirements, and will encourage the growth of bacteria. Frostbitten parts must be kept cool.

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† Hot packs are metal boxes containing a chemical source of heat. At great altitudes there is insufficient oxygen for the heat producing chemical reaction to take place.

A number of active treatments have been suggested, but are still sub judice. Short-wave treatment has been advocated by Burkmann (1934) but it is difficult to see what good could come of it. Passive vascular exercise is popular in the United States but has been little used here and nowhere under properly controlled conditions. It appears at first sight to be dangerous, for should the arterial supply to the limb be increased the capillary pressure would be further raised and transudation increased. On the other hand, if pressure-changes were used sufficient only to effect the venous side of the circulation the capillary pressure would be lowered and good might come. I hope to be able to provide some experimental evidence on this point later.

Recent publications (Soupault and Orsone 1940, Simon and Filhouland 1940, Forster and Wiederkehr 1940, Stricker and Buck 1940) have described the use of lumbar injections of procaine and allied compounds, of femoral sympathectomy, and of injections of the stellate ganglion. It is difficult to see how treatment producing vasodilatation could possibly do anything but harm in the acute stage. The suggestions of Lewis and Love (1926) that the arteries should be obstructed, and of Lake (1917) that they should be constricted are more rational. After the acute stage, healing takes place in any event, and though vasodilatation might conceivably hasten the process the treatment seems hardly worth while. Happily none of the cases reported were seen until a time when they were probably well on the way to spontaneous recovery, but it is to be hoped that without careful previous animal experiments no surgeons will be tempted to follow in the footsteps of these French colleagues.

Amputation is, in the absence of uncontrollably spreading sepsis, seldom necessary and never urgent. In the last war hundreds of limbs were unnecessarily lopped off because they were black and of alarming appearance. I have described a case (Greene 1940a) in which the feet were black and hard to 3 in. above the ankle, where a clear line of demarcation might have tempted a surgeon. Below this level the woody tissues obscured the pulsation of the arteries. I am not a surgeon and I left well alone. The gangrenous skin peeled off little by little like a sock, leaving healthy skin beneath. Two months later the little toes and the terminal phalanges of the others were amputated in the comfort of a hospital—as a matter of convenience not of necessity even then. A porter on the 1933 Everest expedition was frostbitten in establishing camp 6 at 27,390 ft. Two of his fingers were black and hard to the proximal interphalangeal joints. After a short time he refused to wear dressings. When he returned to Darjeeling he refused to have his fingers amputated; he liked them like that. Presumably they fell off in the end. We should never, therefore, amputate hurriedly any part of the body afflicted with uncomplicated frostbite. Amputation may be advisable later for æsthetic or orthopædic reasons. That question can be left to the unhurried judgment of a surgeon working amid the conveniences of a hospital at home.

SUMMARY

Frostbite and the kindred conditions of trench-foot, shelter-foot and immersion-foot are produced by combinations in differing proportions of many causes, the most important being cold and damp. Of secondary, but still great, importance are excessive warmth during recovery, circulatory stagnation, wind, anoxia, dietetic deficiencies, and trauma, especially during ill-directed treatment. By bearing in mind the causes, and especially by proper care of the feet, most cases are preventable. Those cases which occur despite all care, are usually less alarming than they appear to be.

The treatment consists of the avoidance of trauma and infection. Amputation is seldom necessary, and in the absence of spreading infection, is never urgent.

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THE RESPONSE TO VITAMIN K

A LIVER-FUNCTION TEST

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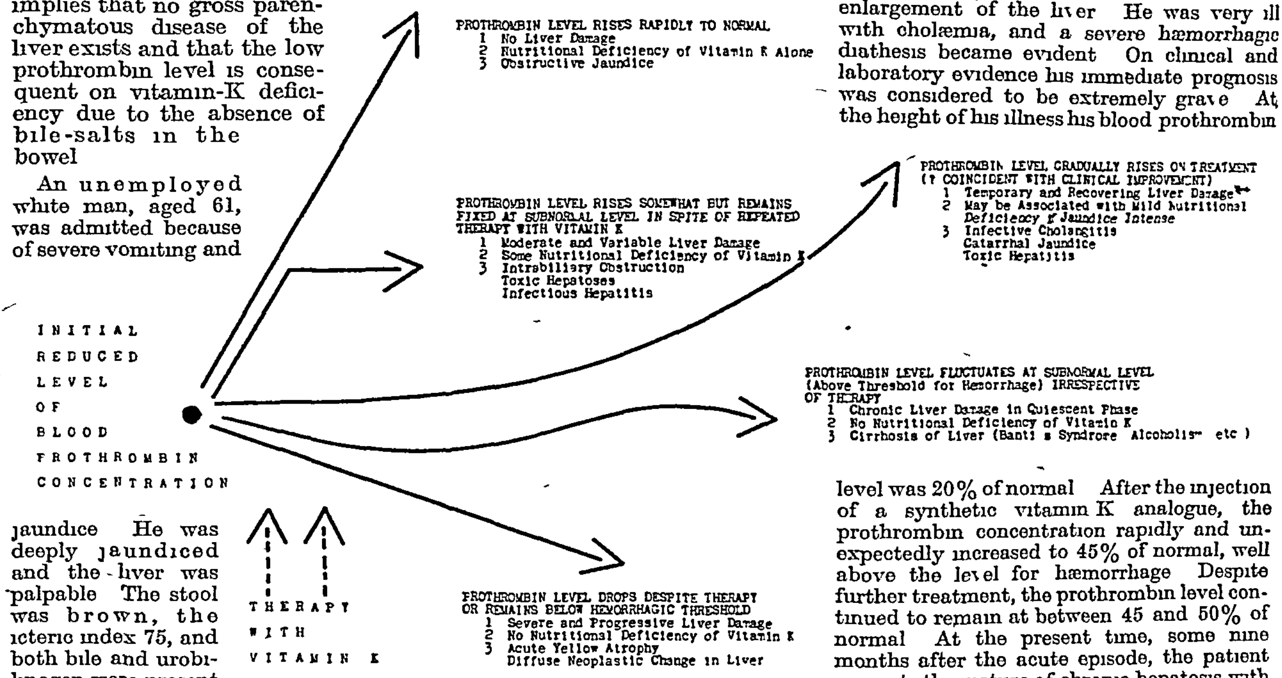
THE experimental evidence in support of the hypothesis that the liver plays an essential rôle in the production of prothrombin is to be found in the work of Andrus and his colleagues (1939) and of Warren and Rhoads (1939), who by total and partial hepatectomy in animals produced a profound reduction in the blood prothrombin concentration which was not affected by treatment with vitamin K and bile-salts. The observations reported here have been made during the past two years, while we were studying the effect of various preparations of vitamin K on the prothrombin level. During this study it became obvious, as has been noted by others (e g. Butt, Snell and Osterberg 1939, Scanlon et al 1939), that some patients with liver disease and hypoprothrombinæmia do not show a satisfactory response to oral or parenteral therapy with vitamin K or its synthetic analogues. Smith, Warner and Brinkhous (1937), from the results of an experimental investigation of chemically induced liver damage in dogs, have suggested that the plasma-prothrombin level appears to be a fairly sensitive index of liver function provided there is not an associated vitamin-K deficiency.

Of approximately 200 of our patients suspected of having hypoprothrombinæmia, 57 were diagnosed clinically as having disturbances of the liver. Among these patients were cases of portal and biliary cirrhosis, catarrhal jaundice, toxic or infectious hepatitis, and patients with intense jaundice which created a difficult problem of differential diagnosis. In attempting to assess the type and extent of liver disorder present in these cases, instead of using the blood-prothrombin level alone, we tried to come to a conclusion from a study of two sets of data. These were the initial level of the blood prothrombin before the administration of vitamin K, and the character and degree of response following its administration

Analysis of the data accumulated showed that these 57 cases with clinically evident liver disease could be placed in five subdivisions A schematic representation has been devised (see figure) in which the response of the lowered blood-prothrombin levels to vitamin-K therapy in the patients in each of the five groups is represented by a curve considered typical for each group

GROUP I

The lowered prothrombin concentration in the blood rapidly (24–48 hours) returns to normal level (90–100% of normal) after therapy with vitamin K—When intense jaundice and well-marked hypoprothrombinæmia are present, and when the diagnosis is in doubt, the rapid and complete response of a lowered blood-prothrombin level to therapy with vitamin K indicates the probability of obstructive jaundice The good response to therapy implies that no gross parenchymatous disease of the liver exists and that the low prothrombin level is consequent on vitamin-K deficiency due to the absence of bile-salts in the bowel


PROTHROMBIN LEVEL RISES RAPIDLY TO NORMAL
1 No Liver Damage
2 Nutritional Deficiency of Vitamin K Alone
3 Obstructive Jaundice
PROTHROMBIN LEVEL RISES SOMEWHAT BUT REMAINS FIXED AT SUBNORMAL LEVEL IN SPITE OF REPEATED THERAPY WITH VITAMIN K
1 Moderate and Variable Liver Damage
2 Some Nutritional Deficiency of Vitamin K
3 Intrabiliary Obstruction
Toxic Hepatoses
Infectious Hepatitis
PROTHROMBIN LEVEL GRADUALLY RISES ON TREATMENT (? COINCIDENT WITH CLINICAL IMPROVEMENT)
1 Temporary and Recovering Liver Damage
2 May be Associated with Mild Nutritional Deficiency K Jaundice Intense
3 Infective Cholangitis
Catarrhal Jaundice
Toxic Hepatitis
INITIAL REDUCED LEVEL OF BLOOD PROTHROMBIN CONCENTRATION
PROTHROMBIN LEVEL FLUCTUATES AT SUBNORMAL LEVEL (Above Threshold for Hemorrhage) IRRESPECTIVE OF THERAPY
1 Chronic Liver Damage in Quiescent Phase
2 No Nutritional Deficiency of Vitamin K
3 Cirrhosis of Liver (Banti s Syndrome Alcoholism etc)
THERAPY WITH VITAMIN K
PROTHROMBIN LEVEL DROPS DESPITE THERAPY OR REMAINS BELOW HEMORRHAGIC THRESHOLD
1 Severe and Progressive Liver Damage
2 No Nutritional Deficiency of Vitamin K
3 Acute Yellow Atrophy
Diffuse Neoplastic Change in Liver

An unemployed white man, aged 61, was admitted because of severe vomiting and jaundice He was deeply jaundiced and the liver was palpable The stool was brown, the icteric index 75, and both bile and urobilinogen were present in the urine Because of a history of alcoholic excesses he was thought to have cirrhosis of the liver While under observation the stools were tan to yellow in colour the icteric index remained at between 50 and 100, and bile and urobilinogen persisted in the urine Because of "needle-puncture" hæmatomata a Quick prothrombin time was performed and showed a blood prothrombin level of 25% of normal Forty eight hours after injection of a synthetic vitamin-K analogue the blood-prothrombin level had reached 100% of normal On the basis of this good response to vitamin K it seemed that there was no gross disturbance of liver function and a diagnosis of vitamin K deficiency and obstructive jaundice was made During the next week the jaundice became more intense, the stools became pale and the icteric index rose to over 200 At laparotomy, an obstruction of the hepatic ducts was found, high up, which was considered to be of neoplastic origin The ducts themselves were much dilated, but because of their friability no major surgical intervention was attempted A portion of the liver taken for biopsy showed "slight acute cholangitis, with bile stasis, with no evidence of parenchymatous pathological changes" A cholangeogram performed after the operation showed dilated biliary and hepatic radicles with no dye entering the duodenum

GROUP 2

The lowered blood-prothrombin level rises somewhat but remains fixed at a subnormal level, despite repeated administration of vitamin K—This group of jaundiced patients have acute or subacute parenchymatous liver damage of a moderate and variable degree In them, swelling of hepatic cells exerts pressure on the intrahepatic ducts, and, following the development of intrabiliary obstructive jaundice, vitamin K is not absorbed from the bowel Therapy with synthetic vitamin-K analogues or with natural vitamin K and bile-salts remedies this nutritional deficiency, but, because of a moderate metabolic disturbance in the production of prothrombin by the liver, although the restoration of the blood-prothrombin level is rapid it is not complete The liver seems able to produce prothrombin, but in quantities insufficient to maintain a normal level in the blood If chronic hepatitis develops subsequently, then these patients will show the same type of response as those in group 4 (see figure), but if clinical improvement occurs there will be a return of the blood prothrombin from a subnormal to a normal level (cf group 3) In group 2 are found cases of catarrhal jaundice, toxic or infective hepatitis, cardiac failure with hepatosis, and also cases of so-called "fatty livers" which precede "alcoholic" cirrhosis

A boy, suffering with acute rheumatic fever and severe congestive heart failure, developed an acute parenchymatous hepatosis, characterised by deep jaundice and considerable enlargement of the liver He was very ill with cholæmia, and a severe hæmorrhagic diathesis became evident On clinical and laboratory evidence his immediate prognosis was considered to be extremely grave At the height of his illness his blood prothrombin level was 20% of normal After the injection of a synthetic vitamin K analogue, the prothrombin concentration rapidly and unexpectedly increased to 45% of normal, well above the level for hæmorrhage Despite further treatment, the prothrombin level continued to remain at between 45 and 50% of normal At the present time, some nine months after the acute episode, the patient presents the picture of chronic hepatosis with ascites and dilated abdominal veins The blood prothrombin has remained at the subnormal level

GROUP 3

The blood-prothrombin level gradually rises with treatment, coincident with clinical improvement—In this group of patients with liver disease, jaundice may or may not develop Fever is usually present and may be associated with an acute septic process, involving especially the biliary tree A moderately lowered blood prothrombin does not respond to therapy with vitamin K, or, if there is an immediate response, it is only slight This is because in the majority of these patients there is no true lack of vitamin K in the diet, but the prothrombin level is low because the liver is apparently unable to utilise the vitamin K absorbed from the gut If clinical improvement occurs, either through subsidence of an acute infectious process or because the initial liver disease clears up, then the prothrombin concentration in the blood will eventually reach a normal level In this group are found patients suffering with infective cholangitis, catarrhal jaundice, acute and toxic hepatosis, patients undergoing heat therapy, and patients suffering with obstructive jaundice complicated by an associated infective process

A housewife, aged 35, suffering with obstructive jaundice and hypoprothrombinæmia of 65% of normal, developed high fever, chills and liver tenderness suggestive of acute cholangitis There was no response to what was considered adequate therapy with a synthetic vitamin-K analogue, but after spontaneous remission of the acute symptoms further treatment with similar amounts of the synthetic vitamin-K analogue restored her blood-prothrombin level to normal within two days.

A labourer, aged 55, was admitted with jaundice. Five days previously he had developed anorexia, nausea and vomiting and a moderate degree of fever, and since then his stools had become pale and his urine dark. His skin was a deep lemon-yellow. The liver was palpable 3 cm below the costal margin, firm, smooth and not tender. The icteric index was 75. The stools were pale, and contained no blood. The urine contained bile and urobilinogen. A diagnosis of catarrhal jaundice was entertained. During his first week in the hospital there was some fever up to 102° F, while the icteric index fluctuated between 75 and 200. The blood-prothrombin level two weeks after the onset of illness was 65% of normal. Six days later the blood prothrombin had dropped to 45% of normal. He was given synthetic vitamin K intramuscularly, but the next day the blood prothrombin had dropped to 40% of normal. At this time the jaundice began to clear and there was obvious clinical improvement. However, there was no rapid response to repeated therapy with vitamin K, and the blood-prothrombin level rose gradually over a period of eight days, when it reached a normal level.

GROUP 4

The prothrombin level fluctuates at a subnormal level which is above the threshold for hæmorrhage, irrespective of therapy.—This group of patients have chronic and long-standing liver disease, usually unassociated with jaundice. The blood-prothrombin level usually fluctuates between 40 and 60% of normal and is not affected by therapy with natural or synthetic vitamin K, even when this is supplemented with a "high-vitamin" diet together with lightly broiled liver up to 300 g. per day and dried brewers' yeast concentrates by mouth (equivalent to 30 g. per day), and crude liver extracts given intramuscularly. In these patients there is no deficiency of vitamin K in the diet or evidence of its malabsorption from the gut, but the liver is not able to produce sufficient prothrombin to maintain a normal level in the blood (Kark and Souter 1940). Among these patients are found those suffering with cirrhosis of the liver and those presenting Banti's syndrome.

An unemployed man, aged 46, had been accustomed to take large quantities of alcohol for many years. During this time his diet had been inadequate. Dilated veins were present over the abdomen and there was severe bleeding from hæmorrhoids. Ascites and loss of weight were evident. He obviously had cirrhosis of the liver. While he was in hospital the blood prothrombin concentration fluctuated between 44 and 70% of normal. This fluctuation was irrespective of therapy with vitamin K by mouth or parenterally in addition to 200 g. of liver and 90 g. of dried brewers' yeast by mouth. There was no response to the daily injection of 5 c.cm. of crude liver extract (1 unit U.S.P. per 2 c.cm.) or nicotinic acid, 500 mg., given by mouth or parenterally.

GROUP 5

The lowered blood-prothrombin level drops despite therapy or remains below the level for hæmorrhage.—This group of patients have severe and widespread liver damage. Clinically they appear acutely ill and usually present hæmorrhagic manifestations—bleeding from the mouth, gums or nose, with cutaneous bruising. The blood-prothrombin concentration is in the "hæmorrhagic zone" and often continues to drop despite therapy. The liver seems incapable of producing prothrombin, since it is apparently severely damaged. The immediate prognosis is grave. Autopsy will reveal an acute hepatitis (acute yellow atrophy) or generalised malignant infiltration of the liver.

A male elevator operator,* aged 59, was admitted to Evans Memorial Hospital complaining of weakness and jaundice. After an acute respiratory infection four weeks before admission he lost his appetite, developed a brassy taste in his mouth and his urine became dark. There was no history of alcoholism or of taking drugs. He was deeply jaundiced, his liver enlarged, firm, smooth and tender, and his spleen palpable at the costal margin. The blood-prothrombin concentration was 29% of normal on the day of admission, and during the six days he was in the hospital the level dropped despite therapy. On the day of his death it had fallen to 5–10% of normal. Autopsy confirmed the clinical diagnosis of acute atrophy of the liver.

DISCUSSION

Wilson (1939), from a study of a group of patients with liver disease, in which he compared hippuric-acid excretion and plasma-prothrombin level, concluded that the blood-prothrombin level was as sensitive in the diagnosis of liver dysfunction as tests of hippuric-acid excretion. He found, however, no correlation between the blood-prothrombin levels and the blood-fibrinogen or the bromsulphalein and galactose-tolerance liver tests. In a comparative group of cases reported elsewhere (Kark et al. 1941) no correlation was observed between the blood-prothrombin level and single observations of hippuric-acid excretion in patients with liver disease, after correction by therapy of any coexisting deficiency of vitamin K.

In a report on 12 patients with hypoprothrombinæmia and hepatic disease (Kark and Souter 1940) it was pointed out that they did not respond to therapy with natural vitamin K or synthetic vitamin-K analogues. At that time it was suggested that this failure of response might have prognostic importance when considered along with the level at which the blood-prothrombin concentration was maintained in these patients. It also appears that the repeated observation of the blood-prothrombin level before and after therapy with vitamin K may give information of value in the differential diagnosis of intense jaundice when the results of other tests are equivocal (group 1). For example, if a patient with intense jaundice and well-marked hypoprothrombinæmia responds rapidly (within 48 hours) and completely (blood-prothrombin level returns to 90–100% normal), then the diagnosis is probably obstructive jaundice. On the other hand, if there is a well-marked hypoprothrombinæmia which does not respond to therapy with vitamin K, and especially if the blood-prothrombin level continues to drop after therapy (group 5), the immediate outlook for recovery is extremely poor. Conversely, if there is a response to therapy in an acutely ill patient with liver disease and hæmorrhagic hypoprothrombinæmia (cf. case 2, group 3), the immediate prognosis is not grave.

The extent of liver damage in the other three groups of patients can be told only after a longer period. Furthermore, single estimations of blood-prothrombin level are not likely accurately to assess the extent of the liver dysfunction which is present.

If any of the patients in groups 2, 3 or 4 require a surgical operation, either on the biliary tract or elsewhere, it is always necessary to restore their blood-prothrombin to a normal level and to maintain it there by pre- and post-operative transfusions of fresh blood or fresh plasma. The bleeding occasioned by surgical procedures on these patients may, by reason of prothrombin depletion, reduce an already low blood-prothrombin concentration to a dangerous level. If hæmorrhagic hypoprothrombinæmia develops in these patients they may bleed to death, since in such cases the loss of prothrombin by bleeding and the inability of the liver to produce sufficient prothrombin to make good this loss will perpetuate the hæmorrhagic state.

CONCLUSIONS

In patients with clinically evident liver disease five types of response to vitamin-K therapy have been observed.

In cases with intense jaundice in which the diagnosis is in doubt the rapid and complete return of a lowered blood-prothrombin level to normal after vitamin-K therapy favours a diagnosis of obstructive jaundice.

In cases of gross liver disease the failure of response to vitamin K, when the blood-prothrombin concentration is below 30–35% of normal, is indicative of advanced hepatic failure and is a grave prognostic sign.

In other types of cases with liver disease which respond incompletely or not at all to vitamin K, transfusion of fresh blood or fresh plasma is the only known therapeutic measure which can then increase the prothrombin concentration of the blood. In these cases this therapeutic measure should be employed, before and after operation, if any surgical procedure is necessary.

We wish to thank Dr. George R. Minot and Dr. William T. Salter for their criticism and advice.

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* We wish to thank Dr. Chester Keefer for permission to publish this case report.

PRESERVATION OF LIQUID COMPLEMENT SERUM

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A PROPER technique for Wassermann tests should require that the pooled serum from at least three properly fed, healthy, adult male guineapigs is used as complement (Wyler 1929, Faber and Black 1938a, Eagle 1939, Kolmer 1939)) Any less exacting standard may lead to error Yet in war-time the weekly loss of three prime animals, if the serum is obtained by bleeding out, is an unwelcome extravagance Even if the serum is obtained by heart puncture as little demand as possible should be made on the animals In these circumstances, a simple means of preserving complement serum in the ordinary laboratory will be of much value

The most effective method known is to preserve the serum by drying it from the frozen state, provided that the drying is complete and the dried material is kept dry (Flosdorf et al 1935, 1940, Greaves and Adair 1936 1939) Yet the fact that success depends on the skill applied to a slightly involved technique makes the method less attractive to the ordinary worker Moreover, complement reconstituted from the dried material is *even less stable than is fresh complement* (Faber and Black 1938b) It can only be made up and kept satisfactorily if special preserving solutions such as those discussed below are used The purpose of this note is to outline some factors involved in preserving liquid complement, to discuss some recognised methods of preservation, and to describe some effective new methods

FACTORS CONTRIBUTING TO PRESERVATION

An inclusive explanation of factors involved in preserving liquid complement must take account of many seemingly unrelated facts Possibly the most puzzling of these has been the divergent results given by the same method of preservation on different occasions, or in the hands of different workers

The most popular method of preservation has been to freeze the serum solid in a freezing chamber or freezing mixture Methods for more moderate temperatures (0°–3° C) have been based on storing under carbon dioxide, or on the addition of hypertonic salt solution to the serum, a method which has been effectively modified by adding boric acid as well, presumably as a disinfectant Another modification depends on storing the salted serum in sealed containers (Glover 1933, Green 1938) Most workers have found that serum intended for preservation should be processed promptly, and Glover suggests that the value of sealing may be that it retains carbon dioxide in the serum The serviceableness of the various methods has been reviewed and examined by Kolmer and his colleagues (1919) and by Faber and Black (1938b)

Present work has shown that four factors are especially important in preserving liquid complement at room temperature or at 0°–3° C sterility, hypertonicity, pH and absence of specific destructive effects The chief shortcoming of previous methods has been an imperfect combination of these factors, especially with reference to pH The optimum pH for preservation at 0°–3° C is about 6 4 (as shown roughly by indicators), or at room temperature 6, and the optimum zone is a sharp one The stability of complement rapidly declines above pH 7 The variability of results with the same preserving technique may often express nothing more than a variable approach to the correct pH Sterile hypertonic complement serum should have a life of many months at 0°–3° C or room temperature, if the pH is correctly adjusted Consequences of these facts may be recognised from everyday experience

(*a*) Serum exposed to the air loses CO_2 erratically (the rate depending on such circumstances as warmth and shaking) and suffers an erratic alkaline drift towards pH 8, loss of activity in such serum will thus be erratic as well as rapid

(*b*) Loss of CO_2 can be retarded by low temperature, especially by freezing solid, and can be stopped by sealing in tubes, these procedures help to preserve fresh serum, but not serum which has already lost its CO_2

(*c*) Loss of CO_2 is accelerated by evacuation, vacuum dried serum will be especially unstable on reconstitution

(*d*) Loss of CO_2 can be reversed by storing under CO_2, alternatively, its destructive consequences can be avoided by replacing it with a non-volatile acid of suitable strength (pK 6–6 5),* these are suitable conditions for preserving complement

(*e*) *The rôle of boric acid is apparently complex since its* acid strength (pK 9 2) is insufficient to permit it to replace CO_2 (pK 6 1), its main effect is probably due to polymerisation to a more acid polymer (Thygesen 1938) Significant amounts of polymer are found only in concentrated solution, and this accords with the fact that only concentrated solutions are used for preserving serum (0 4–0 6 M) A secondary and variable effect may follow from the formation of acidic complexes with sugar alcohols or sugars Mannitol, for instance, strongly enhances the acidity of boric acid (Bell et al 1938), is widely distributed in plants, and is not easily metabolised after ingestion (Carr and Krantz 1938) Its presence in serum will vary with the quantity and type of diet, and thus the effect on the pH of boric acid serum will be variable Comparable effects will follow from the presence of other sugar alcohols The variable success of the boric acid method in different laboratories can thus be accounted for

SELECTION OF PRESERVING AGENTS

The choice of reagents to control sterility, hypertonicity, and pH is much restricted by specific destructive effects

Sterility—For various reasons few of the usual disinfectants can be used to control infection in complement serum Strong oxidising agents destroy complement (Ecker et al 1938), and highly coloured disinfectants are inconvenient Heavy metal salts, formaldehyde, and several phenols (trichlorophenol, 8-hydroxyquinoline, and sodium salicylate) were found to inactivate complement on prolonged exposure Merthiolate, phenyl mercuric nitrate, and boric acid were hæmolytic Sulphides, cyanides, and acid gases like sulphur dioxide would cause undesirable pH changes Thus only proflavines, sodium selenite and sodium azide were left for trial Azides resemble sulphides and cyanides in inhibiting cellular respiration (Keilin 1936), and the sodium salt in a strength of 0 01–0 05% will selectively inhibit a variety of aerobes growing on blood-agar plates (Snyder and Lichstein 1940) In this laboratory we have found it a better disinfectant for serum than selenite or proflavine at doses innocuous to complement

Sodium azide (NaN_3) is important as a disinfectant for serological uses because (*a*) it is neither hæmolytic nor destructive of complement at dilutions necessary to prevent visible infection of serum (M/80 = 0 08%), (*b*) it is chemically inert towards organic molecules of serological interest, and is stable in solution at neutral pH (only on substantial acidification is the poisonous hydrazoic acid set free, pK 4 5), (*c*) it is effective in considerable dilution and has ionic properties resembling sodium chloride—notable considerations in dealing with colloids These distinctive advantages are unfortunately offset by its toxicity, it is a powerful poison with effects resembling those due to cyanide (Smith and Wolf 1904) The dangerous dose is only 5–10 mg (Kavser 1928), and this is present in only 0 6–1 2 ml of the stock solutions described below (M/8) Obviously such solutions should not be handled by unskilled persons It may also be noted that the azides of heavy metals are detonators, though sodium azide is stable in solid form, it is probably best handled with non-metallic spatulas

Hypertonicity—Many salts have been recommended for increasing the tonicity of serum for preservation, but they have hitherto been studied without adequate control of pH, conflicting reports have been common (Faber

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* In this note, pK is taken to mean the negative logarithm of the titration constant of the acid at an ionic strength equivalent to that of physiological saline

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and Black 1938b) Work in this laboratory has not yet proceeded far, but it suggests that sodium salts of monovalent ions—e g , chloride—are more satisfactory than those of divalent ions of the dehydrating type—e g , sulphate, phosphate Since sodium chloride is the recognised diluent for serological work, it should be preferred for salting the complement, at least until strong reasons appear for using another salt The practicable hypertonicity will be simply that which can give, after dilution with water to the dose required for the test, a correctly isotonic solution

The pH—Most buffer mixtures which cover the pH region 6–7 include salts with divalent ions Preliminary work with phosphate buffers showed that such divalent salts give inferior results if used both to make the serum hypertonic and to control pH The best results followed from the lowest possible concentrations, tonicity being controlled by other means—e g , by adding sodium chloride

In experiments along these lines, buffer acids with pK values between 6 and 7 were chosen, and sufficient amounts added to samples of serum to bring the pH to about 6–6 2 (shown roughly by sulphonphthalein indicators) The samples were finally made up as 1 in 2 serum dilutions containing M/80 azide and sufficient sodium chloride to be 5 times isotonic and left at room temperature (15°–20°, C) in loosely stoppered tubes The control sample with only azide present became completely inactive within a fortnight, and the 5 × isotonic control without pH adjustment was inactive after five weeks Of the other samples, those adjusted to the above pH with M/50 NaH maleate (pK 6), M/40 cacodylic acid (pK 6 1), saturated CO_2 gas (pK 6 1), M/33 NaH glycerophosphate (pK 6 3), or M/25 NaH_2 phosphate (pK 6 6) have suffered no important change in titre in ten weeks Samples adjusted with hydrochloric acid were less satisfactory, while those with M/20 NaH sulphite (pK 6 7) were inactive in eighteen hours The phenomenal keeping power of salted complement adjusted to the proper pH with selected buffers has been confirmed on many occasions

PRESERVED COMPLEMENT IN THE WASSERMANN REACTION

The serviceability of the various mixtures for use in Wassermann tests by the Harrison-Wyler method (Wyler 1929) and by the recent modification of it (Richardson 1940) has been regularly under study

Complement preserved in acidified mixtures as above was found to be entirely satisfactory for tests by the Richardson modification, and for most tests by the Harrison-Wyler method Occasionally however, a non-syphilitic serum would be found in which a tendency to give a doubtful reaction by the Harrison-Wyler method, using fresh complement would be much accentuated by the acidified complement; the implications of this are being explored In the meantime it was thought that complement at the optimum pH for preservation ought not to be used directly for Wassermann tests An attempt to compromise between this pH and a safe pH for tests was made in early work It was found that complement treated with M/80 azide and M/8 phosphate of pH about 7 could be transmitted by post and still remain satisfactory in tests This important conclusion was confirmed by three pathologists—Dr J L Edwards, Major K E A Hughes, and Dr Robert Thomson to whom I am grateful for collaboration Nevertheless the stability of the product was not optimal, and attempts were next made to store the complement at its optimum pH but under such conditions that the pH automatically returned to less acid values merely on dilution This is the great advantage of the boric-acid method, since the polymer to which acidity is due practically disappears on dilution , but the method has the accompanying disadvantages of a variable pH during preservation, as already discussed, and of high concentrations of non-biological material These faults are remedied in the methods described below

DETAILS OF METHODS

Four solutions—A, B, and C for method 1, and C and D for method 2—are used

A. (*M/4 boric acid in saturated NaCl*)—Boric acid (H_3BO_3), 1 55 g , is dissolved in and made to 100 ml with saturated NaCl solution

B (*M/2 sorbitol, M/8 azide in saturated NaCl*)—Sorbitol ($C_6H_{14}O_6$ ½H_2O), 9 55 g , and sodium azide (NaN_3), 0 81 g , are made to 100 ml as above The very poisonous nature of sodium azide has been discussed

C (*M/8 azide in saturated NaCl*)—Sodium azide, 0 81 g , is made to 100 ml as above

D (*Saturated NaCl*)—A saturated solution of sodium chloride in water

In making solutions B and C, some NaCl may be precipitated It is assumed, however, that the final solutions have the same tonicity as saturated NaCl (5 4 M = about 36 × isotonic) Moderate change of temperature has little effect on the solubility of NaCl

Method 1—Eight volumes of serum are mixed with one volume of solution A and one volume of a mixture of B and C The suitable ratio of B to C may vary according to the source of the complement, but is likely to be about 1 1 (perhaps greater) The pH of the serum mixture should be about 6–6 5, as shown by a faint or negligible green tinge with bromothymol blue indicator and a distinct purple with bromocresol purple, while experience will show what conditions best suit the temperature chosen for preservation In the examples given, a 4 in 5 dilution of serum containing M/40 boric acid, M/40 sorbitol, M/80 azide, and 1 08 M NaCl will be obtained The tonicity will be 0 8 × isotonic with respect to serum and 7 2 × isotonic with respect to NaCl, or 8 × isotonic altogether. The method depends on the ability of boric acid and sorbitol to form an acidic complex whose acidity can be increased with increase in the sorbitol ratio On dilution the complex largely dissociates and the acidity disappears Similar use can be made of other polyhydric alcohols or sugars

Method 2—Eight volumes of serum are mixed with one volume of solution C and one of solution D The mixture is then stored under an atmosphere of CO_2 in a closed container On dilution and exposure to air the carbon dioxide disperses and the acidity disappears

Mixtures made by either method are kept in the dark and may be used as 1 in 10 complement dilutions simply by mixing 1 volume with 7 volumes of distilled water

The methods are satisfactory with stale serum provided the titre has been maintained and also, after appropriate changes, for reconstituting vacuum-dried serum Method 1 is suited to laboratories doing routine testing and lacking facilities for a supply of CO_2 Method 2 is suited to research laboratories needing complement with negligible adulteration , the 1 in 10 dilution has only M/640 (0 01%) sodium azide as adulterant and this is a salt closely resembling sodium chloride in ionic properties

SUMMARY

Successful preservation of the complement activity of hypertonic guineapig serum depends sharply on pH Sterile salted serum keeps for months at room temperature if brought to about pH 6 or, at 0°–3° C , to about pH 6 4 Sodium azide is the disinfectant of choice Methods are described for maintaining a suitably acid pH during storage, and restoring neutrality automatically on dilution They depend on the use of sorbitol-boric-acid complexes, or of carbon dioxide

I wish to thank the Dean of the London School of Hygiene and Tropical Medicine, and Prof James McIntosh of the Bland-Sutton Institute of Pathology, Middlesex Hospital, for hospitality during the course of this work , and Colonel L W. Harrison for his encouragement

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PRESERVATION OF LIQUID COMPLEMENT SERUM

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A PROPER technique for Wassermann tests should require that the pooled serum from at least three properly fed, healthy, adult male guineapigs is used as complement (Wyler 1929, Faber and Black 1938a, Eagle 1939, Kolmer 1939)) Any less exacting standard may lead to error Yet in war-time the weekly loss of three prime animals, if the serum is obtained by bleeding out, is an unwelcome extravagance Even if the serum is obtained by heart puncture as little demand as possible should be made on the animals In these circumstances, a simple means of preserving complement serum in the ordinary laboratory will be of much value

The most effective method known is to preserve the serum by drying it from the frozen state, provided that the drying is complete and the dried material is kept dry (Flosdorf et al 1935, 1940, Greaves and Adair 1936, 1939) Yet the fact that success depends on the skill applied to a slightly involved technique makes the method less attractive to the ordinary worker Moreover, complement reconstituted from the dried material is even less stable than is fresh complement (Faber and Black 1938b) It can only be made up and kept satisfactorily if special preserving solutions such as those discussed below are used The purpose of this note is to outline some factors involved in preserving liquid complement, to discuss some recognised methods of preservation, and to describe some effective new methods

FACTORS CONTRIBUTING TO PRESERVATION

An inclusive explanation of factors involved in preserving liquid complement must take account of many seemingly unrelated facts Possibly the most puzzling of these has been the divergent results given by the same method of preservation on different occasions, or in the hands of different workers

The most popular method of preservation has been to freeze the serum solid in a freezing chamber or freezing mixture Methods for more moderate temperatures (0°–3° C) have been based on storing under carbon dioxide, or on the addition of hypertonic salt solution to the serum, a method which has been effectively modified by adding boric acid as well, presumably as a disinfectant Another modification depends on storing the salted serum in sealed containers (Glover 1933, Green 1938) Most workers have found that serum intended for preservation should be processed promptly, and Glover suggests that the value of sealing may be that it retains carbon dioxide in the serum The serviceableness of the various methods has been reviewed and examined by Kolmer and his colleagues (1919) and by Faber and Black (1938b)

Present work has shown that four factors are especially important in preserving liquid complement at room temperature or at 0°–3° C sterility, hypertonicity, pH and absence of specific destructive effects The chief shortcoming of previous methods has been an imperfect combination of these factors, especially with reference to pH The optimum pH for preservation at 0°–3° C is about 6 4 (as shown roughly by indicators), or at room temperature 6, and the optimum zone is a sharp one The stability of complement rapidly declines above pH 7 The variability of results with the same preserving technique may often express nothing more than a variable approach to the correct pH Sterile hypertonic complement serum should have a life of many months at 0°–3° C or room temperature, if the pH is correctly adjusted Consequences of these facts may be recognised from everyday experience

(*a*) Serum exposed to the air loses CO_2 erratically (the rate depending on such circumstances as warmth and shaking) and suffers an erratic alkaline drift towards pH 8 , loss of activity in such serum will thus be erratic as well as rapid

(*b*) Loss of CO_2 can be retarded by low temperatures, especially by freezing solid, and can be stopped by sealing in tubes , these procedures help to preserve fresh serum, but not serum which has already lost its CO_2

(*c*) Loss of CO_2 is accelerated by evacuation , vacuum dried serum will be especially unstable on reconstitution

(*d*) Loss of CO_2 can be reversed by storing under CO_2, alternatively, its destructive consequences can be avoided by replacing it with a non-volatile acid of suitable strength (pK 6–6 5) ,* these are suitable conditions for preserving complement

(*e*) The rôle of boric acid is apparently complex since its acid strength (pK 9 2) is insufficient to permit it to replace CO_2 (pK 6 1) , its main effect is probably due to polymerisation to a more acid polymer (Thygesen 1938) Significant amounts of polymer are found only in concentrated solution, and this accords with the fact that only concentrated solutions are used for preserving serum (0 4–0 6 M) A secondary and variable effect may follow from the formation of acidic complexes with sugar alcohols or sugars Mannitol, for instance, strongly enhances the acidity of boric acid (Bell et al 1938), is widely distributed in plants, and is not easily metabolised after ingestion (Carr and Krantz 1938) Its presence in serum will vary with the quantity and type of diet, and thus the effect on the pH of boric acid serum will be variable Comparable effects will follow from the presence of other sugar alcohols The variable success of the boric acid method in different laboratories can thus be accounted for

SELECTION OF PRESERVING AGENTS

The choice of reagents to control sterility, hypertonicity, and pH is much restricted by specific destructive effects

Sterility —For various reasons few of the usual disinfectants can be used to control infection in complement serum Strong oxidising agents destroy complement (Ecker et al 1938), and highly coloured disinfectants are inconvenient Heavy metal salts, formaldehyde, and several phenols (trichlorophenol, 8-hydroxyquinoline, and sodium salicylate) were found to inactivate complement on prolonged exposure - Merthiolate, phenyl mercuric nitrate, and boric acid were hæmolytic Sulphides, cyanides, and acid gases like sulphur dioxide would cause undesirable pH changes Thus only proflavines, sodium selenite and sodium azide were left for trial Azides resemble sulphides and cyanides in inhibiting cellular respiration (Keilin 1936), and the sodium salt in a strength of 0 01–0 05% will selectively inhibit a variety of aerobes growing on blood-agar plates (Snyder and Lichstein 1940) In this laboratory we have found it a better disinfectant for serum than selenite or proflavine at doses innocuous to complement

Sodium azide (NaN_3) is important as a disinfectant for serological uses because (*a*) it is neither hæmolytic nor destructive of complement at dilutions necessary to prevent visible infection of serum (M/80 = 0 08%) , (*b*) it is chemically inert towards organic molecules of serological interest, and is stable in solution at neutral pH (only on substantial acidification is the poisonous hydrazoic acid set free, pK 4 5) , (*c*) it is effective in considerable dilution and has ionic properties resembling sodium chloride—notable considerations in dealing with colloids These distinctive advantages are unfortunately offset by its toxicity , it is a powerful poison with effects resembling those due to cyanide (Smith and Wolf 1904) The dangerous dose is only 5–10 mg (Kavser 1928), and this is present in only 0 6–1 2 ml of the stock solutions described below (M/8) Obviously such solutions should not be handled by unskilled persons It may also be noted that the azides of heavy metals are detonators , though sodium azide is stable in solid form, it is probably best handled with non-metallic spatulas

Hypertonicity —Many salts have been recommended for increasing the tonicity of serum for preservation, but they have hitherto been studied without adequate control of pH , conflicting reports have been common (Faber

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* In this note, pK is taken to mean the negative logarithm of the titration constant of the acid at an ionic strength equivalent to that of physiological saline

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traced back the history of my patients and found that in 6 breast cancer ran in the family All 6 patients had undergone operations for breast cancer and after the operation had had X-ray treatment by experts Male hormone was given to these patients to see whether when given over a long period it would inhibit severe metastasis and influence recurrences Naturally no prophylactic treatment could be applied before the first appearance of cancer, as can be done in mice—membership of a family in which cancer runs is no indication for prophylactic treatment Thus treatment could be started only when the normal mammary cells had already undergone cancerous change In 3 of the 6 there were no signs or symptoms of recurrence when male hormone was implanted ; in the other 3 metastases were present at that time. Of the following cases 4 have already been published in part (Loeser 1939, 1940).

CASE 1 —Married woman, aged 37 , no children Maternal aunt died from breast tumour Radical operation in Johannesburg in June, 1936, after X-ray treatment Recurrence above right clavicle in February, 1937 Histological examination revealed carcinoma I performed curettage in April, 1937, because of uterine hæmorrhage , hyperproliferation of the endometrium found During May–September, 1937, patient had testosterone propionate, 1500 mg , injected, resulting in amenorrhœa In December, 1937, testosterone propionate, 600 mg , was injected Symptoms of masculinisation appeared—enlargement of clitoris, hoarse voice, increased sexual urge, increased growth of hair, gain in weight These symptoms faded in June, 1938 In March, 1939, September, 1939, and March, 1940 testosterone propionate, 600 mg, was implanted again with the same result In November, 1940, the patient was free from symptoms or signs of cancer The voice remains hoarse

CASE 2 —Married woman, aged 42 , two healthy children, one miscarriage Paternal uncle died from cancer , grandmother died from breast tumour Radical removal of breast performed September, 1935, after X-ray treatment Recurrence in cicatrix on the left breast, March, 1936 , excision Second recurrence in armpit, October, 1936 ; histological examination confirmed carcinoma Curettage performed because of uterine hæmorrhages , hypertrophic endometrium found Between April, 1937, and January, 1938, testosterone propionate, 700 mg , injected December, 1938 to March, 1939, testosterone propionate, 600 mg , injected. In November, 1939, and June, 1940, implantations of testosterone propionate 600 mg , were made Signs of masculinisation followed as in case 1 In October, 1940, there were no signs or symptoms of cancer recurrence

CASE 3 —Spinster, aged 41 Mother died from breast tumour, illness lasting four years Radical operation on patient's right breast in Budapest in 1936, after three courses of X ray treatment, Supraclavicular recurrence in 1938, treated by X rays In June, 1938, patient consulted me because of pruritus vulvæ At that time she had no recurrence of breast cancer Between June and October, 1938, testosterone propionate, 700 mg , injected In January, 1939, testosterone propionate, 500 mg , implanted , implantation repeated in June, 1939 Masculinisation as in the other cases In December, 1940, there were no signs or symptoms of cancer

CASE 4 —Married woman, aged 60 , two children One sister had breast cancer For the past eight years patient had been treated with radium for carcinoma of the breast Multiple recurrences were treated by excision Metastases on both sides, supraclavicular and mediastinal Diffuse infiltration in right axilla with a suppurating ulcer the size of half a crown around the nipple The radiologist called in recommended morphine for pain , on account of the disseminated carcinosis no other treatment was carried out From July to October, 1939, testosterone propionate, 1850 mg was implanted The temporary result was a superficial swelling around the right nipple, accompanied by considerable reduction of the ulcer, softening of the hard infiltration in the armpit, and superficial swelling and pigmentation of the healthy breast Striking features were an increase in weight by 5 lb and obviously improved health , the pain along the right arm lessened considerably , the patient felt very well, walked about and looked after her household, whereas previously she had been confined to bed The improvement lasted only four months A new implantation could not be performed owing to lack of material The patient's weight dropped again and further decline could not be checked

CASE 5 —Married woman, aged 45 years ; no children. Sister had had breast cancer, and a nephew at the age of 18 was suffering from cancer of the testis and had recently been operated on Radical operation for cancer of the breast on the right side 1937, followed by much X-ray treatment in the next year She had two recurrences in the operation scar and a fresh recurrence in the axilla in July, 1939 From August to November, 1939, testosterone 1500 mg , was implanted At first patient showed similar striking symptoms of improvement to those in case 4, but there was no change in the consistency or size of the recurring tumour in the axilla, though it showed no enlargement , X-ray treatment dissipated this little tumour New recurrence in the armpit and left breast in April, 1940 As the patient had undergone temporary masculinisation after the implantation of testosterone, a trial was made of progesterone In July, 1940, progesterone, 300 mg , was implanted and daily doses of progesteral, 40 mg , by mouth were given up to a total of 2800 mg Menstruation stopped No result was obtained , metastasis in the liver with ascites was diagnosed

CASE 6 —Married woman, aged 28 , no children Paternal aunt died from breast tumour Two years ago operation was performed followed by X ray treatment because of breast cancer She had metastases in the mediastinum, with hoarseness Supraclavicular glands involved on both sides Radiologist refused further X ray treatment Progesterone, 400 mg , implanted in August, 1940, and for two months daily doses of progesteral, 40 mg taken by mouth There was no change in her condition She had amenorrhœa for approximately a year, and after the implantation amenorrhœa continued No improvement, further decline and death in November, 1940 The total amount of progesteral taken was 2400 mg

Cases 1, 2 and 3 had one common feature soon after radical operation and X-ray treatment they all developed recurrences , when treatment with male hormone was begun these were not present, for they had either been excised or had disappeared after X-ray treatment Clinically these patients were free from any sign of cancer when the injections or implantations of male hormone were begun But although they had shown recurrences soon after operation they remained free from recurrences and metastases for 3–4 years (cases 1 and 2) and 2½ years (case 3) after the hormone treatment It is now nearly five years since the operations were performed on all these patients and they are still in good health These patients will have to be observed for several more years before any final judgment can be reached, and it will be necessary to continue hormone treatment from time to time Even then it will be difficult to assume that the male hormone is responsible for the good result and the postponement of recurrences

Cases 4, 5 and 6 all had metastases at the time when hormone treatment was begun Cases 4 and 5 improved strikingly under implantation treatment for the first two or three months but the cancer itself remained unaltered and their decline could not be averted

DISCUSSION

There is a wide difference between inherited breast cancer in mice and carcinoma of the breast in women Virgin or castrated female mice of strains with high incidence of breast cancer seldom suffer from cancer of the breast Virgin or unmarried women acquire breast cancer more often than married women who have had children (Peller 1940) In my experiments the mice as well as the women showed an inherited susceptibility to breast cancer This susceptibility was further enhanced in the mice by œstrogenic substances developed in response to forced breeding as a result of which the mammary gland was exposed without interruption to hormonal irritation The same cannot be said of the patients , 4 of them had never had a child, and there is no reason to assume that their mammary glands had been exposed to any irritation by œstrogenic substances Whether they produced abnormally high amounts of these substances in their tissues cannot be said But the antagonist of œstrogens was introduced into their circulation, and it is my impression that it was not the antagonistic action alone but the alteration in the patient's constitution—the masculinisation—which had an effect. The crescendo of masculinisation coincided with improvement in their condition ; the diminuendo with progress of the disease

MAMMARY CARCINOMA

RESPONSE TO IMPLANTATION OF MALE HORMONE AND PROGESTERONE

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A HIGH percentage of certain strains of mice die from cancer of the breast and some women seem to have an inherited susceptibility to the disease Apart from inherited susceptibility, one of the carcinogenic factors which may transform a normal cell into a cancerous one is said to be a surplus of œstrogenic substances in the body It appeared, therefore, worth while to try to counteract the female hormone by male hormone

Lacassagne (1939), Raynaud (1939), Murlin (1939), and Nathanson and Andervont (1939) have published papers on the same subject, but they never used the implantation method—they made injections with male hormone Sometimes they injected the mice at a very early age before they had litters (between the 1st and 21st day of life), and none of them treated the mice after the age of 4–4½ months If a mouse is treated with male hormone soon after birth there is a risk that the mammary gland will be prevented from developing Male hormone in big doses causes an atrophy of the mammary gland as well as of the ovaries, and the suppression of the ovarian function may also be secondary to pituitary inhibition No details of the changes in the different glands can be described in this paper, but the results of a long-continued action of testosterone on these glands are well known

All the observers mentioned showed that testosterone protects from cancer of the breast a high percentage of mice of the strain I used in my experiments Murlin influenced the growth and metastasis of the transplanted Brown-Pearce epithelioma by urinary androgens and considerably reduced severe metastasis and mortality, especially when the injections were begun before the inoculation of the tumour The workers quoted tried to counteract inherited susceptibility to cancer by injecting male hormone, and succeeded to some extent where they injected the mice at a very early age But they undoubtedly altered the constitution of a female mouse if they injected the male hormone so early, and at the end of the course there was only a rudimentary mammary gland, or a gland which had never properly developed It is not surprising therefore that these mice did not develop cancer of the breast, since the œstrogenic factor could not be formed while the ovaries remained atrophic, and these mice were never wholly female

In the following experiments I used the implantation method in order to maintain a permanent source of counteracting hormone in the tissues It is perhaps worth comparing the results in strains of mice with a very high familial incidence of breast cancer and those obtained in women suffering from breast cancer who had a high familial incidence of the disease Unfortunately the number of animals and patients who were treated and observed over several years was small The animal experiments took place between February, 1939, and September, 1940 The war prevented me from breeding further generations of mice It was also difficult to keep track of the patients over a sufficiently long period Many of the treated patients left London before my observations were concluded, and only a small number could therefore be used for the purpose of this inquiry

MOUSE EXPERIMENTS

Mice of Strong A strain were used They show a very high incidence of breast cancer, and according to Bittner (1939) up to 83% die from breast cancer when they are eleven months old and have had several litters I had at my disposal 354 mice born in the laboratory but only 65 were bred and used either for implantation or as controls Out of these 65 mice, only 22 remained for investigation over a period of thirteen to sixteen months, 43 died from intercurrent disease or failed to have three litters

Of the 22 remaining mice 10 (nos 1–10) had testosterone propionate implanted and 12 (nos 11–22) were controls Each of them had three litters, the 10 treated mice having 165 offspring altogether, and the controls 189. Every three to five weeks 7–8 mg of testosterone propionate was implanted subcutaneously in tablet form, being embedded in the subcutaneous fat of the back of mice nos 1–10 After three or four weeks the small tablet was usually absorbed

Of the 12 control mice 9 died from cancer of the breast (see table) They usually showed the first sign of cancer between the tenth and eleventh month and on an average it took a month from the beginning of the disease for them to die Mouse no 20 died at 10 months of intercurrent disease Of the 10 implanted mice 4 died from cancer Mouse no 4 had no cancer when it died from an intercurrent disease at fourteen months It was found that none of the mice who lived for more than fifteen or sixteen months died from cancer All the mice of this strain which had no cancer by the age of twelve or thirteen months died from some other cause, the age at death being between sixteen and eighteen months Altogether 5 of the treated mice and 2 of the controls survived, 4 of the treated mice and 9 of the controls died of cancer, 1 treated mouse and 1 control died from other causes

RESULTS OF IMPLANTATION OF TESTOSTERONE PROPIONATE IN MEMBERS OF A STRAIN OF MICE SUSCEPTIBLE TO MAMMARY CANCER

No	TREATED MICE (Testosterone propionate 7–8 mg in each implant)			No	CONTROL MICE
	Age at first implant (months)	No of implant	Result		Result
1	4½	7	Living, 15 mths, no cancer	11	Died cancer, 12 mths
2	5½	7	Living, 15 mths, no cancer	12	Died cancer, 13 mths
3	6	7	Died cancer, 14 mths	13	Died cancer, 14 mths
4	5½	7	Died, 14 mths, no cancer	14	Died cancer, 13 mths
5	8	3	Died cancer, 10 mths	15	Died cancer, 12 mths
6	8	5	Living, 16 mths, no cancer	16	Living, 16 mths, no cancer
7	5½	4	Living, 15 mths, no cancer	17	Died cancer, 13 mths
8	8½	5	Died cancer, 12 mths	18	Died cancer, 12 mths
9	8	4	Living, 15 mths, no cancer	19	Living, 15 mths, no cancer,
10	9	4	Died cancer, 13 mths	20	Died, 10 mths, no cancer
				21	Died cancer, 12 mths
				22	Died cancer, 12 mths

If we compare the 5 mice who did not develop cancer after the implantation with the 4 mice who did so in spite of implantation, we find that 3 of the former had received implants before the age of six months, whereas all the latter received implants at six months or even later. The younger a mouse the more implants can be made, thus the young mice received 7 implants The fewer the implants the more limited the chance of protection In some of the mice who developed cancer fresh implants were made even after the first appearance of the growth, but no beneficial effect could then be observed Histological examination of the tumours revealed no difference in the treated and control cancerous mice

I made no implantations until the mice had had three litters, when forced breeding had produced œstrogenic substances without interruption for at least the first four and a half months of their lives Thus not only was the hereditary factor acting but a surplus of œstrogenic substances had also stimulated the breast Of the 4 mice which were implanted before the first half of their precancerous life was over, 3 appeared to be protected from cancer for fifteen months and more, whereas of 6 mice implanted nearer to the date when breast cancer in this strain usually appeared, 4 were not protected

CLINICAL TRIALS IN WOMEN

The mamma is an organ in which there is a high familial incidence of cancer, often restricted to the immediate female relatives of the woman suffering from breast cancer, as the statistical investigations of Wassink (1936) in Holland and of Waaler in Norway have shown I

THE LANCET

LONDON. SATURDAY, DECEMBER 6, 1941

EGG OR SCORPION?

EARLY in 1939 SIR ARNOLD WILSON and Prof. HERMANN LEVY published their first volume on our law of workmen's compensation surveying the historical origins, Parliamentary debates and departmental inquiries The war, which has broken their admirable partnership and delayed their second volume now published[1] must not be pleaded as an excuse for deferring study of their conclusions on the admitted need of reform War means extended hours in factories a quickened industrial tempo, more fatigue less experienced workers (some of them long unemployed) new machinery, processes and materials involving unknown risks of accident and injury These conditions are in part familiar in times of prosperity, war adds personal anxieties, air-raid dangers and the inconvenience of the blackout

After leading them in industry, Britain has lagged behind other countries in her scheme of industrial compensation Distrusting bureaucracy we have refused to contemplate large-scale official administration We leave this great social activity to the private enterprise of the insurance companies and to the judicial impartiality of the county courts. The courts are swift and their proceedings are reported but there is a lack of uniformity, a settlement passed by the judge or registrar of one court would be rejected it is said by that of another Hence the demand for a Workmen's Compensation Commissioner Afraid of interfering with the individual control of business we have not even insisted upon compulsory insurance of employers (except in mining) though we now insist upon it for motorists We hesitate to create a "State monopoly" of occupational insurance because it would be so costly, yet an insurance company pays out only 60 per cent of its earned premiums in awards to incapacitated workmen about 9 per cent being consumed in commissions and 32 per cent in management expenses What would we say if a banker, taking our money on deposit, informed us that about 40 per cent of it would be absorbed by expenses? The companies do not concern themselves with accident prevention The insured employer has no incentive to diminish the risks The standard of safety is said to be highest in those great undertakings which carry their own insurance

Hesitating to fetter freedom of contract we have left the law too loose The all too attractive bait of the lump-sum agreement is dangled It looks like a nest-egg, but has a sting in its tail The injured man, be it recalled, can choose between three legal remedies First comes the common-law claim for damages, based on some breach of duty on the employer's part and complicated by the defence of "common employment" which eminent judges have called fantastic Next comes the Employer's Liability Act with its own special technicalities seldom used but still to be considered Lastly the Workmen's Compensation Act imposes liability irrespective of negligence by either side Its sweeping provisions were meant to simplify awards, but the notorious words "accident arising out of and in the course of the employment" have multiplied the litigation which the statute was to avert Faced with the choice of remedy, the workman may have no trade-union to advise him The insurance company will naturally seek a settlement which suits itself Last October the Master of the Rolls criticised "an act of the shabbiest description" discreditable to such companies' reputation for decent, humane and reasonable behaviour; he warned them not to take advantage of an injured man, nearly always a working man who might be suffering from shock, by putting before him a form when he had no-one near to advise him and then afterwards contending that because he had signed the form, he had precluded himself from making a more advantageous claim Does it pass the wit of man to substitute one foolproof remedy for the workman's triple choice and to develop our hospital services and other remedial facilities as part of a coördinated scheme of industrial compensation and State health insurance[2] We have no answer to the charge that the law of workmen's compensation fails to do anything for the medical care of the injured or unfit man for his physical or vocational rehabilitation and his reabsorption into industry We are backward in fracture clinics If the general practitioner cannot provide the best diagnosis and treatment of the man's injury in his own home, the general hospital may also fall short, moreover it seldom keeps the patient long enough Figures are offered to show that incapacity is far more prolonged, and permanent disablement far more likely, when the patient is not treated in a proper clinic This brings us to problems of staffing the appointments in surgery The Delevingne Committee report repeated somebody's blunt dictum that "there is no money in fractures" as far as surgical practice outside the hospital is concerned. If the fracture clinic is to be well organised, something must be done to offer the surgeon-in-charge a post which is pecuniarily attractive Mention of the medical referee raises other problems, there are the old doubts of his independence and of the value of the final decision of a single arbiter, especially if he sometimes appears as an expert witness in the court of an adjoining district Medical examination itself moreover, seems to cause the workman misgivings He goes before the insurance company's doctor like a plaintiff about to suffer cross-examination, the atmosphere is controversial, there are implied suspicions of malingering There is no certainty that he will be allowed to have his own doctor present He will inevitably dislike examination by a doctor known to have given evidence to the disadvantage of other injured workmen As for the place of the examination will it be his own home or his own doctor's consulting-room or will it be a solicitor's office?

These may be small points compared with so fundamental a matter as our failure to furnish continuity and uniformity of treatment from first aid to rehabilitation, but if we want the blessings of industrial peace and a contented society, we must remove the sense of injustice And for this purpose there can be no better preparation than a study of this new work by SIR ARNOLD WILSON and Professor LEVY WILSON'S courage of thought (as conspicuous

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[1] Workmen's Compensation vol II (Need for Reform) Sir Arnold Wilson M P and Prof Hermann Levy London Humphrey Milford Oxford University Press. Pp 363 18s

Progesterone can also be regarded as antagonistic to the follicular hormone In my cases no effect of progesterone on the cancer cells was observed Progesterone acts quicker when given by mouth than when implanted, and as it was only applied in hopeless cases no definite conclusions should be drawn, but it might be worth trying it in still more massive doses in cases which—like my cases 1, 2 and 3—are free from cancer at the time of treatment

Incomplete as this series is, I hope it may encourage others to try out the idea and perhaps to implant testosterone or progesterone in cases of breast cancer at the time when the radical operation is performed It may be implanted in the tissues of the operated breast whether postoperative X-ray treatment is given or not, and the implant should be repeated as soon as the signs of masculinisation disappear The effect of testosterone is always temporary, and may be compared with a temporary sterilisation, which in contrast to X rays acts on every tissue of the cancerous body instead of locally I suggest that testosterone propionate, 700 mg, should be injected over two months I have called this the hormone atrophy dose (H A D) for the endometrium, since it temporarily sterilises any healthy woman and makes the endometrium atrophic (Loeser 1940) It is better to implant testosterone propionate, 500 mg, than to inject 700 mg, since the implant has a more lasting effect

SUMMARY

On the assumption that excess of œstrogenic substance is a factor in producing cancer of the breast, an attempt was made to counteract this effect by implanting male hormone

In mice of a strain showing a very high incidence of breast cancer testosterone propionate was implanted subcutaneously in 10 every three to five weeks while 12 acted as controls Implantation was not begun until the mice had had three litters In the treated group 4 and in the controls group 9 died of cancer

In 6 women with a family history of breast cancer who had had their breasts amputated for carcinoma, testosterone propionate or progesterone or both were repeatedly implanted and in 2 progesteral was also given by mouth In 3, recurrences were present at the time of implantation, and though 2 of these improved temporarily in general health, the progress of the cancer was not checked In 3 no recurrences or metastases were present at the time of implantation, and none has appeared in the subsequent five years

It is suggested that male hormone should be implanted in the operation site when the breast is removed for carcinoma, and implantation should be repeated when signs of masculinisation disappear

I wish to thank Prof J B S Haldane for allowing me to work in the Department of Biometry at University College, London, Dr H Gruneberg and Dr P A Gorer for giving me advice on breeding mice, Miss M Watson my assistant and the Schering Corporation of New York and Organon Laboratories for supplying testosterone and progesterone tablets

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Reviews of Books

Lipidoses Diseases of the Cellular Lipid Metabolism

SIEGFRIED T THANNHAUSER, M D, Ph D, formerly professor of medicine, University Clinic, Freiburg, associate professor of medicine, Tufts College medical school London Humphrey Milford, Oxford University Press Pp 370 30*s*

MOST of our knowledge of this group of metabolic disorders has accumulated during the last twenty years, a period covered by Professor Thannhauser's contribution of the section on lipoid diseases to the "Oxford Loose-Leaf Medicine" The publication in book form of this monograph by one who has contributed so much to this particular branch of medicine will be welcomed by all interested in the lipoidoses The volume, which is well edited by Prof H A Christian of Harvard, is abundantly illustrated and embodies full records of cases observed by the author Appropriately enough, the section on xanthomatosis occupies most of the book, it embraces 12 primary types divided into hypercholesteræmic and normocholesteræmic groups, and 8 other types Gaucher's disease and Niemann-Pick's disease are fully considered in separate sections

The author has no doubt that the primary lipoidoses are manifestations of abnormal intracellular metabolism in the reticular and histiocytic cells of the organism, supporting this concept with convincing biochemical and experimental evidence He regards an imbalance of intracellular lipoidases as the fundamental disturbance The research worker will reap a rich harvest from the 1076 references which are conveniently arranged at the end of each section

Parenthood Design or Accident?

(4th ed) MICHAEL FIELDING London Williams and Norgate Pp 259 2*s* 6*d*

THIS excellent little book on birth control and related problems needs no introduction either to the medical profession or to the public In this edition recent research work on spermicides is included, the description of the technique of well-established and desirable methods has been rewritten in the light of modern experience, dangerous, ineffective, emergency and experimental methods are fully discussed, so also is the safe period It would be difficult to find a more lucid and concise description, or a more helpful evaluation, of this much publicised method of family *limitation* The sections on the sociological, ethical and legal aspects of contraception remain materially unchanged The appendices include lists of birth-control clinics in the United Kingdom and of approved and reputable appliances and chemicals There is also a short bibliography, glossary and index

Arthritis and Allied Conditions

(2nd ed) BERNARD I COMROE, M D, F A C P London Henry Kimpton Pp 878 42*s*

THIS is a large book but not too large, for arthritis and various conditions loosely termed rheumatic occupy a considerable part of medical practice here as well as in Philadelphia In fact Dr Comroe often compresses the result of much study (there are references to over two thousand original papers) into a small space General practitioners, as well as physicians especially interested in chronic rheumatism, will find much to interest them and to help them in their choice of therapy, though they will probably use the book more for reference than for light reading on dark evenings The illustrations are good and more profuse than in the first edition, while new chapters have been added and many old ones rewritten Curiously, the paging of the sections of each chapter is given in the table of contents, not the paging of the chapters themselves, but the index is full

Out of the Test Tube

(3rd ed) HARRY N HOLMES, Ph D New York Emerson Books Inc Pp 305 $3

FEW of us without special knowledge of the subject ever pause to consider the material benefits conferred by chemistry upon mankind In his expanded and revised edition Dr Holmes gives a vigorous account of what the chemist, working in divers spheres, has done, is doing and will do for us Our food, tools and clothing, our medicines, means of transport and weapons of war are only a few of the accepted accompaniments of modern life which are profoundly influenced by chemistry It is depressing to reflect on how high explosive has been largely diverted from its proper purpose of quarrying rock and so liberating slave-labour, or to realise that profit-making rather than philanthropy has been a prime motive of chemical research But we shall change all that in the brave new world after the war

THE LANCET

LONDON SATURDAY, DECEMBER 6, 1941

EGG OR SCORPION?

EARLY in 1939 Sir ARNOLD WILSON and Prof HERMANN LEVY published their first volume on our law of workmen's compensation, surveying the historical origins, Parliamentary debates and departmental inquiries The war, which has broken their admirable partnership and delayed their second volume, now published [1] must not be pleaded as an excuse for deferring study of their conclusions on the admitted need of reform War means extended hours in factories, a quickened industrial tempo more fatigue, less experienced workers (some of them long unemployed), new machinery, processes and materials involving unknown risks of accident and injury These conditions are in part familiar in times of prosperity, war adds personal anxieties, air-raid dangers and the inconvenience of the blackout

After leading them in industry, Britain has lagged behind other countries in her scheme of industrial compensation Distrusting bureaucracy, we have refused to contemplate large-scale official administration We leave this great social activity to the private enterprise of the insurance companies and to the judicial impartiality of the county courts. The courts are swift and their proceedings are reported but there is a lack of uniformity, a settlement passed by the judge or registrar of one court would be rejected, it is said by that of another Hence the demand for a Workmen's Compensation Commissioner Afraid of interfering with the individual control of business, we have not even insisted upon compulsory insurance of employers (except in mining) though we now insist upon it for motorists We hesitate to create a "State monopoly" of occupational insurance because it would be so costly, yet an insurance company pays out only 60 per cent of its earned premiums in awards to incapacitated workmen about 9 per cent being consumed in commissions and 32 per cent in management expenses What would we say if a banker, taking our money on deposit, informed us that about 40 per cent of it would be absorbed by expenses? The companies do not concern themselves with accident prevention The insured employer has no incentive to diminish the risks The standard of safety is said to be highest in those great undertakings which carry their own insurance

Hesitating to fetter freedom of contract we have left the law too loose The all too attractive bait of the lump-sum agreement is dangled It looks like a nest-egg, but has a sting in its tail The injured man, be it recalled, can choose between three legal remedies First comes the common-law claim for damages, based on some breach of duty on the employer's part and complicated by the defence of "common employment" which eminent judges have called fantastic Next comes the Employer's Liability Act with its own special technicalities seldom used but still to be considered Lastly the Workmen's Compensation Act imposes liability irrespective of negligence by either side Its sweeping provisions were meant to simplify awards, but the notorious words "accident arising out of and in the course of the employment" have multiplied the litigation which the statute was to avert Faced with the choice of remedy, the workman may have no trade-union to advise him The insurance company will naturally seek a settlement which suits itself Last October the Master of the Rolls criticised "an act of the shabbiest description" discreditable to such companies' reputation for decent, humane and reasonable behaviour, he warned them not to take advantage of an injured man, nearly always a working man who might be suffering from shock, by putting before him a form when he had no-one near to advise him and then afterwards contending that because he had signed the form, he had precluded himself from making a more advantageous claim Does it pass the wit of man to substitute one foolproof remedy for the workman's triple choice and to develop our hospital services and other remedial facilities as part of a coordinated scheme of industrial compensation and State health insurance? We have no answer to the charge that the law of workmen's compensation fails to do anything for the medical care of the injured or unfit man for his physical or vocational rehabilitation and his reabsorption into industry We are backward in fracture clinics If the general practitioner cannot provide the best diagnosis and treatment of the man's injury in his own home the general hospital may also fall short, moreover it seldom keeps the patient long enough Figures are offered to show that incapacity is far more prolonged and permanent disablement far more likely when the patient is not treated in a proper clinic This brings us to problems of staffing the appointments in surgery. The Delevingne Committee report repeated somebody's blunt dictum that "there is no money in fractures" as far as surgical practice outside the hospital is concerned If the fracture clinic is to be well organised, something must be done to offer the surgeon-in-charge a post which is pecuniarily attractive Mention of the medical referee raises other problems, there are the old doubts of his independence and of the value of the final decision of a single arbiter, especially if he sometimes appears as an expert witness in the court of an adjoining district Medical examination itself, moreover, seems to cause the workman misgivings He goes before the insurance company's doctor like a plaintiff about to suffer cross-examination, the atmosphere is controversial, there are implied suspicions of malingering There is no certainty that he will be allowed to have his own doctor present He will inevitably dislike examination by a doctor known to have given evidence to the disadvantage of other injured workmen As for the place of the examination will it be his own home or his own doctor's consulting-room or will it be a solicitor's office?

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NEW DRUGS IN PROTOZOAL INFECTIONS

In 1935 some continental workers recorded that the drug Synthalin (decamethylene-guanidine dihydrochloride) exerted a slight therapeutic action on certain pathogenic trypanosomes in mice They ascribed this action to hypoglycæmia produced by the drug, an adequate supply of sugar being essential to the metabolism of trypanosomes, and not to a direct action of the compound on the parasites Warrington Yorke and his collaborators thought that a degree of hypoglycæmia sufficient to affect the trypanosomal infections would be incompatible with the life of the host, and decided to investigate the subject further They found that, in vitro, synthalin exerted a direct and powerful trypanocidal action, a dilution of only 1 in 100 million destroying all the trypanosomes in a suspension of nutrient medium within 24 hours at 37° C They further found that the degree of hypoglycæmia produced in the normal animal by synthalin in therapeutic dosage is not pronounced The discovery that synthalin has a direct lethal action on certain trypanosomes opened up a wide field of biological and chemical investigation into the chemotherapeutic value of drugs of this and allied series in protozoal infections of man and of animals This inquiry was followed by the preparation and trial of many compounds, of which three, produced by Ewins of May and Baker Ltd, have been shown by Yorke and his co-workers to possess considerable therapeutic promise These are all diamidine compounds and are diamidinostilbene, diamidinodiphenoxypentane and diamidinodiphenoxypropane Cases of human sleeping sickness, of human visceral leishmaniasis and of babesiasis in domesticated animals have now been successfully treated with these compounds, and information is being accumulated that not only are these drugs therapeutically active in such conditions but that in some of them they are superior to any remedy hitherto employed This is more particularly the case in the Mediterranean and Sudan forms of visceral leishmaniasis, or kala azar, conditions with a very high mortality which are notoriously resistant to the antimony treatments normally effective in the Indian form of the disease

Some figures collected by Stephenson,[1] showing the results of antimony treatment of cases of Sudan leishmaniasis, with others collected by Kirk and Sati,[2] showing those of treatment with the diamidines, illustrate this point Stephenson saw 73 cases of Sudan leishmaniasis between the end of 1937 and the middle of 1939 Of these, 19 were admitted moribund and died before treatment could be begun Of the remaining 54 cases, 25 died in hospital and 22 were discharged as presumably cured, but 11 of these subsequently died Another 7 left hospital before completion of treatment and 6 of these later died The standard treatment was a course of 4 8 g Neostibosan, followed by a full course of tartar emetic, and in some cases by further courses of these drugs or of Anthiomaline The total result was that of 54 cases treated only 12 were alive in January, 1940 Kirk and Sati treated 49 cases of Sudan leishmaniasis with the diamidines, of whom 8 died Of these 8, 5 were moribund on admission, and 1, when progressing well, broke out of hospital on a debauch and died within 48 hours Of the 43 cases which completed treatment 41 (95%) were provisionally regarded as cured These results compare most favourably with those obtained with the antimonials Cases treated by other workers in Palestine and elsewhere, both of the Indian and of the Mediterranean forms of kala azar, show that the diamidines may effect a cure where antimony has previously been given and proved ineffective In Africa these drugs are being tested on cases of human trypanosomiasis and have been found rapidly to produce sterilisation of the peripheral blood, early cases, as a result, are cured by them So far there is inadequate information as to their effect on late cases with involvement of the central nervous system In the veterinary field the diamidines have shown much promise in the treatment of the various forms of babesiasis, a condition responsible for great economic loss among dogs and domestic stock The diamidines may be given to man in doses ranging from 0 5 to 2 mg per kg body-weight, either intravenously or intramuscularly Owing to their greater solubility, diamidinodiphenoxypropane and diamidinodiphenoxypentane are more suitable for intramuscular injection than is the less soluble diamidinostilbene The drugs may be given daily or on alternate days until 30, or even 60 or 90, injections have been administered No serious accidents have so far been recorded, although certain immediate effects lasting about half an hour occur owing to a dramatic fall in blood-pressure These are more pronounced when the intravenous route is employed, and vary from headache and dizziness with a rapid pulse, sweating and retching with occasional vomiting, to alarming symptoms in a small number of cases, where there may be syncopal-attacks with temporary unconsciousness These symptoms are all transient and last but a short time, and no permanent after effects have been observed

THERAPEUTIC RESEARCH LIMITED

Freedom and opportunity, as Sir Henry Dale reminded the Royal Society on Monday, provide the conditions for the highest type of research The quality of research is in fact determined by the character of those engaged in it and not by organisation or by the source of endowment Stated thus the proposition sounds self-evident Yet there is no denying the justice of the reproach made by the promoters of the new Therapeutic Research Corporation[1] that there has existed in the past a diffidence on the part of some academic research workers in this country to ally themselves wholeheartedly with the researches of industrial firms, or the rightness of the corporation's aim to establish closer liaison between industry and the research laboratories of the universities It is only a couple of months ago that we remarked in these columns "If ever there was a case for open and full cooperation here is one." Moreover the die was cast when in January, 1937, two medical men holding important academic positions became trustees under Sir Henry Wellcome's will for the allocation to medical research of the profits of a great manufacturing and trading organisation. The new approach is less surprising when one reflects that the research staffs of the most individualistic concerns have fraternised freely in the past. Knowledge has an instinctive urge to companionship and the most jealously guarded secrets have been those with nothing substantial to conceal. There is a little more to it than a common research pool. Five laboratories—and there is nothing to prevent others coming in—with highly trained staff and elaborate equipment will now be able to concentrate on the solution of any new problem. And, perhaps the best feature of all, any new drug which may be discovered will not be monopolised by one member of the corporation. This will facilitate the known intention of the Medical Research Council to undertake chemotherapeutic research on a much larger scale in the future. Clearly there is no room here for the relaxation of the rigid standards of true science in favour of policy or propaganda which the President of the Royal Society regards as a danger to be foreseen and resisted.

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[1] Stephenson R W *Ann trop Med Parasit* 1940, 34, 175

[2] Kirk, R and Sati, M H *Ibid*, pp 83, 181

[1] The constitution and object of the corporation were stated on p 11 of our advertisement columns last week

CADMIUM POISONING

If we know cadmium at all most of us would recall its brilliant sulphide, which as Cadmium Yellow is familiar in the paint-box and was thrown down by H_2S from acid solution in our analytical tables. It occurs in nature as the sulphide in association with zinc ores, chiefly in Scotland (as "greenockite"), in Czechoslovakia and in Pennsylvania. It is a bluish-white metal which takes a high polish, and can easily be deposited electrolytically from a cyanide bath. Lately it has come to be increasingly used for plating in place of silver, nickel and chromium, and it is this that has led to trouble. There have been instances of poisoning from the inhalation of dust containing cadmium in zinc works, but most of the recorded cases have arisen from the unwise use of cadmium-plated vessels containing foodstuffs, because cadmium is readily corroded by acetic, tartaric, citric and lactic acids and therefore by foodstuffs containing vinegar, fruit acids and the like.

On another page Dr A T W Powell recalls eight cases of poisoning resulting from the preparation of "lemonade" ices in refrigerator trays replated with cadmium. In his report for 1935 the Chief Medical Officer of the Ministry of Health recorded the poisoning of three people by cadmium falling into their food from the reflector of an electric cooker. Dr Powell also draws attention to 208 cases of cadmium poisoning reported in the U S Navy,[1] where foodstuffs had been in contact with cadmium-plated utensils for 1½–14 hours. It was found there that anything over 15 parts per million of cadmium might produce symptoms of poisoning, and some of the navy men had drunk lemonade containing 100 p p m. A few months ago Frant and Kleeman[2] reported five outbreaks in the United States, involving some 50 people in all. One of these, in which at least 29 school-children were affected, was traced to cadmium contamination of popsicles—flavoured ices frozen on a stick. Here too the popsicle moulds had been replated with cadmium. In these cases the symptoms are those with which the wise student defeats his examiner when asked for the symptoms of irritant poisoning—vomiting, diarrhœa, abdominal pain, and the symptoms and signs of dehydration—and the violent evacuation seems to prove effective, for fatal cases are rare. In the popsicle epidemic all the children recovered completely in 5–6 hours. Cases due to inhalation are less common but may be more deadly. In 1858 Sovet[3] reported poisoning in three domestic servants who inhaled the dust when polishing silver with cadmium carbonate. Here the symptoms were collapse, cramps in the legs, headache, a feeling of constriction in the throat, continuous vomiting, and blood-stained diarrhœa with colic. One of the three also developed pneumonia and nearly died. Sir Thomas Legge, in his factory report for 1923 (p 74), reported poisoning in an engineer and two workmen who inhaled fumes while melting down ingots of cadmium in an ill-ventilated factory. The engineer died, and the autopsy showed congestion of the larynx, trachea, bronchi, stomach and intestine, with fatty infiltration of the heart and liver, and congestion of the spleen and kidneys. Curiously enough, chemical analysis of the viscera revealed no trace of cadmium. Chronic poisoning has been extensively studied in animals, but seems to be rare in man. Stephens,[4] however, has reported 9 cases of chronic poisoning. One was an elderly zinc smelter who had received compensation for plumbism, but at autopsy he was found to have chronic interstitial nephritis and cardiac hypertrophy, and his liver contained nearly a grain of cadmium to the pound. It seems, therefore, that despite the severity of the local action on the stomach, a certain amount of cadmium may gain access to the body tissues.

In the factory where ores containing cadmium are smelted, or wherever dust or fumes of cadmium may be in the air, prevention must depend on adequate ventilation, supported when necessary by masks. But for the commoner danger prophylaxis is simpler: cadmium plating, however desirable it may be for motor-car parts, must not be used for utensils which may come in contact with foodstuffs.

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[1] Quoted from *U.S Naval Medical Bulletin* in *Chem Age, Lond* Nov 15, 1941 p 259

[2] Frant, S and Kleeman, I *J Amer med Ass* 1941, 117, 866

[3] *Pr méd Belge*, 1858, 10, 69

[4] Stephens, G A *J industr Hyg* 1920–21, 2, 129

Post-war Hospital Policy.—Replying to Captain Elliston's question in the House of Commons on Dec 2, Miss Horsbrugh gave the following terms of reference for the survey of London hospitals:

To survey the hospitals (other than mental hospitals and mental deficiency institutions) in London and the surrounding area, and having regard to the information thus obtained, and to the general principles of post-war hospital policy laid down by the Minister of Health in the House of Commons on Oct 9, to advise the Minister what area would appropriately be served by a hospital system centred on London, and what modifications or extensions of the existing hospital facilities would be necessary or desirable to give effect to that policy.

Dr A M H Gray and Dr A Topping are to make the survey and have already started on the preliminary work.

as the physical gallantry with which he met his death), his gift of handling the statistics which in this subject are none too adequate, his industry and his astounding facility of quotation are here exemplified Linked, not for the first time, with the solid abilities of the collaborator who survives him, they add one more to the series of reports which, like those of CHADWICK in the field of poor law and public health a century ago, compel social reform

NEW DRUGS IN PROTOZOAL INFECTIONS

IN 1935 some continental workers recorded that the drug Synthalin (decamethylene-guanidine dihydrochloride) exerted a slight therapeutic action on certain pathogenic trypanosomes in mice They ascribed this action to hypoglycæmia produced by the drug, an adequate supply of sugar being essential to the metabolism of trypanosomes, and not to a direct action of the compound on the parasites WARRINGTON YORKE and his collaborators thought that a degree of hypoglycæmia sufficient to affect the trypanosomal infections would be incompatible with the life of the host, and decided to investigate the subject further They found that, in vitro, synthalin exerted a direct and powerful trypanocidal action, a dilution of only 1 in 100 million destroying all the trypanosomes in a suspension of nutrient medium within 24 hours at 37° C They further found that the degree of hypoglycæmia produced in the normal animal by synthalin in therapeutic dosage is not pronounced The discovery that synthalin has a direct lethal action on certain trypanosomes opened up a wide field of biological and chemical investigation into the chemotherapeutic value of drugs of this and allied series in protozoal infections of man and of animals This inquiry was followed by the preparation and trial of many compounds, of which three, produced by EWINS of May and Baker Ltd, have been shown by YORKE and his co-workers to possess considerable therapeutic promise These are all diamidine compounds and are diamidinostilbene, diamidinodiphenoxypentane and diamidinodiphenoxypropane Cases of human sleeping sickness, of human visceral leishmaniasis and of babesiasis in domesticated animals have now been successfully treated with these compounds, and information is being accumulated that not only are these drugs therapeutically active in such conditions but that in some of them they are superior to any remedy hitherto employed This is more particularly the case in the Mediterranean and Sudan forms of visceral leishmaniasis, or kala azar, conditions with a very high mortality which are notoriously resistant to the antimony treatments normally effective in the Indian form of the disease

Some figures collected by STEPHENSON,[1] showing the results of antimony treatment of cases of Sudan leishmaniasis, with others collected by KIRK and SATI,[2] showing those of treatment with the diamidines, illustrate this point STEPHENSON saw 73 cases of Sudan leishmaniasis between the end of 1937 and the middle of 1939 Of these, 19 were admitted moribund and died before treatment could be begun Of the remaining 54 cases, 25 died in hospital and 22 were discharged as presumably cured, but 11 of these subsequently died Another 7 left hospital before completion of treatment and 6 of these later d The standard treatment was a course of 4 8 g Neost bosan, followed by a full course of tartar emetic, in some cases by further courses of these drugs or Anthiomaline The total result was that of 54 treated only 12 were alive in January, 1940 and SATI treated 49 cases of Sudan leishmaniasis with the diamidines, of whom 8 died Of these 8, 5 were moribund on admission, and 1, when progressing well broke out of hospital on a debauch and died within 48 hours Of the 43 cases which completed treatment 41 (95%) were provisionally regarded as cured These results compare most favourably with those obtained with the antimonials Cases treated by other workers in Palestine and elsewhere, both of the Indian and of the Mediterranean forms of kala azar show that the diamidines may effect a cure where antimony has previously been given and proved ineffective In Africa these drugs are being tested on cases of human trypanosomiasis and have been found rapidly to produce sterilisation of the peripheral blood, early cases, as a result, are cured by them So far there is inadequate information as to their effect on late cases with involvement of the central nervous system In the veterinary field the diamidines have shown much promise in the treatment of the various forms of babesiasis, a condition responsible for great economic loss among dogs and domestic stock The diamidines may be given to man in doses ranging from 0 5 to 2 mg per kg body-weight, either intravenously or intramuscularly Owing to their greater solubility, diamidinodiphenoxypropane and diamidinodiphenoxypentane are more suitable for intramuscular injection than is the less soluble diamidinostilbene The drugs may be given daily or on alternate days until 30, or even 60 or 90, injections have been administered No serious accidents have so far been recorded, although certain immediate effects lasting about half an hour occur owing to a dramatic fall in blood-pressure These are more pronounced when the intravenous route is employed, and vary from headache and dizziness with a rapid pulse, sweating and retching with occasional vomiting, to alarming symptoms in a small number of cases, where there may be syncopal attacks with temporary unconsciousness These symptoms are all transient and last but a short time, and no permanent after effects have been observed

THERAPEUTIC RESEARCH LIMITED

FREEDOM and opportunity, as SIR HENRY DALE reminded the Royal Society on Monday, provide the conditions for the highest type of research The quality of research is in fact determined by the character of those engaged in it and not by organisation or by the source of endowment Stated thus the proposition sounds self-evident Yet there is no denying the justice of the reproach made by the promoters of the new Therapeutic Research Corporation[1] that there has existed in the past a diffidence on the part of some academic research workers in this country to ally themselves wholeheartedly with the researches of industrial firms, or the rightness of the corporation's aim to establish closer liaison between industry and the research laboratories of the universities It is only a couple of months ago that we remarked in no doubt however that urine does pass into the tissues at the same time, since Kidd[1] showed that the fluid drained from the infiltrated tissues contained urea Wesson[2] successfully reproduced the clinical mode of spread of the condition experimentally by injecting coloured fluid through the urethra into the superficial perineal pouch in cadavers, and more recently Finestone,[3] in an attempt to confirm the hydrostatic theory, has carried out a series of rather similar experiments in which the spread of the injected solution (sodium iodide) was checked by serial radiograms as well as by dissection He was able to reproduce the clinical spread of extravasation only in the superficial perineal pouch and over the scrotum, the injection failing to pass up over the anterior abdominal wall or to involve the penis He suggests that this failure was due to lack of tone in the scrotum of the cadaver and to the absence of the inflammatory element In several instances the bulb of the urethra was accidentally pierced by the needle and the vascular tree injected The ease with which this occurred suggested that the importance of the vascular arrangement in this region has not been sufficiently considered in previous conceptions of the pathology of urinary extravasation Whether inflammatory or not, the disease process in its spread from the urethra must involve the corpus spongiosum with resulting thrombophlebitis This would account for the severity of the general symptoms, which are particularly serious in those patients who continue to pass water naturally, since the contraction of the bulbo cavernosus with each act of voiding helps to spread the inflammation This affords a sound argument for the diversion of the urinary stream, particularly in such cases In summarising, Finestone tries to correlate the evidence in favour of the two theories of urinary extravasation, but does not make it clear to which view he adheres himself His experiments confirm rather than exclude the importance of the infective element

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[1] Stephenson, R W *Ann trop Med Parasit* 1940, 34, 175

[2] Kirk, R and Sati, M H *Ibid*, pp 83, 181

[1] The constitution and object of the corporation were stated on p 11 of our advertisement columns last week

DEVELOPMENT OF MITRAL STENOSIS

It has apparently been accepted without question that mitral deformity takes place slowly Had there not been much truth in the tradition it would have been questioned long ere this, but Glazebrook and Scott Thomson[4] of Edinburgh have questioned it now They report 5 cases of rheumatic fever, in 3 of which physical signs of mitral stenosis appeared within sixty days of the onset of the illness, while in the remaining 2 physical signs of aortic incompetence appeared within twenty days and disappeared after persisting for two months and seven months respectively This last observation is scarcely unexpected, but the evidence in favour of their first observation is by no means complete None of their 3 patients gave any history of previous rheumatic infection but one was aged 16 and two 15 , the mere fact that signs of mitral stenosis developed, or were detected, during the illness reported suggests strongly that there had been a previous attack, especially in view of the statement that typical radiological signs of mitral stenosis were observed by the fourth and ninth weeks of the illness The authors of the paper argue that because the subcutaneous rheumatic nodule goes through the stages of inflammation and repair with scarring in the space of a few weeks the same time interval probably applies to a similar lesion on a heart valve , but conditions in a heart valve differ considerably from those in the subcutaneous tissues It is well known that during the febrile stage of rheumatic fever a soft presystolic murmur is occasionally heard at the apex, presumably from dilatation of the mitral ring, the consequent tautness of the chordæ tendineæ producing a relative stenosis of the mitral valve, but this murmur nearly always disappears as the acute stage of the illness subsides, and presumably the presystolic murmur detected by the Edinburgh observers was not of this type That the valvular changes in rheumatic fever may occasionally result in stenosis within a comparatively short time is undoubtedly true , but Linnell and Thomson[5] put the time limit at six months, which probably represents the consensus of clinical opinion on the subject The Edinburgh findings are interesting, but until more evidence is available most clinicians will continue to work on the assumption that the development of a characteristic apical rumbling diastolic murmur during an attack of rheumatic fever points to a previous attack

THE LITTLE MORE

Lord Woolton is justly proud that today our food is more evenly distributed than ever before But though everyone is getting an adequate ration there is not much margin, and fads or dislikes may upset the balance of a finely adjusted diet Many of us have to manage without some of the semi essential luxuries to which we were accustomed, and especially among children an anxious watch is being kept for signs of deficiency diseases In his presidential address to the Society of Medical Officers of Health on Nov 21, Sir Alexander Macgregor told how a survey of the records of over 20,000 children under two years of age visited by the Glasgow health visitors during the first three months of 1939 and 1941 showed that under war-time conditions the incidence of rickets for the city as a whole had fallen, but that there was a fractional increase of mild rickets in some of the poorer localities At Great Ormond Street Dr Paterson and Dr Daynes[6] have reported 8 cases of scurvy among some 6500 patients treated up to the beginning of October this year as against 2 cases among 10,000 patients last year These are perhaps examples of vigilance rather than disease but they show that the Government's proposed free distribution of fruit juice and cod-liver oil to infants is a wise precaution Though our health is so good nutritionists are still prepared to take a benevolent interest in us The L C C and other authorities have received supplies of vitamins from America to carry out controlled experiments on their school-children But in war-time the exact goal of research must depend on the data we can obtain, and it is better to leave our destination vague until we know something of the land we are exploring and the condition of the roads on which we will travel

TREATMENT OF THE MENOPAUSE

The increasing popularity of stilbœstrol in the alleviation of menopausal symptoms has perhaps tended to an enthusiastic misapplication of this drug While most writers speak favourably of their results from this therapy, there are a few voices raised in protest and condemnation Stilbœstrol is so cheap and simple to take, and its results in many cases are so dramatic, that it is only natural for practitioners to prescribe this drug to any woman whose symptoms of whatever nature are reasonably referable to her climacteric There are, however, certain indications and contra-indications that should be more fully defined and more widely appreciated The use of stilbœstrol is primarily therapy by substitution, the deficient hormone being, in the case of the menopausal patient, the naturally occurring œstrin If we are to prescribe stilbœstrol reasonably and effectively it behoves us to define which, if any, of her symptoms are due to this œstrin deficiency The symptoms of the menopause may be, broadly speaking, divided up into groups amenorrhœa, vasomotor or circulatory symptoms (such as hot flushes, tachycardia, palpitation), dyspnœa, vertigo, cold hands and feet, numbness and tingling , nervous mani-

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Annotations

ECONOMISE NOW

As the inexorable economic war gains momentum, it is not surprising that produce other than food is coming more and more under the surveillance of Government departments. The man in the street is well aware of the shortage of supplies in many pharmaceutical requirements such as dusting powders, ointments and liquid paraffin. The physician too is beginning to feel that the war is cramping his style as a prescriber, but restriction of supply has served to show how difficult it is to abandon or even modify the prescribing habits of a lifetime; in fact, many recipes have become reflexes. Nevertheless, if we are to avoid the nightmare of actual rationing of drugs, we must wake up to the fact that we must economise now. Happily, when we set out to produce a particular therapeutic action there are often several ways of achieving the desired result; and when we have to choose a preparation of a drug, a great deal of latitude is permissible without significantly altering the pharmacological action. Thus there is plenty of scope for economy in prescribing; and the matter rarely involves sacrifice by anybody, though it needs forethought by the doctor. Just now the common drugs which must be used sparingly are aspirin and phenacetin, alcohol, glycerin, glucose, mercury and liquid paraffin, and unless the non-essential uses of these are curtailed those whose health really depends on them will have to go short. Even where one of them is certainly needed we must avoid ordering 8 oz. when 6 oz. will do, and the direction on the aspirin should read "Take one, and repeat if necessary," not "Take two." Before prescribing any drug, the practitioner might well ask himself two questions. First, is the substance chemically similar to any foodstuff or material which is now rationed? And secondly, does the drug come from abroad? Liniments are half-cousins to the salad dressings of happier days; ointments should be regarded with the respect we pay to the butter ration; and the recollection that glycerin is an alcohol should inspire that conservatism which evokes from the canny host an agonised "say when!" It is often forgotten that malt is primarily an emulsifying agent, and we are apt to credit it with almost mystical nutritional qualities which it certainly does not possess. War babies will be found most accommodating in swallowing cod-liver oil neat instead of malt and oil; and the substitution of vitaminised (arachis) oil should always be considered when prescribing vitamin D for children. The conservation of drugs coming from abroad presents a different problem, but experience suggests that it should not be insoluble. No one will doubt our desire to assist the Government in its economy campaign, and when the doctor errs it is usually because there is nothing to remind him of the need for caution. These are conditions which lend themselves to the use of propaganda. We are no less susceptible than the lay public to suggestion and reiteration. Eye-witness accounts of the hardships our merchant seamen undergo in order to bring essential supplies to this country are occasionally broadcast by the B.B.C. In addition to their dramatic value, these vivid descriptions of superb acts of heroism on oil tankers make every one of us think twice before using petrol unnecessarily. What is true of fuel is also true of many drugs. How can the fact be brought home to the busy practitioner? Thumbnail pictures by a Bernard Partridge or a Matania providing graphic records of these sagas of the seas might be stuck on bottles and containers used for many of the drugs in classes B and C. The greater the variety of pictorial labels the more sustained would be the interest of both doctor and patient. Furthermore the scheme could easily be extended to the use of labels which would indicate the country's approval of the physicians' choice of drugs. These pictorial reminders would undoubtedly stimulate the interest of the profession in the Therapeutic Requirements Committee's classification of drugs—an interest which will otherwise be difficult to arouse. The method is unconventional, but some sacrifice of the conventions is unavoidable if we are to cope successfully with a problem which is demanding the immediate attention of every registered medical practitioner.

QUESTIONABLE LIPOIDOSES

The publication of a work on the lipoidoses by Thannhauser (reviewed on p. 700) will raise recent controversies anew. Within the last few years Tay Sachs's disease and chondrolipodystrophy (gargoylism) have been added to the list of lipoidoses, yet Thannhauser has excluded both from his monograph. Either he does not regard these conditions as lipoid disorders, or else he considers their status to be still undecided. A discussion, by one who has contributed so much in this field of medical research, of the relationship of these two diseases to the lipoidoses of known causation would have been extremely welcome; for in the better-known lipoid disorders the nature of the biochemical disturbance has been elucidated and the character of the excessive lipoid demonstrated. Xanthomatosis, embracing many clinical types including the Schüller-Christian syndrome, is a cholesterosis; Gaucher's disease, a cerebrosidosis in which there is an accumulation of kerosin; and Niemann Pick's disease, a sphingo-myelinosis. Thannhauser emphasises the modern conception that the fundamental disturbance in the lipoidoses is an imbalance of intracellular lipoidases in the reticulo-endothelial system. In Tay-Sachs's disease and chondrolipodystrophy (gargoylism) the nature of the lipoid error is unknown. The rarity of these conditions, and the difficulty of obtaining post mortem material which has been suitably fixed for biochemical analysis and lipoid staining, are the principal causes of the failure to elucidate the precise nature of the metabolic disturbance in them; but it would seem unjustifiable to exclude these diseases from the category of lipoid disorders on this account, since they have many clinical and pathological features in common with the other lipoid diseases. Moreover, foam cells, the most characteristic feature of the lipoidoses, were demonstrated by Bielschowsky in the spleen in a case of Tay-Sachs's disease recorded by Brouwer[1], and widespread infiltration of the tissues with a heavy deposit of a lipoid substance was observed by Kressler and Aegerter[2] in a typical case of chondrolipodystrophy. Only further pathological and biochemical investigation can settle this vexed question to the satisfaction of everyone, and the fullest use should be made of every opportunity for doing so.

EXTRAVASATION OF URINE

The pathogenesis and mechanism of urinary extravasation have excited much comment in their time. Earlier observers believed that the urethra dilated behind an obstruction—nearly always a stricture—and gradually became attenuated until it suddenly gave way, usually while the patient was straining at micturition. This concept of the process was suggested by the frequent history of long standing obstruction followed by a feeling of "something giving way" and temporary relief; however, besides being open to other objections, it failed to explain the cases without organic obstruction where the patient continues to pass urine naturally. These are commoner than is generally imagined and probably constitute about 15% of all cases. The purely hydrostatic theory, although not completely discarded, has been largely superseded by the view that urinary extravasation is more of the nature of a severe cellulitis spreading from the urethra, associated in many instances with the presence of gas-forming anaerobic organisms. There is no doubt however that urine does pass into the tissues at the same time, since Kidd[1] showed that the fluid drained from the infiltrated tissues contained urea Wesson[2] successfully reproduced the clinical mode of spread of the condition experimentally by injecting coloured fluid through the urethra into the superficial perineal pouch in cadavers, and more recently Finestone,[3] in an attempt to confirm the hydrostatic theory, has carried out a series of rather similar experiments in which the spread of the injected solution (sodium iodide) was checked by serial radiograms as well as by dissection He was able to reproduce the clinical spread of extravasation only in the superficial perineal pouch and over the scrotum, the injection failing to pass up over the anterior abdominal wall or to involve the penis He suggests that this failure was due to lack of tone in the scrotum of the cadaver and to the absence of the inflammatory element In several instances the bulb of the urethra was accidentally pierced by the needle and the vascular tree injected The ease with which this occurred suggested that the importance of the vascular arrangement in this region has not been sufficiently considered in previous conceptions of the pathology of urinary extravasation Whether inflammatory or not, the disease process in its spread from the urethra must involve the corpus spongiosum with resulting thrombophlebitis This would account for the severity of the general symptoms, which are particularly serious in those patients who continue to pass water naturally, since the contraction of the bulbo-cavernosus with each act of voiding helps to spread the inflammation This affords a sound argument for the diversion of the urinary stream, particularly in such cases In summarising Finestone tries to correlate the evidence in favour of the two theories of urinary extravasation, but does not make it clear to which view he adheres himself His experiments confirm rather than exclude the importance of the infective element

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Special Articles

BUILDERS MUST PLAN

"From the siting of a factory to the provision of a children's playground we are concerned with the right use of the land, and that is Planning"

Lord BALFOUR OF BURLEIGH

SOME parts of our cities should have been built again ong ago, some will have to be built again because they re lying flat. The opportunity ahead has been clearly tated for Birmingham in a study[1] made by the Bournville Village Trust of conditions of living and working here. The trust decided to begin the research in 1935, he material took three years to collect, and now appears n a well-illustrated book. The city can be conveniently divided into the central wards where population density reaches 62 people per acre, the middle ring with 32 people per acre, and the outer ring with 15 people per acre, this gives an average density for the city of 20 people per acre, which compares favourably with the county of London where the average pre-war density was 54, and the density in Stepney 238. Birmingham had no charter until 1838 but attracted many skilled workers in base or precious metals and other trades. In the nineteenth century growth of industry fired those speculative builders who, careless of life and health, set up street after street of back-to-back houses, of which no less than 38,000 still remain in the central wards and in parts of the middle ring. They were originally built without internal water-supply or sink, and many still have only one standpipe in the courtyard to serve a dozen or more houses. Every house in the row is surrounded on three sides by similar houses so that through ventilation or adequate lighting cannot be attained. Later, by-laws demanded air space on at least two sides of every dwelling, and those tunnel-back houses sprang up which still occupy miles of streets in the middle ring. The building of tunnel-backs, so called because the rear of each house juts backwards in a narrowing projection leaving a dank strip of yard between itself and the tunnel-back of the next house, was a nefarious way of keeping within the law and crowding houses into a site with a density of 20 or 30 to an acre. At the end of the nineteenth century came the garden city movement, bringing the semi-detached house intended for wide frontages and low density. The speculative builders snapped up the idea without conforming to the low density plan, and built thousands of closely-packed semi-detached houses in the suburbs of Birmingham, tricked out with aimless decoration which satisfied the taste of their customers without educating it.

These, then, were the three main types of house in Birmingham when the City Council undertook an inquiry in 1913, their report appeared three months after the beginning of the last war and recorded that 50,000 houses were unfit for habitation, many of them being overcrowded as well. At the end of the war building costs had risen and speculative building no longer paid, under the Housing Acts of 1919, 1923, and 1924 the municipal authorities received help which gave them the field to themselves for almost ten years. In Birmingham, 3234 houses were built under the 1919 Act, 3433 under the 1923 Act, and (over a period of 8 years) 33,612 under the 1924 Act, the result being movement of population towards the outskirts. By 1930 building costs had fallen sufficiently for private enterprise to take a hand again, and the Housing Acts of 1930 and 1935 enabled local authorities to concentrate on slum clearance and the abatement of overcrowding. Much good work had already been done, but the slums still remained. Indeed, in the middle wards, apart from provision of a separate water-supply in many houses previously without, little change had been made since the 1913 report. The number of houses built since 1920 has been greatly in excess of the corresponding rise in population, but on the other hand the average family has been growing smaller, and thus the number of families needing houses has increased out of proportion to the rise in population. However, about 10,000 houses were condemned and about 8000 pulled down between 1930 and 1938. Meanwhile private building between 1935 and 1938 was going on at the rate of 7000 houses a year in the outskirts of the city, and at the same time the corporation was building at the rate of 2500 a year. All the municipal houses were earmarked for the occupation of families displaced from the slums. Yet despite this, progress "was hardly sufficient to ensure the abolition of the slums within any tolerable period", so in 1938 the city council launched out on a five-year programme of building at the rate of 5000 houses a year. Even this number fell short of the minimum actually required within the five years, a number estimated at 17,500 for slum clearance, 3500 to abate overcrowding and 8000–10,000 to meet normal needs.

The plan has of course been interrupted by the war, but the trust in their report consider how it should be resumed when the time comes. Householders in all three regions of the city have been questioned and factory sites, transport and rentals studied, in an attempt to bring the whole mass of conflicting interests into unity. The writers of the report conclude that individualism must be tempered to fit civilisation, the city's problems must be integrated with those of the region, those of the region with those of the country as a whole, and "these in turn must be examined against the matrix of the world problem". And they are supported by Lord Balfour's definition of planning in a foreword to the report. To acquire further building land beyond the city boundaries would increase transport difficulties, and make the countryside still less accessible. The worst difficulty of planning is in the old jewellery quarters of the central wards where many small factories are thrust in among the dwellings. There is no simple solution, as the report points out, but the best plan here seems to be to build flatted factories five or six stories high, which could rehouse existing factories in less than half the space. This would make it possible to include extra services—good working accommodation, canteens, laundries, rest rooms, first-aid posts, garages, repair shops, car parks, and cycle sheds. Similar factory centres or flatted factories could be built scattered through the city and suburbs alike, and this would enable a larger number of people to live near their work. Many of the largest factories must remain where they are because removal would be too costly and complicated. Others could be removed beyond the city boundaries to form the nucleus of satellite towns. As to rehousing workers, the report shows that preference among Birmingham residents is for the separate house with a garden, but in the central wards this would simply not be possible. There is no solution for the 130,000 people living there except transfer to modern flats, maisonettes and well-planned terraced houses, built not as competing alternatives but as part of a housing scheme. The flats, like the factories, would have communal advantages—central heating, hot water, playgrounds, creches and lifts, and wide through roads and boulevards to the city would help to ease transport difficulties for those living on the outskirts.

To carry out these improvements the Bournville trust suggest that a national planning authority should be established, that the present system of land tenure should be reformed to ensure control of land for use in the public interest, and that expansion of the present city area should be stayed by enforcing the maintenance of an agricultural green belt. They propose, too, that the life of buildings should be limited by licence so that plans for reconstruction could be eased and synchronised.

DENTAL MEDICINE AT HARVARD.—On Sept 23 the new Harvard School of Dental Medicine was opened with nine students selected from different parts of America. The school has been made possible by an endowment of $1,500,000, most of which was contributed by the Carnegie, Rockefeller and Markle foundations. Under the present plan of instruction no more than 15 students may be accepted in any one class. At the new school the combined course of dentistry and medicine will last for five years and students will receive both the M D and D M D degrees. The existing Harvard Dental School will continue its present courses for three years more until members of the present second year class are graduated.

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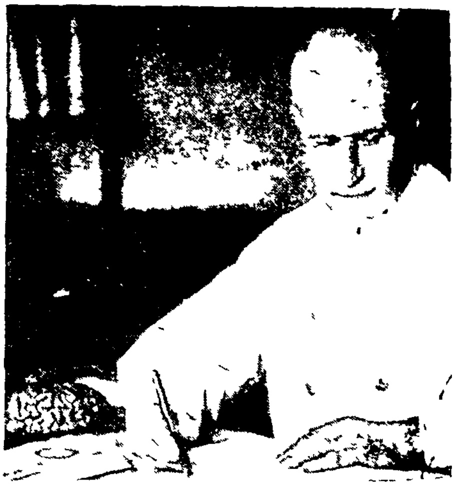
[1] When we Build Again. London: George Allen and Unwin. Pp 138. 8s 6d.

festations such as excitability, irritability, headache, loss of memory and power of concentration, insomnia, and depression psychosis, and a number of gastro-intestinal symptoms such as dyspepsia, flatulence, nausea, constipation and the like. One or two of these groups may dominate any given clinical picture though the patient will often produce a hotch-potch of the lot. The presence of hot flushes and other somatic sensations may well be responsible for irritability and depression and a timely treatment of the vasomotor symptoms will result in a disappearance of the emotional counterpart. But Heaver[1] points out that unless the patient's exaggerated emotional response is directly related to these vasomotor phenomena stilbœstrol may do harm rather than good. He is inclined to regard the menopause as a causative factor in precipitating an unstable patient into a state of involutional melancholia, and he states categorically that 4% of all mental diseases are to be traced to this specific source. He does not agree that the endocrine upheaval of the menopause is responsible for the psychosis, and believes that such a case is better treated by a psychiatrist. Substitution therapy by stilbœstrol in such cases may stimulate ovarian and genital activity and so increase the emotional chaos that the physician is only anxious to soothe. Heaver treated 26 established cases of menopausal psychosis with stilbœstrol. 66% of the women so treated showed withdrawal bleeding and 23% other toxic side effects such as enlargement and fullness of the breasts, areolar pigmentation, increased sexual feelings, nausea, diarrhœa and even dysmenorrhœa. From a psychological point of view 43% were unrelieved and 38% were definitely in a worse state than before treatment. The crux of the problem is whether it is justifiable to attempt to relieve vasomotor symptoms at the expense of exaggerating other aspects that contribute to the psychosexual conflict which is in part responsible for the development of the psychosis. Heaver replies that such symptomatic treatment is wholly unjustifiable. The general employment of a potent and readily obtainable drug, such as stilbœstrol, raises once more the question of more remote dangers of œstrogen therapy. No actual evidence is clinically available that this substance is in man a carcinogen, yet no one would sponsor its exhibition in say a case of established breast or uterine cancer. Moreover, the œstrogens have a remote effect on other body structures than the genital organs, certainly in small animals, where pituitary tumours have been produced. No such effect has yet been seen in human cases, but until further evidence accumulates it is as well to curb indiscriminate dosage for mild symptoms with this drug. Finally, some patients seem to acquire almost a drug addiction to stilbœstrol and once they get the taste are difficult to wean from its subtle attraction. It may well be said that all this is nebulous and fanciful, but none the less until the risks can be completely assessed the wise physician will restrict the use of stilbœstrol and other œstrogens to those cases where the indications are clear-cut.

HANS BERGER

Professor Berger died on June 7, aged 68 years. He had lived in Jena all his life, and all his work was done in the university there, where he held the chair of psychiatry and was director of the university clinic for nervous and mental diseases. Although he was a clinical psychiatrist who saw the great advances in analytical psychology modifying the approach to the psychoses which had previously been fundamentally organic (or "clinical"), he spent his life investigating mental diseases by physiological experiment. In this he was practically alone in his country, but in spite of ridicule he persistently studied the physical minutiæ of the brain in health and disease. In the late 'nineties he was measuring cerebral vascular changes, and at the turn of the century he was recording cerebral temperature with great accuracy. As these studies seemed to yield little he began in 1902 to look for electrical changes in the brain. This search was based on the tentative conclusions of Canton, von Monakow, Beck, and Horsley, but it was hampered by the limitations of electrical recording available thirty years ago. Berger employed each advance in physical knowledge as it arose believing that the change he hoped to demonstrate required more sensitive methods of recording. So his work developed with the capillary electrometer, the string galvanometer, the thermionic valve, and finally the cathode ray oscillograph.



In 1924 Berger was able to record minute electrical fluctuations from the brain of a patient who had a skull defect. He then began to study the phenomenon with Teutonic thoroughness, so that when he published his first observations five years later he had acquired a wealth of data which formed the basis of electro encephalography. In the years which followed, before his work had been recognised or had been given the seal of respectability by its confirmation in the orthodox schools of physiology, he conducted a logical series of clinical investigations backed by animal experiments. He described the characteristics of the electro encephalogram, the alpha and beta rhythms, and their modification by all forms of stimuli and experimental changes, and he also drew conclusions as to their origin and propagation. He found that detrimental factors caused slowing or abolition of the alpha waves, and he described abnormally slow waves around cerebral tumours and abscesses, in anæsthesia, and in coma due to many causes, including high intracranial pressure. He recorded abnormal waves in some forms of psychosis, especially in the dementias, and he also made important negative observations, as in the extrapyramidal diseases, in which the electro-encephalogram is normal. His initiative and perseverance were the more remarkable, not only because he was alone in this field of neurophysiology, but because electrophysiologists were concerned with single neurones and nerve-fibres, while the simultaneous change in millions of cells was unorthodox and considered hardly scientific. When his work was criticised he answered criticism by further successful experiment, and he had to modify few of his many conclusions.

As is the way with prophets Berger first received recognition abroad, and it is recorded that, when hailed as a distinguished visitor at the Paris congress of psychology in 1937, he said with feeling "In Germany I am not so famous." Even in the last years he continued to work quietly and undisturbed until his death.

Hans Berger was not an extraordinary man, nor was he an outstanding intellectual but using all his talents fully in the course he had set for himself he made rare advances in knowledge and gained an honoured place in medicine.

DR WILLIAM EVANS physician in charge of the cardiac department of the London Hospital, will deliver the third Strickland Goodall lecture, at Apothecaries Hall, in June 1942. His subject will be triple rhythm.

WE regret to announce the death, on Nov 20, in Dublin of Dr T HENRY WILSON, a former president of the Royal College of Physicians of Ireland, and King's professor of midwifery at Trinity College.

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[1] Heaver, W L *Amer J Obstet Gynec* 1940, 40, 980

of the London and Counties Medical Protection Society The council's solicitor laid the facts before the council Asked for an explanation by the Registrar, Dr Gunn had replied that he had been very ill at the time of signing the statements He quoted the warning notice, the words of which were used in the charge

Dr J R Bulman testified that at a meeting of the Hereford Medical Board (of which he was chairman) on March 7 1941, Mr Lyward had handed to him six "certificates' relating to persons attending for medical examination These documents were signed by Dr Gunn but did not actually certify anything, being case-histories of mental cases, without verbs Witness said his suspicions were aroused because the documents used expressions which he thought no ordinary medical man would use Asked to exemplify such statements, he quoted "Lives entirely in phantasy," and "Has fetichisms" Every one of the six boys had been rejected for military service, after examination by the county psychiatrist

Mr Pereira pointed out that a school for neurotic boys had been evacuated to Ludlow, and Dr Gunn, who had taken over a practice there, was called in by the headmaster, Mr Lyward, and had been asked at the same time to attend the boys, all of whom had been sent to the school by well-known psychiatrists Later, when he was ill in bed, he had received an urgent letter asking him for a resumé of the histories for the use of the board, before which the boys had to appear at short notice He appreciated now that he should not have put his name to these histories in the way he had, though he *had* never intended to imply that the statements were of his own observation of cases

Dr Gunn testified on his own behalf, confirming his counsel's statements, and put in medical certificates as to his state of health at the time His name was not erased

* * *

The case of *Israel David Black*, registered as of 649, Leeds Road, Bradford, M B Leeds (1926), who had been summoned to appear before the council on the following charge

That being a registered medical practitioner you signed and issued the following certificates —

(1) Tel No 5276 649 Leeds Rd , Bradford
D Black, M.B , Ch B *Feb* 7, 1941
I hereby certify that Ronald Hindle residing at 30 Long St Bfd , is suffering from chill and is unable to attend School D BLACK

(2) MEDICAL CERTIFICATE
This is to certify that Ronald Hindle of 30 Long St , Bfd , attending Usher St School is suffering from chill and is not fit to attend School for a week. D BLACK

(3) Date 28/2/41 *March* 14, 1941
I hereby certify that R Hindle residing at 30 Long St Bfd , is suffering from influenzal deb and is unable to attend school
D BLACK.

whereas you had not examined the said Ronald Hindle on any of the said three days or at all, and he was in fact quite able to attend school on all the said three days, and such certificates were untrue, misleading, and improper

Dr Black was accompanied by Mr Pereira The council's solicitor said that the town clerk of Bradford had drawn the council's attention to this case, on the instructions of the city council Bradford had a custom of granting compassionate leave to children whose relatives were ill, in this case no medical certificate was required Ronald Hindle's sister was in hospital, and his mother had to look after the two grandchildren as well as her own seven and kept the boy at home to help her On Jan 7 a certificate for the compassionate ground was given by Dr Black's assistant and Ronald had been granted leave until Jan 24

Mr W Margerison, superintendent of school attendance, testified to the custom at Bradford and to the facts in this case He agreed that an officer had called at the home during the material time and found the boy out—and so presumably not ill

Mrs Selina Hindle testified that her daughter had been in hospital ten weeks with lobar pneumonia, and the baby had had fits She had sent Ronald to the doctor's for medicine for the baby and a doctor's note to continue the leave of absence already granted The assistant who had signed the first certificate was not there, and the boy had returned with document (1) in the charge She had been to the town hall and explained the circumstances On a second visit the boy had gone with her She sent the boy to the surgery again for repeat certificates during the ten weeks Dr Black was not her doctor or her family's doctor, except only the married daughter's She had been too busy to look at the certificates before sending them to the school Dr Black had sent an account last week (14*s* for the certificates), previous to that the collector had been taking 6*d* a week from her for 14 weeks She knew that the usual charge for certificates was 1s each but had made no protest at the size of the bill She emphatically denied any treatment to the boy, as Dr Black was not his, or her doctor She admitted having shown Dr Black the damp cellar of her house when he called to see the daughter's baby Ronald had been in the house at the time of the visits

Ronald Hindle confirmed his mother's account of the facts and added that during his school leave he had been distributing newspapers for his older brother

Dr Black declared that he had a large mixed general practice He had been called to see the baby on Feb 7 and had seen the baby, Mrs Hindle and Ronald He went through the house with her, saw five inches of water in the cellar and promised to report it She said they were all getting colds and that Ronald had been coughing He examined him and found bronchial catarrh He sent a certificate accordingly, with the baby's medicine At the time he had not known that Ronald had school leave on compassionate grounds He had called to visit the baby every day until Feb 17 and had seen Ronald every time Ronald was fit for school on March 18; he had attended the surgery on March 21 and asked for another certificate, he denied he had been selling papers Respondent refused a certificate He had never seen Ronald at the surgery at any other time The bill was given to the collector at the end of August

Cross-examined, he said he had destroyed—as was his custom—the visiting lists, on slips of paper from which he made up his ledger Thus there was no contemporary evidence of his attendance He destroyed this evidence in June or July, although he had heard of an inquiry into the case in May It was before he heard from the G M C

In reply to the Legal Assessor, he detailed the examination and treatment of Ronald The certificate of "influenzal debility" was an error, the boy had not previously suffered from influenza

Mr W Sergeant, Dr Black's collector, testified that accounts for Mrs Hindle and her married daughter had been handed to him about the beginning of August, and that he had called in the first week of September and seen both women, the daughter taking the accounts and paying an instalment on her own After that he had called weekly and got sums on both accounts each week Neither had ever protested about the amount He explained the system of accounting in detail

The council did not find the charges proved

ERASURE FOR ADULTERY

The case of *Eric Dickens Spackman*, registered as of 46, Shelley Road, Worthing, M R C S (1917), who had been summoned to appear before the council as a result of the divorce decree in the case of Pepper *v* Pepper (Spackman cited), dated Feb 3, 1941, he having stood in professional relationship with Mrs Pepper at all material times Respondent was represented by Mr O Hempson, and gave evidence on his own behalf, strenuously denying any adultery Strong testimonials to character and a petition signed by over 500 patients were put in, but the council directed the registrar to erase Mr Spackman's name

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Mr T E A Stowell, F R C S , and Dr D A Coles have been re elected to the council of the Industrial Welfare Society

Sir Harold Gillies has visited America as the guest of the Academy of Ophthalmology and Otolaryngology to attend their meeting in Chicago on Oct 19 and 23, and he spoke at a special defence programme meeting held by the academy Dr R D Gillespie is visiting America at the request of the New York Academy of Medicine to deliver Salmon memorial lectures He has chosen as his subject psychoneuroses from the standpoint of war *experience* Dr Gillespie will also give addresses at Chicago, Toronto, and San Francisco

GENERAL MEDICAL COUNCIL

WINTER SESSION, NOV 25–28 1941

AT the conclusion of the President's address, reported last week (p 677), Dr Thomas Fraser was introduced by Sir Henry Brackenbury as direct representative for Scotland, Prof W J Wilson by Prof. C G Lowry as representative of Queen's University, Belfast, and Prof L G Parsons by Dr Guy Dain as representative of Birmingham University

Five names were, after deliberation in camera, restored to the Medical Register *John William Paterson Collier, William Joseph Doody, William Aloysius Kennedy, Francis Stedman Poole* and *James Pearson Thierens*

Charges against Medical Practitioners

REPORTED CONVICTIONS

The council then considered thirteen charges arising out of convictions for drunkenness, but did not erase any names save those of *John Mackay Young*, M B N Z (1923) and *John Black*, M B Belf (1921) In addition to two convictions for being drunk and disorderly Dr Black had been sentenced to one month's imprisonment with hard labour for obtaining credit by fraud

CHARGES OF IMPROPER CERTIFICATION

The case of *Alexander Cannon*, registered as of 38 Harley Street, London, W 1, M B Leeds (1924), who appeared before the council on the following charge

That being a registered medical practitioner (1) You on July 15, 1941, signed and sent to one Herbert Latreille, a district warden on the whole time paid strength of the A R P wardens establishment of Beckenham, a certificate, notification, report, or document of a similar nature dated July 15, 1941, in the following terms —

To whom it may concern This is to state that Mr Herbert Latreille is under my care and requires an immediate rest owing to the state of his nervous system and I have ordered him away for a rest from the 19th instant for a period not less than three weeks In my opinion it would be criminal to allow him to continue his work at present

ALEXR CANNON
ALEXANDER CANNON, K G C B , M D , etc

whereas you had neither seen nor examined the said Herbert Latreille at any time during the calendar year 1941, and such certificate, notification, report, or other document was misleading and improper

(2) You on October 22, 1940, signed and sent to the said Herbert Latreille a certificate dated October 22, 1940, in the following terms —

This is to certify that Herbert Latreille of Beckenham Kent is suffering from nervous exhaustion and sympathetic atonia and urgently requires 14 days rest from all duties with complete change of air away from England

ALEXR CANNON
ALEXANDER CANNON, K G C B , M D , Ph D , D P M , etc

whereas you had neither seen nor examined the said Herbert Latreille since March, 1940, and such certificate was misleading and improper And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect

Dr Cannon conducted his own defence The council's solicitor said that Mr Latreille applied in July, 1941, to his employing local authority for sick leave in order to spend three weeks in the Isle of Man under treatment by Dr Cannon He submitted a medical certificate from a local practitioner, stating that he was suffering from boils and was recommended " three weeks' holiday (for special treatment) on the advice of his specialist " The local authority refused the sick leave but granted twelve days' ordinary annual leave Mr Latreille then sent to the chief warden the medical certificate, the subject of the first charge, which he had received the same morning, July 18 This document purported to " state," not to " certify," the matter contained in it The local authority accepted this certificate and granted Mr Latreille his sick leave Dr Cannon, when asked to explain why he had given it, wrote that he had been under the impression that a specialist could send a statement regarding a patient who was under treatment to anyone without actually seeing the person concerned He had therefore commenced the document " This is to state ", but in a later certificate which he had issued on August 8 after seeing Mr Latreille he had written " This is to certify " He had treated Mr Latreille from time to time since the beginning of 1937, the latest occasion being in December, 1940 It was arranged that he should come to the Isle of Man on July 19, but two days beforehand his wife had telephoned saying that the local authority, although he was very ill, would not let him come because he had not a medical certificate Dr Cannon had explained to Mrs Latreille that he could send the medical statement to get over the immediate difficulty, and then when he saw the patient he could issue the medical certificate This he had actually done at the end of the three weeks' treatment The facts he had stated and certified were, he wrote, true and he asked the council's forgiveness for any offence against its rules

In a further letter Dr Cannon declared that he had known Mr Latreille's condition immediately before issuing the statement of July 15, " having spoken to h wife and then himself on the phone and having mad hypnotic diagnosis through a third party that day, and which method is often more reliable than ordinary clinical findings, and as you know, the Hippocratic Oath allows me to use any means of diagnosis and treatment " In another communication, when asked to admit that he had not seen Mr Latreille at any time between Jan 1 and July 15, 1941, and between March and Oct 22, 1940, he replied that he had not seen, but had spoken to and examined the patient hypnotically on three dates during the interval in 1940 and had a telephone call and contact with him again on Oct 2 1940 , in 1941, before July 15, he had spoken to the patient and examined him hypnotically on five dates On each of the dates when he had issued a statement or a certificate he had spoken to Mr Latreille and examined him hypnotically He also sent to the registrar a copy of his book " Sleeping through Space," a chapter of which explained briefly the method he used

The council's solicitor maintained that both documents were certificates within the meaning of the council's warning notice He called Mr W J Sampson, mayor and chief warden of Beckenham, who identified the 1941 statement and testified to the circumstances in which he had received it

Mr Latreille gave evidence for the defence, confirming Dr Cannon's written explanation and saying that the documents had truly stated his condition Dr Cannon gave evidence on his own behalf and answered questions put by members of the council After the council had deliberated in camera, the President announced their finding as follows

Dr Cannon I have to announce that the facts alleged against you in the charge have been proved to the satisfaction of the council The council cannot avoid the conclusion that the certificates signed by you in your professional capacity which form the subject of the charge were certificates of the type stigmatised in para 1 of the warning notice issued by the council as untrue, misleading or improper This paragraph is presumably within your knowledge, and the attention of the profession was drawn to its special importance under all conditions by an announcement published on behalf of the council in the professional journals in April, 1941 The council regard your action in giving the certificates as a serious breach of the trust which Parliament has confided to the members of the medical profession They have listened to the description of the circumstances in which these misleading and improper certificates were given by you They do not regard that as affording any excuse for your laxity in giving them They take a grave view of carelessness in issuing certificates required by public authority , but from your statements they are prepared to believe that you sent the certificates, not from any perversity or desire to falsify, but from a mistaken view of your duties and an error of judgment Taking that into account, and believing that the warning you have received will be sufficient they have not directed the registrar to erase your name from the Medical Register

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The case of *Albert Alexander Gunn*, registered as of 3 Carr Wood Road, Pownall Park, Wilmslow, Cheshire, M B Edin (1898), who had been summoned to appear before the council on the following charge

That being a registered medical practitioner you on March 5, 1941, gave certificates, notifications reports or documents of a similar nature in your professional capacity for subsequent use for administrative purposes under the National Service Acts, 1939 to 1941 in the cases of John D Collings Philip Connell Peter H Goddard, David Hobbs, D[illegible]id H C Mason and Roger Wakefield who were inmates of an institution maintained by an unqualified person one G H Lyward You had not seen or examined the persons for whom you gave the said certificates or other documents either on March 5, 1941, or at all, and the said certificates or other documents were accordingly misleading and improper

Dr Gunn was represented by Mr A A Pereira, instructed by Messrs Le Brasseur and Oakley, on behalf ndition They have practised these virtues for 20 r 30 years and the sentiment is wearing thin

* * *

Your peripatetic's note on stillbirths (disposals of) mphasises what scope for ingenuity lies in this direction among midder-boys in the East End a convenient method of disposing of the body is (or was) to wrap it up n a neat parcel and take a taxi to a point near to the ospital This was to establish an alibi The parcel ould then either be taken out and handed over to the ost-mortem department, or, better, left behind for the axi-driver to discover later and explain away to his wife One has heard it said that float-fishing in the Seine used o be ruined by the fact that during an average day's angling the catch included rather more fœtuses than fish, but this may be an exaggeration A method which may appeal to the maliciously minded is to choose a railway terminus against which one bears a grudge, hand in the parcel containing fœtus to the left-luggage office, and omit to call for it In the country the problem is less pressing than in the town In my experience there is nothing to beat a rabbit hole I remember once disposing in this way of the products of a miscarriage—no it wasn t a criminal abortion—and I confess to having felt certain qualms when I observed a great mongrel that I owned at the time, who was always hungry and dusty in the sunshine, eyeing the hole later Hens, by the way, seem very grateful for placentæ in these hard times

* * *

Why is it that so many medical men feel obliged to adopt the tone of a muscular curate when writing for the ordinary public on sex ? I am told by Dr John Drew, in his Pelican "Man Microbe and Malady" that the "sex instinct is one of the strongest, and can be one of the most ennobling, of human instincts ' In almost the same words a well-meaning clerical schoolmaster closed an unsought (and unnecessary) interview given to me in adolescence Despite the undoubted truth of the statement, the effect of such a bromide can only be either soporific or irritating, according to the mood of the reader Other phrases of Dr Drew's such as "clean and upright lives," and his description of congenital syphilis as "the atonement made by the innocent child for the sin of the parent" have likewise a clerical rather than medical ring Aldous Huxley once said that the research worker was the modern equivalent of the medieval monk, and on the whole this is probably a flattering comparison There is, however, little in common between the curate of today and the medieval churchman, and it would be a pleasant change if doctors writing on sex paid some attention to a precedent laid down by the most famous of medical monks, Rabelais

In my experience the majority of scientists outside the laboratory are a confirmed set of old women, but most people tend to think of them as cold and inhuman In the laboratory their assessment of values probably is logical rather than human Dr Drew, despite his fondness for the "human touch," is not altogether free from this The common cold for instance, is not for him just an infernal nuisance to millions of individuals but is "responsible for an enormous loss of individual and national efficiency, and for severe industrial dislocation and economic loss" Again the ravages of malaria are "estimated at 2 000,000 people annually, an annual economic loss to the British Empire alone of from fifty to sixty million pounds" Human loss cannot be assessed in terms of pounds, shillings and pence, and such estimates may be the first stage of an insidious process Its culmination finds expression in such a phrase as I heard spoken on a bus by a Homburg-hatted person after one of the spring blitzes—"It is terrible, terrible ! Think of the millions of pounds worth of damage" Something is very wrong when property and pelf are considered more important than people I do not suggest that Dr Drew thinks this, but the tendency is one that doctors should guard against

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BRITISH ORTHOPÆDIC ASSOCIATION —The annual general meeting of this society will take place at Oxford on Jan 2 and 3 The scientific sessions will be held in the department of human anatomy at 9 30 A.M. on both days Prof T P McMurray will give his presidential address, on conservatism in orthopædic surgery, and Prof Philip Wilson, of New York, will read a paper on arthroplasty

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M.P

THE House of Commons is now discussing a general mobilisation of the nation s man-power and woman-power which, if we were a quick thinking people, we should have done before war was declared in 1939 But we are not quick thinking or quick acting We are slow, our social organisation is heavy with a great weight of inertia

How "sure" are we in our debates, and because of this sureness of our position how tolerant The whole House spent a day debating an anti-war amendment to the address proposed by Mr Maxton s party of three And two days before that it had listened to Dr Salter opposing the war on the ground that it was a betrayal of Christ Dr Salter was seriously ill some time ago and began his speech by saying that this was "probably almost the last occasion on which I shall have the opportunity of addressing this House," but rose to oppose the present war and everything connected with it Dr Salter estimated that one in twenty of the population was against the war, he also quoted the Cardinal Archbishop of Ireland's demand for a negotiated peace and ended, "Will not somebody, for the love of God, for the sake of Christ, demand sanity and peace ? Must the war continue by its own inherent momentum until the final crash ends in prolonged anarchy and social confusion ?" But the member who followed him, while paying tribute to Dr Salter's sincerity—the sincerity of the Christian martyrs—went on blandly to discuss the Government's lack of a "wages policy" Sir George Schuster brought the debate to a high level in a carefully reasoned appeal linked with constructive proposals to make "equality of sacrifice" and "equality of service" business realities The present mongrel system of profit-making and service-giving was injuring the war effort—over the door of every business there should be a notice saying, "This business for the duration of the war is being run on account of the Government" Many debates, perhaps, on the Address are ragged and inconsequential because anything can be raised and everything, practically speaking, is in order Sir Roger Keys spoke soon after Sir George Schuster about the termination of his appointment in charge of the Commandos, while the next speaker talked about our relations with the United States and the need of a great British export trade after the war Colonel Wedgwood spoke of the Zionist offer to provide Jewish troops And so the debate went on—not a debate in any narrow sense, but a firing of argumentative broadsides at the Government Mr Greenwood, who tidied up the discussion in his reply for the Government could not of course do more than say that the matters raised would receive attention, and promise that the Government would give facilities for a debate on any aspect of the Home Front it was desired by the House to discuss

* * *

The 18B debate was a debate over a clearly limited field and was in the nature of a critical attack on the Hon. Herbert Morrison, the home secretary The amendment expressed the grave concern of the House "at the abolition of any judicial safeguard for the liberty of the subject against the arbitrary acts of the Executive" Sir Irving Albery, the mover of the amendment was backed by a large number of signatures The uneasiness felt in the House was expressed also by Commander Southby the member for Epsom, and to some extent by Mr Pethick-Lawrence and many others Mr. Morrison's case was that most of the detainees were either of enemy origin or members of the British Union of Fascists, that a large number of cases which had appealed to the advisory committee had been released, and that the number of detainees other than those mentioned was small Mr Morrison's method of defence in the past has been to attack In this debate he parried attack with gentle riposte and the House approved his defence of 18B without a division

* * *

Despite Government successes however a clear indication is emerging of the formation of opposition opinion.

In England Now

A Running Commentary by Peripatetic Correspondents

THE officer with the long gloomy face settled down in his corner and regarded me with the perseverance of one who has a story to tell. No wedding guest, I was yet sufficiently susceptible to the power of the human eye to give in, and soon the preliminaries were over and the man was retailing information likely to be of service to the enemy. I hasten to pass it on, an example of careless talk. It's a long run from the West Country to London, and I daresay we hadn't got much beyond Exeter before I knew he was attached to a blood depot —a doctor, of course, one of the pessimistic kind. It seems they are bothered by vampires. “ They get in at night you know,” he said, his voice was mournful and sincere. “ Bats and so on, you know how it is with vampires.” I said I knew my Bram Stoker as well as the next woman. “ Just so,” he answered sadly, “ we have been warned. Vampires in these days should be child's play. The whole thing has been thoroughly worked out: symptoms of infestation, course of illness, autopsy findings, treatment, methods of defestation, all the rest of it. Plenty of well-authenticated case-histories, nice statistics. Child's play.” He ruminated. “ We haven't had any bad epidemics in England, either, up to now. They're endemic in Styria, of course, or what used to be Styria,” he appended with the caution of a generation which has never had a chance to roll up the map of Europe. “ But we've been exceptionally lucky over here. Vampires and trichiniasis run about parallel.” I complimented him on our gratifying immunity. “ They're on the increase though,” he answered darkly. “ Bound to be. You've got to remember that everyone dying of vampiric anæmia (it's ordinary microcytic anæmia, of course, but the term's convenient. Israels suggested it) everyone dying of it becomes a vampire too. So they're naturally very much on the increase.” “ But surely you could get rid of them,” I demurred, and I muttered something about wild garlic and stakes, which reminded me so keenly of a pre-war luncheon that my attention wandered to my stomach for a time. When I came back into circulation he had digressed into a short lecture on vampire therapy.

“ much simpler ways nowadays,” he was saying, “ though I won't deny the old measures were pretty effective. However, it meant a lot of field work, and the apparatus cost a bit. Then locating the tombs always took some time; in fact in a badly infested neighbourhood you really needed two or three first-class vampire teams in the public health service constantly on the go, and of course the local authorities made trouble about the expense. Short-sighted,” he ended bitterly, and brooded for a while. But presently he brightened up to say that nowadays they were getting encouraging results with sulphathiazole. “ Really ? ” I asked. “ How do you apply it ? ” “ Oh to the vampire, you know, directly to the vampire,” he answered briskly. “ Not to the patient ? ” I ventured. He shook his head. “ Contra-indicated,” he said, “ because of the anæmia. No, we sprinkle it—or better still insufflate it—directly on to the vampire.” A cloud crossed his already overcast face. “ Of course you first have to catch your vampire,” he conceded, and went on dejectedly, “ Hair brushes and things like that are no good. Nor are nets over the windows or bird-lime, we've tried them all. They dematerialise, you know, vampires do.” I admitted that this property of vampires had escaped my memory. “ Oh yes,” he said, “ they dematerialise. Makes it very awkward. Come in like a bat and go out like a candle.” I said it reminded me of the month of March. “ We've even tried fitting the windows with Berkefeld filters,” he replied, unheeding, “ —no good at all.” I asked how it had begun. At first, he said, it hadn't been too bad, there had only been one vampire to start with, a reasonably considerate creature who attacked the stored blood by applying itself to a glass tube and imbibing as through a straw. “ Quite clean and orderly. Probably a doctor in his time, or anyhow a lab man.” But later the founder had brought in a friend and soon the depot had become a club for all the undead in the region, many of whom it seemed were bats of a different colour.

“ I can't give you details,” he said, belatedly cor “ but the truth is those gatherings simply became orgies. There's no other word. They took to knocking the top off the bottles.” His face wore the pained expression a man who is accountable for stores. “ They even took to plasma: simply lapped it up. And—you won't let this go any further, of course, because I've no proof and one likes to be fair—but it's my belief they're using the dried plasma like ‘ snow ’—sniffing it.” His long shocked face peered into mine, and my round shocked face peered back. Any of his colleagues from the depot would have given us a transfusion on sight. “ Things are getting worse, too,” he said, sinking his voice. “ I simply can't tell you what it was like on Walpurgis night. All the riff-raff in, and bottles going off like machine guns. You couldn't go in there—they'd have made a dead set at your external jugular.” I said imagination fairly boggled, and he agreed it did. “ And there's New Year's night coming on,” he pointed out. “ Some of them are bound to be Scots.” We thought about it silently. Bottled Scots bats. Bats wha hae Bill Wallace bled. It was likely to be quite a night. “ Then there's the medicolegal side,” he remarked abruptly. “ If they were attacking patients it would be different, but as it is we don't quite know where we stand. Are they really a medical problem at *all*, or are they breaking and entering, and should we charge them as burglars ? It's a nice point.” It was, and I was relieved when the attendant put his head in and summoned me to lunch; after all he must solve his own medicolegal problems and bottle up his own bats. Life is like that. But he sent me out shuddering all the same.

“ I sometimes wonder,” he said, leaning over impressively, “ whether there are fifth columnists among *them*.” My, *that makes you think*.

* * *

On y revient toujours, the subject of examinations and the inferences that may be drawn from results, with inevitable criticisms of the curriculum and the rationale of medical education. Evidence too should be forthcoming of the influence of war-time conditions, and possible contributions supplied to post-bellum reconstruction. We have from time to time received stout assurances from some enthusiasts who, so far from just conceding that they are making the best of a bad job, actually maintain that they are better off than ever and would prefer the perpetuation of present-day dispersal and other arrangements when we return to security and peace. Doubtless there is always a tendency to see what you expect to see. There may in some cases have been exceptional opportunities for instruction, but judging by the general standard of examinees I am persuaded that the material presented bears the hall-mark of education acquired by long application to textbooks and of deficient clinical instruction. They know all about minute difference in the varieties of leucocytes, they are very glib with the figures of biochemical problems, but they are reluctant to assess the significance of a cardiac murmur until they are provided with a radiogram and an electrocardiographic report, and a baby's belly ache is associated in their minds with an obscure “ abdominal catastrophe ” (they always spell it “ catastrophy ”). And this is precisely what I should have expected. It is the seniors on whom we should rely for the teaching of fundamentals. The *brilliant young men* of the registrar class are all very well to expound to postgraduates, but maturity and experience are indispensable for instruction of the elementary student. And with these are bound up an unanalysable quality of atmosphere, of personality (to use a question-begging term), which puts it over. It would not be surprising if the seniors are flagging. Their ranks have been depleted of the more vigorous members by the claims of the Services. Those who are left are weary, bored and disheartened. They were thrown out of their stride by the other Great War and now after the long hard effort in building up a career find themselves very much as they were twenty years ago. They had hoped for comparative leisure, for cakes and ale, and find the return to a struggle to obtain dry bread and an occasional pat of butter ill suited to their years and inclinations. They can't help asking themselves to what have they to look forward ? To sow for others to reap ? Well, they are not strangers to philanthropy, to the eleemosynary casting of bread to professional purchased and consumed by adults seeking a substitute for liquid milk. These inquiries showed that every effort was being made by the trade to restrict sales to customers purchasing the foods for infant feeding, and considerable publicity has been given to the subject in the appropriate trade paper

Central Medical War Committee

Although the full Central Medical War Committee has only met twice in the year ended Sept 30, its work has been carried on continuously by its appropriate subcommittees and by its officers in accordance with the authority which it has entrusted to them (Mr **Brown** replying to Mr T E **Groves**)

Medical History of Pension Claimants

Mr C **Stephen** asked the Minister of Pensions whether he would take steps to arrange for a medical board or medical referee in each case where there was a conflict of opinion between the panel doctor of an applicant for pension, who was acquainted with the applicant's medical history and his medical advisers, who were responsible for the rejection of the claim, to consult personally with the panel doctor and the minister's advisers, with power to recommend the grant of a pension and to avoid injustice being done to applicants for pension —Sir W **Womersley** replied It is the practice of my medical advisers to give full consideration to any opinion expressed by a man's doctor in conjunction with the evidence in the possession of the ministry Where there is a conflict of opinion and serious doubt obtains I seek the advice of an independent medical expert nominated by the president of the Royal College of Physicians or of the Royal College of Surgeons All the evidence, including the opinion expressed by the man's doctor, is placed before this independent expert whose medical opinion I always accept

No War Bonus for Panel Practitioners

Mr **Groves** asked the Minister of Health whether his attention had been called to the resolutions passed by the Doncaster and Kent panel committees, supporting the appeal for a war bonus of 4*s* to insurance practitioners , and whether he would consider this matter —Mr E **Brown** replied I have received copies of these resolutions, but I cannot see my way to grant such a bonus

No Smallpox in the Army

In reply to a question, Captain H D R **Margesson** said that no cases of smallpox have been reported in the Army since the outbreak of war

Army School of Hygiene

Mr W J **Thorne** asked the Minister how many civilian doctors had passed through an Army school of hygiene course , and how many had taken courses for treating mechanical warfare casualties —Captain **Margesson** replied I understand that the courses referred to are those given to civilian doctors on entering the Army Medical Service Some 5000 medical officers have passed through a course at the Army School of Hygiene and over 1000 through a course for the treatment of mechanical warfare casualties

Public Health

From the Annual Reports

HARROW

Dr Caryl Thomas in his annual report criticises the decision of the Ministry of Health to curtail annual reports in war-time He says " The records of the public-health activities of a stable community will show from year to year a steady progress effected , those of a rapidly growing community may present more spectacular features, but no changes in peace-time can be of the magnitude of some of the social upheavals which have taken place in so very many districts this last year " And there is much point in this argument Dr Thomas also calls attention to failure by practitioners to attend to the alteration of death-certification which became effective in 1940 as the result of the international conference The chief alteration is that formerly, when more than one cause of death appeared on the certificate, the registrar chose one for purposes of classification by an arbitrary convention In the new order the cause which the practitioner puts first is taken for the purpose of classification The practitioner should therefore take care to put first what he really believes killed his patient Up to the time of writing his 1940 report there had been no appreciable shelter ill health in Harrow but Dr Thomas fears, as we all must, that our comparative freedom from shelter disease cannot be expected to continue We shall not know until long after the war is over whether shelters were a benefit or a mistake, but it seems clear that where air attacks on a big scale are unlikely they are generally disadvantageous Dr Thomas hopes that " even should raiding have more pronounced effects in this district again, the population, having once adapted themselves to spending their nights in their own homes, will continue to feel secure there," for he thinks that the " security " of shelters is mainly the mass courage of companionship

The general death-rate of Harrow rose in 1940 from 7 1 to 9 1 crude, 11 2 corrected, and in infantile mortality from 38 5 to 50

COUNTY PALATINE OF CHESTER

This administrative county of 622,746 acres and 767,770 persons is heavily urbanised, and all but 171,250 of the population live in boroughs or urban districts There was a drop in notifications of tuberculosis in 1940 to 674 against 709 in 1939 and 802 in 1938 , but an increase in deaths from the disease to 403 against 358 and 360 in the two preceding years The mortality-rate of 0 52, though higher than those of the two previous years, is still low A table of infant feeding shows that breast-feeding is slightly commoner in the urban than in the rural districts At the end of the first month only 66% of the rural and 68% of the urban children were breast-fed and at the end of the sixth month the percentages had fallen to 48 and 47 respectively All the rates except those for the end of the third month were lower in 1940 than in any year since 1936 A further table shows that the health of children aged 2–4 years is considerably better in those who were breast-fed than in those who were not Infants are unfortunately often taken off the breast because they are sickly or feeble, so the difference in health may in part be due to this

Dr Ian Mackay, the county medical officer, comments on the increase of adulteration in foods and drugs to 9% of all samples taken, the highest on record in Cheshire The chief increase was in watered milk " Even the heavy fines inflicted on delinquents has not had the desired effect " The heaviest fine was £32 2*s* including costs against a farmer who had added 55% of water to his milk This is the highest penalty ever inflicted in Cheshire Had it been multiplied a hundredfold and taken as a precedent it might have done something to bring to an end this most frequent and pernicious form of swindling

There are 1105 persons on the blind register of Cheshire of whom only 6 are under five years of age There are 413 over seventy and 844 over fifty years of age Prevention of blindness has made good progress of recent years, but the reduction in the numbers of young blinded people is mainly due to low prevalence of diseases which threaten blindness remotely Unpreventable causes of blindness appear to be diminishing while the preventable causes are becoming less severe and are being better treated The total number does not, however, fall because, like everyone else, the blind are living longer

COLCHESTER

Dr W F Corfield reports an increase in the death-rate of Colchester from 9 2 in 1939 to 12 4 in 1940 and of the birth-rate from 14 6 to 15 6 The Registrar General's estimate of the population, on which the rates are based, was 46,400 against 52,550 in 1939, but " it is impossible to say how it compares with the actual population," and local birth-rates and death-rates for 1940 cannot be reliable But infantile mortality, which is the most sensitive index of the health of populations and is independent of their age-sex composition, more than doubled, from 28 5 to 58 5, and Dr Corfield says " It is difficult to account for this great increase , probably war conditions have a good deal to do with it " The isolation hospital admitted 82 cases of cerebrospinal fever in 1940, but there was only one death

Infectious Disease in England and Wales

WEEK ENDED NOV 22

Notifications —The following cases of infectious disease were notified during the week smallpox, 0 , scarlet fever, 1417 , whooping-cough, 1995 , diphtheria, 1082 , paratyphoid 18 , typhoid, 10 , measles (excluding

There are several oppositions—there is no destructive opposition But that a constructive opposition will emerge is probably only a question of time

FROM THE PRESS GALLERY

Women's War Work

APART from sidelights on sartorial refinements such as uniforms for munition-workers and motley for the noble lords on the cross benches, some useful points emerged from the debate on women's war work in the House of Lords on Nov 25 Lord **TRENCHARD** was especially concerned with conditions in the Auxiliary Territorial Service which he thought had never had a fair chance On its inception in 1938 it had been run by very junior Army officers and even now there was still too much masculine interference with discipline and training He was old-fashioned enough to dislike seeing a woman doing a man's work even in these hard times, and he was not sure that parents approved of the A T S working with men in small units scattered about the country He thought there was a lot to be said for retaining some older women as officers Lord **SAMUEL** spoke of the general call-up of women He thought the experience and ability of interviewers had often been to seek and that there was a lack of uniformity in the standards of the medical examinations He deplored the long hours worked by women in some factories There were still many complaints of the inadequacy of canteens and an insufficiency of day nurseries More welfare officers were needed in industry, or many evils, though recognised as evils, would still continue If women were to be conscripted good use must be made of them Lord **STRABOLGI** thought a tremendous lot depended on whether Mr Bevin or Dr Ley won the race in mobilising married women for the factories To this end the provision of day nurseries was crucial and urgent, yet the Ministry of Health was moving in a ponderous, peace-time, bureaucratic way Lord **CROFT**, who replied for the Government, declared that the War Office was not prepared to treat women as though they were tough soldiers nor as though they were a women's university in time of peace But the approved scale of accommodation for women was decidedly better than for the men They tried to keep women's units separate from the men's, but as in many other walks of life it was not always possible All the A T S units were now commanded by women and when women are trained for staff duties they would be used Till then the final responsibility must rest with the Service Lord **SWINTON** made a plea to give women the minimum of man-made drill and the maximum of training by women for the jobs they would have to do. Lord **TRENCHARD** was doubtful whether Lord Croft had given an assurance that women were to run their own services Lord Croft seemed to infer that there were not enough women trained to run their services, but were there any men trained to do the work of training women?

Uneasiness about recruitment to the A T S was also reflected in the debate on the Address in the Commons Captain J H F **McEWEN** thought the problem was feline not ovine It was useless for the Minister of Labour to go about the country bellowing like a wounded rhinoceros, threatening conscription and appealing to women's sense of adventure, for most women only wanted security Captain McEwen' was sorry the glamour recruiting poster had been withdrawn, it was the only theme which would attract many women Mr C **STEPHEN** agreed that women wanted security rather than adventure, but suggested offering them the more rational baits of social equality and equal compensation and pensions with men

Incidence of Tuberculosis

Mrs. J L **ADAMSON** asked the Minister of Health whether, in the inquiry by the M R C into the causes of the increase of tuberculosis in girls and women of 15–30 years of age, he would ascertain the nature of their occupations, and if the increase was revealed as a result of medical examination not normally undertaken in peace time Mr E **BROWN** replied I understand that the M R C, in the course of their inquiry, will consider such evidence as is available as to how far occupational circumstances have a bearing on this problem The trend of tuberculosis has been revealed by information compiled by the Registrar-General in the normal way

QUESTION TIME

National Wheatmeal Flour

Sir **ERNEST GRAHAM-LITTLE** asked the secretary to the Ministry of Food what machinery existed the dissemination and enforcement of the statutory defining national wheatmeal flour, whether he was that notwithstanding this order national wheatmeal flour 85% extraction might consist merely of white straight flour with added bran, and whether this compo accorded with the specification furnished by the M Research Council in its second memorandum, published in spring of 1941 —Major G **LLOYD GEORGE** replied N wheatmeal is made by controlled flour millers, and, in the manufacture of this product, they are bound by the statutory order defining national wheatmeal and also by the more precise instructions regarding its manufacture which were issued to secure adherence to the recommendations of the Medical Research Council The Minister has the necessary powers to secure compliance with such orders and instruction A composition consisting of white straight run flour with added bran would not accord with the specification of the M R C, nor would it be in accordance with the manufacturing instructions issued to millers

Control of Disease in Dairy Cattle

Mr M P **PRICE** asked the Minister of Agriculture what steps had been taken to set up a scheme for the regular inspection of dairy cattle by voluntary arrangements with farmers for the elimination of contagious abortion, mastitis and Johne's disease, and for the provision of serum at special rates for this purpose —Mr R S **HUDSON** replied The arrangements for a voluntary scheme for the control of certain of the major diseases of dairy cattle are in an advanced stage of preparation, but difficulties in connexion with the choice of the most suitable contagious abortion vaccine have somewhat delayed its inception I hope, however, that this difficulty will shortly be resolved

Weybridge Tuberculin Test

Major E G R **LLOYD** asked the Minister whether, in view of the experience of Scottish and English herd owners with the Weybridge tuberculin test and the lack of confidence felt in the test by the industry, he would consider discontinuing the use of the recently introduced tuberculin and reverting to the type of preparation formerly used pending further scientific investigation, and whether he would consider the advisability of arranging a conference between representatives of Scottish and English herd interests and veterinary medical associations to discuss this matter in the light of their respective experiences —Mr **HUDSON** replied The whole question of tuberculin and the tuberculin test has for some time been under investigation by the joint tuberculosis committee of the Agricultural Research Council and the M R C, and I propose to await the findings of that committee before taking any fresh step in the matter

Children of Women Workers

Mr **GORDON MACDONALD** asked the President of the Board of Education what steps he was taking to safeguard the health of school children whose mothers were employed on war work. —Mr R A **BUTLER** replied I have asked local education authorities to give particular attention to the need of providing meals for school children whose mothers are employed on war work

Mr K **LINDSAY** asked the minister whether he would give a 100% grant to local education authorities who wished to stimulate nursery provision for children under five —Mr **BUTLER** replied It has been decided that where new nursery classes are provided in public elementary school premises, especially to meet the needs of the children of women war workers, the authorities' expenditure will be eligible for 100% grant from the Ministry of Health as expenditure on war time nurseries

Out of the Mouths of Babes

Mr D L **LIPSON** asked the parliamentary secretary to the Ministry of Food if he was aware that patent baby foods were being consumed by adults seeking a substitute for milk, and as the supply of baby food was limited, would he take steps to see that it was reserved for those for whom it was intended —Major **LLOYD GEORGE** replied Patent baby foods are not controlled by the Ministry of Food, but an infant food manufacturers group has been formed after consultations between the ministry and the trade Inquiries have recently been made into the allegation that such baby foods are being enry Cohen and Sir Robert Kelly reported little value om the operation in a series of 10 cases, but in 1936 Frazier and S N Rowe recorded 8 operations on a ries of 5 patients with considerable improvement in 2 oth cases however relapsed after the first operation and equired a second, their later history is not known y own experience of myelotomy in 3 cases was ufficient to convince me that the operation has no ermanent effect on symptoms and no curative effect on he process itself

Manchester　　GEOFFREY JEFFERSON

CADMIUM POISONING

SIR,—The recent publication (*Chem Age Lond* 1941 45 259) of a precis of a report on 208 cases of acute poisoning resulting from the use of cadmium-plated food utensils is of interest after reference to 3 somewhat similar cases in the report of the Chief Medical Officer to the Ministry of Health for 1935 (p 155)

Last year there were 8 cases of acute cadmium poisoning in Walthamstow

In May, 1940, 3 adults and 5 children were found to have become acutely ill some 15 minutes after consuming "lemonade ices" prepared by freezing "lemonade" in the metal trays of a reconditioned refrigerator All were sick and 4 had diarrhœa, but recovery was generally complete within 24 hours The remains of the unconsumed "lemonade ices were not available but the method of preparation was repeated This consisted of dissolving a popular brand of lemonade crystals (consisting of citric acid and sugar) in boiling water and freezing overnight in the refrigerator Analysis showed that the trays had been plated with cadmium on copper and that there was up to 279 p p m of cadmium in solution This roughly represented gr 1/20 of cadmium per "ice" block It therefore appears that this quantity of cadmium may cause somewhat severe poisoning The refrigerator was of a well known make but had been supplied second hand by another firm It had then acquired cadmium plated copper trays not supplied originally The supplying firm was instructed to warn all its customers of the danger of making "lemonade ice" in similar trays The original manufacturers were naturally most anxious to investigate the matter but the supplying firm unfortunately proved non coöperative in regard to tracing back the persons responsible for the replating of the trays with cadmium

The quantitative toxicity of cadmium has apparently not yet been clearly established but it is sufficiently dangerous for its use to be prohibited in colouring matters for foodstuffs

I wish to acknowledge the assistance of Mr George Taylor, F I C, public analyst to the borough of Walthamstow

Walthamstow　　A T W POWELL

GRADUATION AT AN EARLIER AGE

SIR,—I would refer Dr Rogerson, who doubts my facts, to the PEP report on British Health Services (p 137) "In 1938 a student will not be permitted to register before 18 　 The course cannot be completed in less than six years at some medical schools, or less than five and a half at others, and one single failure through bad luck or sickness may make the course six months or a year longer" The B M A. recommend another year in house jobs, prolonging the course to seven years or so

This late age of graduation to some extent explains why out of 18,901 married doctors according to the 1931 census, only 5 8% were married before the age of 30 This figure does not take account of those who never marry at all, so it is on the high side Statistics show that, on the average, a wife is not more than a year younger than her husband, and as fertility in primiparæ falls rapidly after 30 it is little wonder that the doctor's nursery is almost empty

Do specialists fare better? "A young man will hardly keep himself for the first ten years that he is in specialist practice" (p 160) I looked up at random 50 honorary physicians and 50 surgeons at London hospitals in Who's Who 1940 Their average age was 52 and the average age on marriage was 32 6 About a quarter (24%) had no children at all, 42 had no male issue while only 3 had five children

With regard to an earlier start in medicine, Dr Rogerson wants to know what intelligence is "In so far as there is a common meaning to the word intelligence we may say that it corresponds to *g*" according to R Cattel, quoted with approval by Professor Spearman the greatest authority on the subject who says that *g* ceases to grow after 13 or 14 Conative factors, of course, are also important, and my contention is that enthusiasm for learning is less under a system where graduation is virtually at 26 and the chances of making a home by the age of 30 is only about one in twenty Dr Rogerson's misgivings as to whether a man at 21 can be safely given responsibility sounds strange in an age when our youth is showing such resourcefulness and leadership as indeed they always do when given the chance

Mr Bates, who seems to think two blacks make a white says we are no worse off than other professions, but it is to us that the public come for advice on size of family, and we ought to put our own house in order first The G M C have not only made biology and psychology compulsory for students but genetics as well Perhaps the student of tomorrow will say to the G M.C. "Biology tells us that the best age for parenthood is 24–32, so why may we not be encouraged to settle down by then? Psychology teaches that mental health is benefited by an emotional life appropriate to one's years a full nursery in the thirties and grandchildren to brighten one's declining years I am not satisfied with a system that gives me only one chance in twenty of a home of my own at the age of 30 or if I am a specialist only forty-eight chances in a hundred of having a son to carry on my name Surely you educationists can get together to devise a system which will give us a logical mind, a love for knowledge, and professional skill by the age of 21"

I would not however go so far as Mr Bates in hinting that only communism can remedy all this Some of our youth will always prefer a "good time" to civic responsibilities but if the authorities would act we could have an efficient system of education which would enable those who wished to do so to start at 16 graduate at 21 and become householders by 24 or 25 Care must be taken that able men are not penalised professionally for doing so Some such system is bound to come and we shall hear a great deal more on the subject in the next few years, when facts force the Government to adopt some sort of population policy

Aylesbury　　A SPENCER PATERSON

PROBLEMS IN HÆMAGGLUTINATION

SIR,—With reference to your leading article of Oct 25, I should like to stress the fact as I did previously (*Brit med J* Nov 23, 1940, p 721) that the indiscriminate use of O serum or plasma is in fact not the best procedure for emergency transfusion Individuals belonging to group O must only be considered as universal donors if whole blood is transfused When the corpuscles are excluded and only plasma is used O individuals are least suitable as universal donors because their plasma contains both anti-A and anti-B agglutinins The ideal of utilising AB serum generally for this purpose cannot be attained because of the scarcity of this group On the other hand, A plasma or serum is more suitable than O plasma or serum because it contains only *anti-B* agglutinins Group A is, at least in the southern part of England, about as common as group O, so that it would not be more difficult to collect A blood than O blood Any danger caused by agglutination of the recipient's corpuscles is then avoided if the recipient belongs to group O or A Only about 15–18% of the population (groups B and AB) would then remain in whom the possibility of agglutination of their corpuscles by A serum would arise Further, *since* anti-B agglutinins are usually weaker than anti-A agglutinins in these cases the likelihood of damage would seem to be less than that which might result from the transfusion of *O serum to A* and AB individuals Hence preference should be given to A serum (or plasma) rather than to O serum if homologous blood is not available

The method utilised by B L Della Vida and S C Dyke (*Lancet*, 1941, 1, 564) of mixing O serum with A and B serum may not always be reliable The amounts of A and B antigens detectable in serum are different. The serum of A_2 blood usually contains weaker A antigens than that of A_1 The full action of the iso-antigens present in serum is often only detectable by special rubella), 639 , pneumonia (primary or influenzal), 1100, puerperal pyrexia, 142 , cerebrospinal fever, 114 , poliomyelitis, 13 , polio-encephalitis, 0 , encephalitis lethargica, 2 , dysentery, 209 , ophthalmia neonatorum, 59 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Nov 19 was 1321, including scarlet fever, 174 diphtheria, 286 , measles, 37 , whooping cough, 487 , enteritis, 37 , chicken pox, 37 , erysipelas, 26 , mumps, 7 , poliomyelitis, 4 dysentery, 25 , cerebrospinal fever, 12 , puerperal sepsis 16 enteric fevers 35 , malaria, 1 , other diseases (non infectious), 60 , not yet diagnosed 77

Deaths —In 126 great towns there were 1 (0) deaths from enteric fevers, 3 (0) from scarlet fever, 2 (0) from measles, 9 (2) from whooping-cough, 27 (0) from diphtheria, 35 (2) from diarrhœa and enteritis under 2 years, and 25 (5) from influenza The figures in parentheses are those for London itself

There was 1 death from an enteric fever at York Liverpool reported 7 fatal cases of diphtheria

The number of stillbirths notified during the week was 192 (corresponding to a rate of 39 per thousand total births), including 13 in London

CHILDREN IN SHELTERS

How much time should children spend in air-raid shelters ? At first glance the answer would seem to be " As little as possible," but at a conference arranged by the Save the Children Fund, and held at Friends House on Nov 29, the question was not felt to be simple Evacuation was not discussed, because all agreed that London was not the proper place for children during a war But there are children in London, and their welfare must be considered, for as Mr **Kenneth Lindsay**, M P , pointed out in his opening address they are exposed not only to bombs but to anything the war may bring along If during the winter months children are encouraged to come to the shelter in the evenings they are at least off the streets, and their parents know where they are , but of course it would be better, as most speakers agreed, if there were enough properly organised boys and girls clubs or play centres for them to attend instead

How far, then, can the shelter be made to serve the purpose of a play centre and is it desirable that it should be used in this way ? In some boroughs many parents are now sleeping at home and sending the children to the shelters to sleep , in others, where no children under 14 are allowed to sleep in the shelter without their parents, many children come to the shelter to meet their friends before going home to bed Thus the children themselves are treating their shelter as a rendezvous If there are no organised occupations for them they find their own amusements, which include card-playing for money and smoking Those between 10 and 14, who feel on the brink of complete citizenship, are naturally the most prone to these adult pursuits , but in one shelter, as soon as a counter attraction in the form of aeroplane modelling was presented, the children forsook gambling to become absorbed in it They want an occupation—one speaker said " they're like a dry sponge " —but they want the occupation to have some point to it They would rather make Christmas decorations for the shelter than raffia mats , they would rather paint a cupboard than a picture book , they like better still to be doing something which they feel is helping the troops or the war effort , and most significant of all, they do not use the term "play centre " among themselves—they speak of the " centre " or the " club " They like going to clubs and centres because they " get the chance to make things " , and they rightly regard the word " play" as an affront No-one would tell an artist to go and play in his studio or a carpenter to play at his bench

If the shelters, then, are to be used as temporary and accessory centres in areas which lack sufficient provision of the kind—and most speakers agreed that shelters should take on this extra duty—they must offer the children something cooperative and responsible in the way of occupation , work for the improvement of the shelter itself, or project work giving them an insight into a trade or social service Mr Lindsay saw the situation as another opportunity to " cash in on the war " , and his dream of a Ministry of Childhood and Youth may begin to have a material foundation in work starting now in the shelters

Letters to the Editor

ABOUT THE CHRISTMAS GIFT FINAL

Sir,—Referring to my appeal on behalf of the Christmas Gifts fund of the Royal Medical Benevolent Fund, I recently received a letter from a doctor, aged 7 He and his wife, aged 72, are both beneficiaries of the fund and their joint income is £169 They have been recipients of our Christmas gifts and their letter states –

" As Christmas approaches we think of the special gift which the Committee has so kindly sent us for several years, but would like to make a suggestion Since we came to the little farm worker's cottage we find expenses are easier than formerly It would, therefore, give us much pleasure if our Christmas gift this year was given instead to someone who has been bombed out of home "

Many of our beneficiaries have unfortunately suffered through enemy action May I, through your columns, ask those of your readers who have not yet responded to my Christmas appeal to send in their contributions as soon as possible addressed " Christmas Gifts," Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, London, S W 15

Thos Barlow,
President, R M B F

WHAT'S IN THE LOAF?

Sir,—Your leader of Nov 15 and the admirable letter from Dr Swindells (Nov 22) should spur the medical profession to the realisation of their ultimate responsibility as guardians of the public health for what you describe as the present "strategically bad" situation of the national wheatmeal loaf

Recent parliamentary answers reveal that the Ministry of Food has expended during the past year over half a million sterling on its advertisements, including those of the " national wheatmeal loaf " and that notwithstanding these costly efforts at persuasion the sale of that loaf represents only about 7% of the total consumption of bread in this country Moreover, the Parliamentary Secretary was constrained to admit that the national wheatmeal loaf now in the market is of entirely variable composition, and is impossible to obtain over wide areas of the kingdom The rise in the mortality from tuberculosis during the past two years, indicated in several recent parliamentary answers, suggests an increasing measure of malnutrition in the community, one factor of which may be the admittedly poor nutritive value of the white loaf, which throughout the country (except for one district in Wales) apparently still consists of straight-run flour (75% extraction), deprived of the germ and without any of the " fortification " promised 18 months ago by the addition of synthetic vitamin B_1 and calcium If the influence exercised by the milling industry, with its formidable occupation of key positions in the Ministry of Food, is the explanation of the otherwise inexplicable reluctance of that ministry to make provision for the highest possible extraction flour for the national war-bread, public opinion will hardly allow the obstacle of vested interests to resist indefinitely so urgent and obvious a reform This provision was made with success in the last war, and has been urged by practically unanimous scientific and medical opinion, strongly fortified by the statement, for which the ministry itself is responsible, that universal consumption of the wheatmeal loaf would result in the saving of one-fifth of shipping space I submit that the medical profession should lead the revolt

House of Commons **E Graham-Little**

SURGERY FOR SYRINGOMYELIA

Sir,—In your annotation (*Lancet*, Nov 22, p 644) you invite neurosurgeons to give their experience of the surgical treatment of syringomyelia Some have already done so , I summarised their findings in the Medical Annuals of 1933 (p 471), 1936 (p 427) and 1937 (p 421) A Juzelevskij in 1935 reported on 23 cases , he found that opening up of cavities in the cord only gave partial and temporary relief of symptoms, which in some cases recurred within a fortnight He also found that the pressure of the fluid in the cavity was the same as that of the cerebrospinal fluid in the theca, so that there was no question of relieving tension In the same year nry Cohen and Sir Robert Kelly reported little value m the operation in a series of 10 cases, but in 1936 Frazier and S N Rowe recorded 8 operations on a ries of 5 patients with considerable improvement in 2 oth cases, however relapsed after the first operation and quired a second their later history is not known own experience of myelotomy in 3 cases was fficient to convince me that the operation has no rmanent effect on symptoms and no curative effect on e process itself

Manchester GEOFFREY JEFFERSON

CADMIUM POISONING

SIR,—The recent publication (*Chem Age Lond* 1941 5, 259) of a precis of a report on 208 cases of acute oisoning resulting from the use of cadmium-plated food tensils is of interest after reference to 3 somewhat similar ases in the report of the Chief Medical Officer to the Ministry of Health for 1935 (p 155)

Last year there were 8 cases of acute cadmium poisoning in Walthamstow

In May, 1940, 3 adults and 5 children were found to have ecome acutely ill some 15 minutes after consuming "lemon ade ices" prepared by freezing "lemonade" in the metal trays of a reconditioned refrigerator All were sick and 4 had diarrhœa, but recovery was generally complete within 24 hours The remains of the unconsumed "lemonade ices *were not* available but the method of preparation was repeated This consisted of dissolving a popular brand of lemonade crystals (consisting of citric acid and sugar) in boiling water and freezing overnight in the refrigerator Analysis showed that the trays had been plated with cadmium on copper and that there was up to 279 p p m of cadmium in solution This roughly represented gr 1/20 of cadmium per "ice" block It therefore appears that this quantity of cadmium may cause somewhat severe poisoning The refrigerator was of a well known make but had been supplied second hand by another firm It had then acquired cadmium plated copper trays not supplied originally The supplying firm was instructed to warn all its customers of the danger of making "lemonade ice" in similar trays The original manufacturers were naturally most anxious to investigate the matter but the supplying firm unfortunately proved non coöperative in regard to tracing back the persons responsible for the replating of the trays with cadmium

The quantitative toxicity of cadmium has apparently not yet been clearly established but it is sufficiently dangerous for its use to be prohibited in colouring matters for foodstuffs

I wish to acknowledge the assistance of Mr George Taylor, F I C, public analyst to the borough of Walthamstow

Walthamstow A T W POWELL

GRADUATION AT AN EARLIER AGE

SIR,—I would refer Dr Rogerson, who doubts my facts, to the PEP report on British Health Services (p 137) "In 1938 a student will not be permitted to register before 18 The course cannot be completed in less than six years at some medical schools, or less than five and a half at others, and one single failure through bad luck or sickness may make the course six months or a year longer" The B M A recommend another year in house jobs, prolonging the course to seven years or so

This late age of graduation to some extent explains why out of 18,901 married doctors, according to the 1931 census, only 5 8% were married before the age of 30 This figure does not take account of those who never marry at all, so it is on the high side Statistics show that on the average, a wife is not more than a year younger than her husband, and as fertility in primiparæ falls rapidly after 30 it is little wonder that the doctor's nursery is almost empty

Do specialists fare better? "A young man will hardly keep himself for the first ten years that he is in specialist practice" (p 160) I looked up at random 50 honorary physicians and 50 surgeons at London hospitals in Who's Who 1940 Their average age was 52 and the average age on marriage was 32 6 About a quarter (24%) had no children at all, 42 had no male issue, while only 3 had five children

With regard to an earlier start in medicine, Dr Rogerson wants to know what intelligence is "In so far as there is a common meaning to the word intelligence we may say that it corresponds to *g*" according to R Cattel, quoted with approval by Professor Spearman the greatest authority on the subject who says that *g* ceases to grow after 13 or 14 Conative factors of course, are also important, and my contention is that enthusiasm for learning is less under a system where graduation is virtually at 26 and the chances of making a home by the age of 30 is only about one in twenty Dr Rogerson's misgivings as to whether a man at 21 can be safely given responsibility sounds strange in an age when our youth is showing such resourcefulness and leadership, as indeed they always do when given the chance

Mr Bates, who seems to think two blacks make a white, says we are no worse off than other professions, but it is to us that the public come for advice on size of family, and we ought to put our own house in order first The G M C have not only made biology and psychology compulsory for students but genetics as well Perhaps the student of tomorrow will say to the G M C "Biology tells us that the best age for parenthood is 24–32, so why may we not be encouraged to settle down by then? Psychology teaches that mental health is benefited by an emotional life appropriate to one's years a full nursery in the thirties and grandchildren to brighten one's declining years I am not satisfied with a system that gives me only one chance in twenty of a home of my own at the age of 30, or if I am a specialist only forty-eight chances in a hundred of having a son to carry on my name Surely you educationists can get together to devise a system which will give us a logical mind, a love for knowledge and professional skill by the age of 21"

I would not, however, go so far as Mr Bates in hinting that only communism can remedy all this Some of our youth will always prefer a "good time" to civic responsibilities, but if the authorities would act we could have an efficient system of education which would enable those who wished to do so to start at 16, graduate at 21 and become householders by 24 or 25 Care must be taken that able men are not penalised professionally for doing so Some such system is bound to come and we shall hear a great deal more on the subject in the next few years, when facts force the Government to adopt some sort of population policy

Aylesbury A SPENCER PATERSON

PROBLEMS IN HÆMAGGLUTINATION

SIR,—With reference to your leading article of Oct 25, I should like to stress the fact as I did previously (*Brit med J* Nov 23, 1940, p 721) that the indiscriminate use of O serum or plasma is in fact not the best procedure for emergency transfusion Individuals belonging to group O must only be considered as universal donors if whole blood is transfused When the corpuscles are excluded and only plasma is used, O individuals are least suitable as universal donors because their plasma contains both anti-A and anti-B agglutinins The ideal of utilising AB serum generally for this purpose cannot be attained because of the scarcity of this group On the other hand, A plasma or serum is more suitable than O plasma or serum because it contains only anti-B agglutinins Group A is, at least in the southern part of England, about as common as group O, so that it would not be more difficult to collect A blood than O blood Any danger caused by agglutination of the recipient's corpuscles is then avoided if the recipient belongs to group O or A Only about 15–18% of the population (groups B and AB) would then remain in whom the possibility of agglutination of their corpuscles by A serum would arise Further since anti-B agglutinins are usually weaker than anti-A agglutinins in these cases the likelihood of damage would seem to be less than that which might result from the transfusion of O serum to A and AB individuals Hence preference should be given to A serum (or plasma) rather than to O serum if homologous blood is not available

The method utilised by B L Della Vida and S C Dyke (*Lancet*, 1941, 1, 564) of mixing O serum with A and B serum may not always be reliable The amounts of A and B antigens detectable in serum are different The serum of A_2 blood usually contains weaker A antigens than that of A_1 The full action of the iso-antigens present in serum is often only detectable by special physico-chemical methods Thus the way suggested by E Witebsky, N C Klendshoj and P Swanson (*J Amer med Ass* 1941 **116**, 2654 see also *J infect Dis* 1940 **67**, 188, *J exp Med* 1940 **72**, 663)—namely, the addition of the purified group-specific carbohydrates to the serum—should on principle be considered an advance though it may be difficult to obtain sufficient supplies of the purified B substance

Finally it may be mentioned that all errors in grouping (including those originating from auto- or cold-agglutination) may be avoided by examining the corpuscles as well as the serum In adopting this combined method some difficulties may be encountered when very many examinations are wanted in a hurry for the transfusion services Nevertheless it is the only way to be sure of obtaining correct results and avoiding all possibility of mistake This is illustrated by the unusual case reported by H J Parish and R G Macfarlane (*Lancet*, Oct 25 1941, p 477), in which ionised calcium played an inhibiting part against antoagglutination produced in citrated blood For if serum or plasma is also examined against its own corpuscles as is always desirable, such a peculiarity would be recognised immediately

School of Pathology, Trinity College Dublin H Sachs

LOCAL APPLICATION OF SULPHONAMIDES

Sir,—One secret of success in sulphonamide therapy is to give as much of the drug as the patient can tolerate in the first few days Where the infection is a local one and accessible more use should, I feel be made of local application, for this will produce an effective concentration of the drug where it is wanted more rapidly than oral or parenteral administration and will not produce the same nausea For instance when treating a local infection of the nasal cavity a well-powdered tablet may be inserted into the nostril It is surprising too, that local application has not been more freely used in treating gonorrhœa The passage of instruments through an acutely inflamed passage' is contra-indicated, but the manufacturers might consider supplying sulphapyridine or one of the allied compounds in the form of slightly pliable rods up to 3 in long to be inserted into the urethra once the acute stage has subsided and left in position until the patient passes his urine More local application should result in a considerable saving in drugs, an important consideration where expensive remedies are employed on a large scale, as among native communities

Durban, South Africa F Gordon Cawston

GERMAN BLOOD SUBSTITUTE

Sir,—In your annotation of Nov 1 (p 533) you refer to a crystalloid solution named Tutofusin which is used as a blood substitute in Germany, but the composition of which is not mentioned in the article you cite Tutofusin has been manufactured for about eight years by J Pfrimmer and Co of Nurnberg According to the announcements of that firm it consists of "several serum salts," and has been employed both for intravenous infusion and also as a base for local anæsthetics

Cambridge G Brock

ENURESIS

Sir,—The number of letters on the treatment of enuresis seems to indicate that this condition is still difficult to cure The method which I follow—faradism to the perinæum—is almost invariably successful I saw it described first in a French textbook of surgery about 18 years ago The writer stated that it acted by stimulating the perinæal muscles and was successful in over 50% of cases I had much more success with it than that but soon came to the conclusion from watching the reactions of the patients and seeing the varying times it took to cure them that it acted by influencing the child's subconscious mind It is described in the Index of Treatment by Sir Robert Hutchison who says that being painful it is hardly to be distinguished from punishment With this I cannot agree I have heard of boys who have gone all through their public school wetting the bed every night A major operation which would cure the horrible habit would be welcomed and why should a course of faradism be regarded differently? There are certain conditions which must be fulfilled if success is to be obtained

1 The child must be of an age when it can realise bedwetting is a horrid business, and can understand that treatment although painful is in no way regarded as a pu ment but is used as the only certain method of cure

2 The parents must cooperate If the child is an one and much spoiled this sometimes presents a diffic the arguments used above usually convince them that it necessary It failed in one case whose mother said, ' little thing, he can't help it, I do it myself sometimes and does my husband '

3 The treatment must be given by someone who will kind and very firm, preferably a nurse of some standing wi experience of electrotherapeutic methods

The treatment is given before the patient goes to bed and patient, parent and nurse must understand that a inevitably as night follows day so will faradism to the perinæum follow bedwetting on the previous night A few treatments are generally sufficient but if not the strength of the current is increased until it becom decidedly unpleasant There seems no limit to the a at which this will succeed I have cured one youth of 18, but I should not care to try it on children of 3 or 4 That is to say it is suitable for the really difficult cas and it is in the hope of helping these that I write th letter

F R C S

THE DISCHARGING EAR

Sir,—No-one can accuse Mr Layton of lack of versatility or obscurantism, but it is surprising that in discussing otitis media and the discharging ear in his lecture "Medicine and Duty" he makes no mention of treatment with a quartz applicator attached to the Kromayer mercury-vapour lamp Unfortunately patients with discharging ears are only referred to the practitioner of physical medicine after years of treatment with ear-drops, &c I am convinced that many of the complications could be avoided if physical treatment was adopted from the first rather than as a last resort Treatment with the Kromayer lamp should be combined with local infrared irradiation which acts as a super fomentation and with general ultraviolet irradiation to raise the general powers of resistance

Wimpole Street, W 1 W Annandale Troup

MORE CERTIFICATES

Sir,—Neither the peripatetic correspondent in your issue for Nov 22 nor the general practitioner who wrote in the *Daily Telegraph* on Nov 24 has exhausted the varieties of "bits of paper" requested in the kind of confetti practice in which we are now engaged A small girl patient of mine has recently been a long time in plaster for congenital dislocation of the hips On removal of the plaster the orthopædic surgeon suggested that a rocking-horse should be bought for the child to aid in rehabilitation The parents duly went to a shop at a neighbouring town to seek a rocking-horse They were told that it could be supplied if a medical certificate were presented And so, solemnly I have written out a certificate that B requires a rocking-horse

Clynderwen, Pembrokeshire E Roland Williams

Prisoner of War —In a recent casualty list Lieutenant J E Readman, M R C S, R A M C, was posted as prisoner of war

Mobile X Ray Service —Fifteen mobile vans, fitted with X ray equipment, have been presented to the Ministry of Health by the British Red Cross and Order of St John of Jerusalem They will be stationed at selected hospitals in London and the Provinces so that calls from any part of the country can be answered It is not intended to use them for routine work but as reserve sets for an emergency caused either by raid damage or unexpected demands on a hospital's resources The vans will have women drivers and a radiographer will be attached to each unit, who will be appointed by the hospital at which the unit is stationed and who will work there while not engaged with the unit

Each van generates its own current for the X ray apparatus, which can be operated by cable up to 100 yd away, and has a dark room with films and developer

The Ministry of Health is anxious that full use should be made of these units, and application should be made to the hospital officer, or in the London sectors to the group officer

Medical News

niversity of Oxford

On Nov 22 the degree of B M was conferred in absence on A M Johns

University of London

Sir Ernest Graham-Little has been re-elected chairman of he council for external students for 1941–42

University of Wales

At recent examinations for the degrees of M B and B Ch the ollowing were successful —

Obstetrics and Gynæcology —H J Houghton Dorothy M Hyde, Jessie Phillips Annie M Rees Dilys M Rees Dorothy Roberts D C H Tutton A K Toufeeq and S F Williams

Prophit Tuberculosis Survey

The Royal College of Physicians of London proposes to appoint a scholar to conduct this survey into the incidence and progress of tuberculosis The appointment will be at the rate of £350–500 per annum, and special experience of tuberculosis is not essential Further particulars will be found in our advertisement columns

Czech Medical Examinations

At the request of the Czechoslovak Minister of the Interior and Education in London, the examining board in England of the Royal Colleges has undertaken to conduct a special final examination (second and third rigorosa) for the Czechoslovak MUDr degrees Part I (pathology and bacteriology) was held in London last week, when twelve candidates were examined The following were successful —

Artur Flach Jan Glaser Zdenek Pfeifer, Karel Skopek K J Su at Walter Tausig, Josef Voracek and Josefina Liebsteinova

Society of Apothecaries of London

The following, having completed the final examination, are granted the diploma of this society entitling them to practise medicine, surgery and midwifery M C Hannon, Birm , and F G Leekam, St Mary's

National Council for Maternity and Child Welfare

Lord Dawson will take the chair at a meeting to be held under the auspices of the council at 11 30 A M on Dec 10, at the Royal Institution, Albermarle Street, W 1, when Mr Ernest Brown will give an address on the care of mother and child in war time Prof Fletcher Shaw, P R C O G , will also speak

Royal Society of Medicine

On Wednesday, Dec 10, at 2 30 P M , Mr A Lawrence Abel will give his presidential address to the section of proctology He will speak on proctology's debt to living surgeons On Dec 12, at 2 30 P M , there will be a general meeting of fellows and afterwards Sir Almroth Wright, F R S will read a paper on the need for abandoning much in immunology that has been accepted as true

Royal Society of Arts

On Tuesday, Dec 16, at 1 45 P M , at the house of this society in John Adam Street, Adelphi, W C 2, Mr Maurice Ashby, D I C , will address the dominions and colonies section of the society on British Empire drug production

Seals, Salmon and Strychnine

In Scotland the depredations of seals in the salmon fisheries has been so great that the Home Secretary has had to make an exception to the prohibition of the sale of strychnine in the interests of the salmon Now amounts of strychnine up to 4 oz. may be bought for the purpose of killing seals

Ethical Pharmaceuticals Association

The sixth annual general meeting of this association was on Nov 11, and the following officers were elected for 1941–42 chairman, Mr W Beckley , vice chairman, Mr H R Napp , treasurer and secretary, Mr F G W Paige , members of executive committee, Mr J Angus (Bengue and Co) Mr G L Cooper (Coates and Cooper), Mr R F Edkins (Organon Laboratories), Mr A C Henry (Bayer Products) and Mr C W S Taylor (Ciba)

Pharmaceutical Society of Great Britain

On Thursday, Dec 11, at 2 30 P M , at 17 Bloomsbury Square, W C 1, the Harrison medal will be presented to Mr Thomas Tickle, F I C , public analyst for Devon Mr Tickle will afterwards deliver the Harrison lecture and has chosen to speak on the influence of analytical chemistry on pharmacy

Obituary

HENRY OWEN WEST

M D LOND F R C P D P H

ON Nov 20 Dr Henry West medical superintendent of Queen Mary's Hospital for Children at Carshalton, died without regaining consciousness three days after he had been struck down by a cerebral hæmorrhage His steadfastness keenness and high sense of duty had raised the standard of every institution where he worked, and these qualities were associated with the religious convictions which were the background of his life West was born in 1885 the son of the Rev J O West rector of St Philip's Bristol, and the eldest of a family of eleven He came to King's College London, in 1904 from Bristol University where he had passed the Inter B Sc He took a leading part in the Students Christian Union was a first-class hockey player and a useful bat For family financial reasons he had to qualify as soon as possible and early in 1909 after becoming a L M S S A he was appointed house-surgeon to Prof Albert Carless Later in the same year he took his M B and received senior house-appointments at the City Road Chest Hospital and at the Seamen's Hospital In 1913 he went to Queen Mary's Hospital for Children Carshalton as assistant superintendent, and there his interest in children's work and tuberculosis was stimulated Queen Mary's, under Dr Gordon Pugh was a recruiting-ground for tuberculosis medical officers and West soon took up this work and became T O for Kent He had taken his M D in 1912 and he continued to study obtaining the M R C P in 1914 and the D P H in 1916 He joined the R A M C. in 1917 and during his service in Salonika he was mentioned in dispatches But he contracted malaria and soon after his return to England was invalided out of the service

His appointment as medical superintendent of Princess Mary's Hospital for Children at Margate enabled him to return to the work in which he was most interested—children and tuberculosis—and to start his career as a hospital administrator During the twelve years he was there he became an authority on non-pulmonary tuberculosis in children and though primarily a physician he developed special skill in the treatment of surgical tuberculosis At his next job as medical superintendent of the Archway Hospital (L C C) his work as an administrator was recognised and he was soon promoted to St Giles' Hospital Camberwell (L C C) West had long felt that the staffs of teaching hospitals did not always appreciate good work done outside their walls and that the medical schools missed opportunities of teaching in public authority hospitals During his four years at St Giles' he was able to establish happy relations with his own old school Some of his staff taught at King's physicians and surgeons regularly brought their students to St Giles' and he recruited his resident medical officers as far as possible from King's In 1936 West became a fellow of the Royal College of Physicians and a year later he succeeded his old chief at Carshalton

He brought to this exacting and responsible post mature knowledge sound judgment and a high sense of responsibility for the children under his care He slept in his clothes at the hospital throughout the night bombing so that he could dash out at a moment's notice if anything untoward occurred as indeed it often did One night when a ward which had been damaged was being evacuated he was told someone had just noticed an unfamiliar hole in the ground West with extraordinary prescience realised it was probably a delayed action bomb and proceeded feverishly to get the children out of the two adjoining blocks Within a minute of the removal of the last child his intuition proved right There was a terrific explosion and the two wards suffered such damage that casualties would have been inevitable had anyone been in them He was properly proud that not one of his patients suffered any serious injury during the blitz

West married Miss Anne Finchett in 1913 and they had three sons who were all at Epsom College Two obtained scholarships to medical schools, and the youngest is a cadet at Dartmouth

CLAUDE CHURCHILL CHIDELL

M B B S LOND

Dr Claude Chidell who died at Hythe on Nov 18, in his 75th year, was one of the pioneers in the open-air treatment of tuberculosis As with so many others of his time his interest in the disease arose when he became a victim to it himself soon after qualifying, and having got the better of it in Switzerland and South Africa he studied methods at Nordrach and Friedrichsheim before he was invited in 1901 to take charge of Pinewood, then newly founded by a few far-seeing philanthropists for the treatment of early cases among the educated middle classes Here he found his métier, for his commanding presence, his sympathetic understanding of temperament, and his willingness to spend himself unstintingly, made him the ideal sanatorium chief But the strain was too much and after four years he joined a friend who was in practice at Arosa, and later—having in 1909 married Ethel Westall, daughter of William Westall, writer and journalist—had a home of his own at Broadstairs for children with surgical tubercle After his retirement in 1917 he settled in the Folkestone neighbourhood where he kept up his professional interests and revelled in bird and animal life as befitted a London University exhibitioner in zoology Through growing physical debility his mind remained clear to the end

Chidell was early left an orphan and was brought up in London by the parents of his Scots mother who was of Puritan ancestry He was educated at University College school and hospital qualifying in 1891 when he held house appointments at U C H and Birmingham fever hospital He wrote some useful articles on sanatorium methods but his memory is chiefly cherished in the lives of those whom he treated wisely and well

GERIATRIC DATA —A retired electrical engineer, still going strong at 86 has kept a careful log of his blood temperature pulse-rate, weight and so forth twice daily for some years He wants to know if these data would be of use to anyone

Births, Marriages and Deaths

BIRTHS

EVANS —On Oct 16, at Muar Johore, Malaya, the wife of Dr Thomas Evans—a daughter

HECTOR JONES —On Nov 24 at Carmarthen the wife of Captain David Hector Jones R A M C —a son

HESTER —On Nov 25 at Harpenden, the wife of Mr Kenneth Hester, F R C S —a son

LEWIS —On Nov 13, at Moor Park Northwood to Dr Greta Lewis (née Malmberg) wife of Alfred Lewis—a son

MALINS —On Nov 20 at Stourport Worcs the wife of Dr John Malins—a daughter

MARTIN —On Nov 28, at Northampton the wife of Captain A J Martin R A M C —a son

SOUTHWELL —On Nov 28, at Witney Oxon, the wife of Dr Neville Southwell—a son

MARRIAGES

BARRINGTON—DUNN —On Nov 22 in London William Rupert Barrington M R C S R A F V R to Denise Elizabeth Dunn

SCADDING—LAKE —On Nov 29 at Hatch End, Frank Haddow Scadding, M D , to Helen Margaret Lake

DEATHS

CORBETT —On Nov 19, at Howth co Dublin, William John Corbett F R C S I , D P H , J P

NASH —On Nov 28, Elwin Harral Thomas Nash, M R C P , D P H aged 69

TAYLOR —On Nov 24 at Brixham, William Taylor M B Edin , of Putney, aged 86

WILSON —On Nov 20, in Dublin, T Henry Wilson, M A Dubl , F.R.C.P.I.

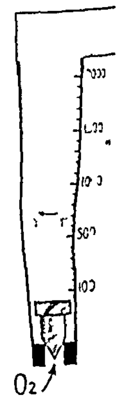
Notes, Comments and Abstracts

SICKLE-CELL ANÆMIA

SICKLE-CELL anæmia, of which a new case has recentl been described,[1] is a rare hereditary disorder of the blo almost exclusively affecting negroes It is characteri by the appearance in the blood from time to time of abnormal sickle-shaped red corpuscles which apparentl are rapidly destroyed in the body with resulting secondar anæmia The disease occurs in attacks with remission and apart from the hereditary factor nothing is known of its ætiology The diagnosis depends on the discovery of sickle-cells (drepanocytes) in the blood of the patient and of his relatives Sometimes they are found only after preliminary treatment of the separated red corpuscles by deprivation of oxygen, an observation which suggest that they *may be formed in the blood-stream* rather than in the bone-marrow The case lately reported from Cuba illustrates most of the features of the disea A negro boy, aged 13, was admitted to hospital sufferin from jaundice, enlarged liver and spleen and mitral incompetence Examination of his blood on two occasions showed 15% and 17% of sickle cells and hæmoglobin values of 75% and 47% The bone marrow contained no sickle-cells The blood of the patient parents and two brothers was examined All the people were apparently healthy but in *all* except one brother the blood after treatment showed sickle cell

FLOWMETERS FOR GAS OR LIQUID

ROTAMETERS have for many years been used in industry but it was not until 1937 that, at the suggestion of Richard Salt, technician to the Nuffield Department of Anæsthetics University of Oxford, they were adapted in a form suitable for anæsthetic apparatus Since then they have been widely adopted for measuring anæsthetic gases in this country The gas to be measured passes upwards through a specially drawn glass tube the axis of which must be vertical The bore of the tube is in the form of an elongated cone with its widest diameter uppermost (see figure) The range of rates of flow of the gas to be measured determines the shape of the cone The bobbin, usually made of aluminium, has small vanes cut in its free edge The stream of gas impinges on the vanes and causes the bobbin to rise and spin round freely on its vertical axis thus eliminating errors due to friction of the bobbin against the walls of the glass tube The pressure loss due to the presence of the bobbin is constant for all positions in the tube The more the control valve is opened the higher is the bobbin forced, and the greater is the area of escape for the gas between the bobbin and the meter tube If the tube is mounted in the truly vertical position these meters are capable of readings of great accuracy



Rotameters are made for a wide variety of purposes and for flows ranging from 20 c cm of liquid or 50 c cm of gas up to 100 litres liquid or 1000 litres of gas per min The makers are the Rotameter Manufacturing Co Ltd , of Portslade, Sussex

SUPPLIES OF ALBUCID —British Schering Ltd inform us that, although sulphacetamide appeared in class B of the supplement to the M R C memo on economy in drugs, they are regularly supplying Albucid of British manufacture and have so far been able to meet promptly all demands for that compound

Appointments

EWEN, EVELYN B G, M B Edin , D P H asst M O H for Merton and Morden

HALDANE F P M B Glasg D P M senior asst physician at the Glasgow Royal Mental Hospital

HODGE, R SESSIONS, M R C S consultant psychiatrist for Somerset

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[1] Machado O and Arostégui de la O *Arch Med infant* 1941 10 91

ORIGINAL ARTICLES

A GROUP OF HEAD INJURIES

JOHN E. A. O'CONNELL, M.B. LOND., F.R.C.S.
NEUROSURGEON, E.M.S.

A REVIEW of the records of 250 cases of head injury consecutively admitted to the neurosurgical unit of an E.M.S. hospital suggested that an analysis of the material might merit publication. Although the number of cases is small when contrasted with the total number of head injuries treated throughout the country during the same period, yet it is large and the material is varied when compared with peace-time standards. In addition, more benefit may be derived from the personal study of relatively small groups of cases at individual centres than from the analysis of large numbers of records by those who have themselves examined but a small proportion of the cases.

A number of the head injuries of ordinary practice are included in this series but many more of the patients were war casualties, some wounded military evacuated from abroad and a larger number of people wounded in this country in air-raids. The centre from which this report emanates is a base hospital so that the group of patients is a selected one. A number of the most serious injuries would die before their transfer to the base could be effected, and the less severe injuries would be discharged from the hospital to which they were first admitted without ever reaching the base. Furthermore, although there is a natural tendency for patients showing complications to be transferred to the base over 200 of the patients were admitted because of a recent head injury, and in spite of the selection it is believed that the figures have a general application.

The term head injury is here used instead of the more cumbersome one of cranio-cerebral injury, to denote cases of injury to the brain or its coverings. Injury to the face and jaws is therefore excluded unless it be associated with evidence of trauma to the brain. The cases will be considered in two groups. First, open head injuries in which there is present *either a scalp wound, a compound fracture* of the skull, or actual cerebral penetration. Secondly closed head injuries in which, although the brain is injured its superficial coverings remain intact. The main value of such a classification is that it suggests the important fact that open injuries are associated with a risk of infection of the meninges and brain which is absent in closed injuries. The number of patients with open head injuries was 148, and with closed head injuries, 102.

Open Head Injuries

The varieties of open injury which have been dealt with were as follows:

Scalp wound	54	Cerebral penetration—	
Compound fracture of skull—		(1) uncomplicated	22
(1) fissured	37	(2) cerebral fungus	11
(2) depressed	20	(3) cerebral abscess	4
		Total	148

SCALP WOUNDS

It is perhaps not sufficiently emphasised that most scalp wounds are lacerated and not incised. It is not surprising that a force great enough to split the scalp by compressing it against the skull is often great enough to damage the underlying brain. In the table it will be seen that evidence of such cerebral injury is frequently present. Two-thirds of the patients admitted with scalp wounds were unconscious for shorter or longer periods and 15% of them showed evidence of focal cerebral damage, by which is meant such manifestations as a hemi- or mono-plegia, or an area of sensory loss of cortical type. As further evidence of the intracranial damage which may be associated with a scalp laceration may be taken the results of lumbar puncture. In only 5 of the cases was it considered necessary, but 4 of these showed definite abnormality of the cerebrospinal fluid (blood or a high protein). Had lumbar puncture been carried out as a routine there can be no doubt but that abnormality would have been detected in many other cases.

After the last war Jefferson (1919) reported signs of localised brain damage in almost a third of a group of scalp injuries which had been under his care. Many of these patients had gunshot wounds of the scalp and it seems that in such wounds the risk of brain damage is greater than in lacerated wounds. Its cause is in part the extreme violence of the injury and in part is doubtless similar to that of the paraplegia which sometimes follows the passage of a bullet close to but not through the spinal canal. More recently McKissock and Brownscombe (1941) have emphasised the frequency with which scalp wounds are associated with evidence of cerebral damage. Cairns (1941) has also drawn attention to the risk of infection spreading through the intact skull and dura from gunshot wounds of the scalp. It has of course always been recognised that any infected lesion of the scalp may lead to infection of the skull and intracranial contents. For this reason it is felt that scalp wounds can justifiably be considered under open injuries.

INCIDENCE OF NEUROLOGICAL DISTURBANCE AND FATALITY-RATES IN OPEN HEAD INJURIES

Type of injury	Total	Cerebral concussion	Evidence of focal brain damage	Deaths	Remarks on fatal cases
Scalp wound	54	36 (66%)	8 (15%)	1 (2%)	No operation. Uræmia
Compound fracture—					
(*a*) fissured	37	28/30* (93%)	4 (11%)	1 (2.7%)	A severe crushing injury
(*b*) depressed	20	11/17* (65%)	6 (30%)	0	
Cerebral penetration	37	16/28* (57%)	26 (70%)	3 (8.1%)	Two died without operation. One postoperative death from senile heart disease

* In the remaining cases the record was insufficient to decide whether concussion was present.

In treatment the importance of adequate exploration of scalp wounds cannot be over-emphasised. This is perhaps especially true of the short wounds which may conceal a penetration of the skull or brain. It is obvious that a proper débridement of a contaminated wound can only be carried out when it is fully explored. Two of the cerebral abscesses in this series arose because what were in reality penetrating wounds of the cerebrum had been regarded as trivial scalp wounds when the patient received his early treatment at first-aid post or hospital. When a large number of casualties are suddenly admitted to a hospital in an area which has been subjected to a heavy air-raid such mistakes are understandable. But they are very serious and would be avoided if final treatment of the wound were delayed and the early treatment confined to securing hæmostasis which can be obtained by the introduction of a very few sutures after the wound has been dusted with sulphanilamide. Thorough exploration, debridement and careful suture can be delayed for many hours in such cases.

Since wide excision of the margins of a scalp wound is never necessary there is usually little difficulty in approximating the margins of the wound accurately by suture. Occasionally—for example, in tangential gunshot wounds—the injury may entail a considerable loss of scalp tissue. When such loss of tissue has occurred it will often be possible to make it good by wide mobilisation of the scalp and the sliding of a flap over the defect. Occasionally the loss of tissue may be so great that this is impossible. If the denuded outer table of the skull is allowed to form the base of an ulcer, healing will be greatly delayed, for epithelialisation can occur only over a base of healthy granulation tissue. Such a base will usually be obtained only when the outer table has sequestrated and the diploic granulation tissue is exposed. The long delay necessary to permit such sequestration can be avoided if at the time of the original operation a number of drill holes is made into the diploe of the exposed area of bone (Porter and Shedden 1922) thus will allow of its rapid covering by granulation tissue derived from the diploe and epithelialisation of the area will thus be greatly accelerated

COMPOUND FRACTURE OF SKULL

Although variations in the structure of the skull itself may be a factor tending towards the production of a fissured fracture in one case and a depressed fracture in another it seems certain that the manner of application of the force to the skull is the usual deciding factor It is generally agreed that a depressed fracture results from the action of a localised force of considerable intensity such as a blow on the head with a small hard object Such violence will produce, in very many cases, a laceration of the scalp and then a localised fracture of the skull, often with indriving of the bone fragments A fissured fracture may result from less severe degrees of the same kind of violence but is usually the result of a force applied to a wide area of skull As a result of this the whole skull is deformed and when the deformation has been carried beyond the limits of the elasticity of the bone a fracture arises and tends to spread along the mechanically weakest portion of the skull—its base Trotter's classical description has led to the general acceptance of these statements

It might be expected that the neurological disturbance would differ in the two types of fracture, and in the table it will be seen that this is actually so Almost all the cases of fissured skull fracture show a period of unconsciousness immediately after the receipt of the injury, whereas this was present in only two-thirds of the cases of depressed fracture On the other hand, while fissured fracture was associated with evidence of focal damage to the brain in 8% of cases there was evidence of such damage in 30% of depressed fractures It seems clear that fissured fractures are associated with evidence of generalised cerebral damage more often than are depressed fractures, while they are much less often associated with evidence of focal nervous disturbance

The occurrence of a leak of cerebrospinal fluid through a skull fracture to the exterior is important because it is clear evidence of a communication between the subarachnoid space and an infected surface area It is of interest that the fractures of the vault in this series, and therefore all the depressed fractures, were not associated with such leakage, which is not uncommon in fractures of the base of the skull Several reasons for this difference at once suggest themselves The dura mater at the vault of the skull is but loosely adherent to the bone, at the base the attachment is very firm A fracture of the vault, even with considerable depression, will often not tear the dura which separates from the bone and slides beneath it, while this may not be true in children it is certainly true in adults Any separation of a basal fissure will be at once associated with a tear in the dura, and all that is then necessary for the occurrence of a leakage of cerebrospinal fluid is an associated tear in the delicate arachnoid No doubt the large size of the basal subarachnoid channels compared with those over the convexity of the hemisphere is another reason for the different incidence of leakage in fractures of the two types Perhaps also gravity tends to maintain a leak at the base when it would have a contrary effect elsewhere

There is difference of opinion as to the correct treatment of a leakage of cerebrospinal fluid after a head injury While leakage may take place into both the nose and the ear, in the latter case it probably always ceases spontaneously The problem is, therefore, that of treating traumatic cerebrospinal fluid rhinorrhœa Some think that the defect through which the leak occurs should be closed by early operation in all cases—the argument being that even when the leak stops spontaneously subsequent meningitis is a definite risk But it is difficult to see why the scar of an operative closure, even if it includes a fascial graft, should be a stronger barrier to the spread of infection than the scar resulting from natural healing In the present series there are 4 cases of cerebrospinal rhinorrhœa In 3 the leakage ceased spontaneously—in one patient after as long as five weeks

In the fourth patient the leak continued for seven weeks During this period she slowly recovered consciousness and after this had recurring attacks of meningeal irritation, in which lumbar puncture showed many polymorph leucocytes in the cerebrospinal fluid but no organisms sterile culture In view of the obvious threat of an operative closure was carried out An intradural was used The opening in the dura mater clothing posterior part of the cribriform plate was seen and with a graft of fascia taken from the thigh The closed after generous local application of sulphanilamide After this operation the leakage ceased and there has been recurrence up to the present

A follow-up of a considerable number of these some treated conservatively and some by early oper is necessary before a definite decision can be reached to the correct treatment of traumatic cerebrospinal rhinorrhœa in its early stage

Two further points in the treatment of compound skull fractures may be raised The value of chemotherapy in preventing the onset of meningitis in case where the subarachnoid space has been opened by the injury is obvious It has been used in a large number of cases and in all those in which there was leakage of cerebrospinal fluid, whether from nose or ear During operations on compound depressed fractures hair and other foreign material are sometimes found between the bone and the dura mater Adequate treatment of any compound fracture in which more than the slightest degree of depression is present, and in which the pericranium is torn, will obviously necessitate the removal of depressed fragments of bone and of underlying foreign material and the examination of the dura Levering of fragments into position through a trephine opening placed on one side of the depression cannot allow of adequate exploration or debridement

CEREBRAL PENETRATION

In the table the neurological disturbance which follows penetrating cerebral wounds is contrasted with that which follows other types of open head injury It will be noted that the incidence of loss of consciousness is similar to that in depressed fractures and scalp wounds and much lower than in fissured skull fractures On the other hand the incidence of focal cerebral damage is—as might be expected—higher than in any other group, amounting to 70% This high figure is clearly associated with the actual passage of a missile into the brain, and the effects of this direct injury to the cerebral tissue may be permanent or transitory

The importance of the dural envelope becomes obvious when penetrating wounds are considered It is the final barrier to the spread of infection to the leptomeninges and brain Moreover, in the vast majority of cases a body which penetrates the dura will also penetrate the brain, causing laceration of cerebral tissue Such penetration will be associated with the risk of immediate focal neurological disturbance and perhaps epilepsy later The risk of both these sequelæ is greater in penetrating wounds than in any other group of head injuries It has already been pointed out that the dura mater is so strong that in depressed fractures of the vault of the skull it will often prevent penetration of the brain even when the depression is of considerable degree Occasionally a foreign body which has penetrated the skull will be held up by the dura in a similar way and it is noticeable that when a foreign body such as a bomb fragment does penetrate the dura it usually passes deeply into the nervous tissue—perhaps until its passage is blocked by some more resistant tissue such as a dural septum

Penetrating wounds will usually be associated with the presence of foreign bodies within the brain Focal signs will in most of such cases be due to the injury done by the foreign body to nervous tissue and perhaps also to cerebral blood-vessels in its passage through the brain Removal of the foreign bodies cannot therefore lessen any focal nervous disturbance, indeed attempts at removal of deeply placed foreign bodies may, by further damaging nervous tissue, have a contrary effect On the other hand, the complete debridement of any wound implies the removal of all foreign material A piece of metal or bone left in the cerebrum may lead to infection of the brain Many examples of abscesses arising in connexion with foreign bodies are known and often in such cases symptoms do not appear for many years

The procedure adopted in this series has been to excise the scalp wound and then the margins of the bone defect bloc as described by Cushing (1918) By means of ction and irrigation through a soft rubber catheter e track is cleared of blood-clot, necrotic brain and iall foreign bodies such as bone chips If metallic reign bodies are easily localisable and removable this done If not the foreign material is allowed to remain situ and the wound closed, drainage being used or not cording to the interval between receipt of the wound d the operation It is felt that possible complications ising from retained foreign bodies can be dealt with as ey arise

In this series there were 24 patients with intracerebral reign bodies The foreign material was bone in 9 ses, masonry in 1 and fragments of bomb or shell in 4 In only 2 instances was the metallic body removed, ut all the other foreign material was removed This as partly because the non-metallic types of foreign body end to be superficially placed and also because they are erhaps more liable to harbour infection, associated as hey are with laceration of scalp and comminution of the kull The wound of a bomb or shell fragment is often y comparison small and clean cut

It will be noted that there were 11 cases of cerebral fungus The frequency of this complication of a penetrating wound depends on several factors, among which may be mentioned a very long delay between receipt of the wound and the institution of treatment (48 hours or more), the destruction of a wide area of scalp, skull and brain in a gunshot wound of tangential type, and sometimes inadequate treatment in the early stages When brain tissue is exposed in the floor of a wound healing can only take place by the growth of epithelium over the exposed cerebrum This in turn can only occur when the exposed brain tissue has been replaced by healthy granulation tissue During the time necessary for this process there is a constant tendency for progressive protrusion of the cerebral tissue through the defect in the dura mater This tendency made cerebral fungus a much feared complication at one time but now, with modern methods of reducing intracranial pressure—posture, dehydration and lumbar puncture—and chemotherapy to combat the risk of meningeal infection, the condition can usually be readily dealt with The 11 patients in this series all made a good recovery

Of the patients with penetrating wounds 4 were treated for cerebral abscesses, 2 of these resulted from inadequate exploration of scalp wounds at the hospitals at which the patients had first received treatment Here the evidence of meningeal reaction and the progression in focal neurological disturbance made the diagnosis obvious In 2 other cases the abscess was found unexpectedly The abscess was treated by tube drainage in each case with healing and recovery of the patient The ease of localisation and slow development of the abscesses in the series, together with the possibility of always avoiding contamination of the meningeal spaces by instituting drainage through an area in which they were completely obliterated by scarring, probably accounts for this happy result

Closed Head Injuries

Cerebral concussion was present in all the patients with closed head injuries—indeed it is cerebral concussion following a blow on the head which admits a patient to the group Sometimes, of course, a blow on the head which does not produce unconsciousness produces subdural hæmorrhage and later focal neurological signs, but there has been no such case in this series Of the 102 patients with closed head injuries, 13 present evidence of a focal lesion of the brain Such damage was more common in the closed injuries associated with skull fracture than in those without fracture, the incidence being 29% in the former and 8% in the latter This difference is no doubt due to the more severe injury which produces fractures

Evidence of generalised neurological disturbance—i e, cerebral concussion—was present in all the closed injuries and almost all the open fissured fractures, but in about two thirds only of the scalp wounds, depressed fractures and penetrating wounds Not only so, but the duration of unconsciousness and amnesia was on the whole greater in the closed injuries and open fissured fractures than in the other groups Focal neurological disturbance occurred in 10–15% of scalp wounds, closed injuries and open fissured fractures, in depressed fracture its incidence rose to 30% and in cerebral penetration to 70% These figures illustrate the difference between the more generalised deformation of the skull which produces closed injuries with cerebral concussion and the localised violence which produces cerebral penetration and depressed fracture with focal brain damage They are in accordance with Trotter's (1932) description of the mechanism of skull fracture In general it may be said that two distinct types of force may be responsible for a head injury—the one a strictly localised force which produces localised damage to scalp, skull and perhaps brain, the other a more generalised force which produces a generalised disturbance of nervous function The exact method by which the latter disturbance is produced remains unsettled In many instances injury will result from a combination of the two types of force—e g, compression maximal at one point—and under these conditions focal and general neurological disturbance may occur together

It is the focal damage which occurs not infrequently in depressed fractures which renders those who have had such an injury liable to develop epilepsy, the depression of the bone fragments is, like the focal cerebral damage, due to the force of the original injury Removal of the bone fragments, at one time popular in the treatment of such cases, therefore offers little prospect of curing the epilepsy This point is well illustrated by one of the cases in the series

A young man was struck in the right parietal region by a fragment of incendiary bomb He suffered no immediate ill effects and the small scalp wound received no treatment Four days later he developed left sided Jacksonian convulsions General and neurological examination showed no abnormality A skull X ray showed a depression of the inner table of the skull of 3 mm and a metallic fragment lodged superficial to the depressed fragment A small osteoplastic flap was turned down and the depressed fragment of skull and the foreign body removed from its deep surface There had been no penetration but owing to its being extremely tense and non-pulsating the dura mater was opened From beneath a dark spot on the cortex half an ounce of dark thick blood clot was evacuated This completely relieved the tension and there has been no recurrence of the attacks

HEADACHE AND THE POST-CONCUSSIONAL SYNDROME

While headache is a very frequent symptom in all types of head injury it is probably more frequent and more severe in the closed injuries than in any other group Correct treatment in the early stages is of great importance since if the headache continues for many weeks after the injury cure may be exceedingly difficult Here lumbar puncture may be of assistance both as a therapeutic measure and as a guide to treatment Pressure estimation will show whether the headache is associated with high or low intracranial pressure and suitable postural treatment and regulation of the fluid balance can then be instituted In many cases blood is present in the cerebrospinal fluid It is almost certainly a factor in the production of headache and is perhaps also responsible for other symptoms Lumbar puncture will, by removing blood, relieve these symptoms Again, it seems certain that at least occasionally blood produces an inflammatory reaction in the meninges which may be of such intensity as to obstruct the circulation of cerebrospinal fluid and even produce a hydrocephalus some time later Its early removal should minimise the risk of such complications

After careful treatment of cases of head injury along lines which are now well recognised the early headache will in many cases quickly disappear In cases in which it persists, or having cleared up recurs when the patient is subjected to the stresses of ordinary existence, the problem becomes very different In many such cases general physical, neurological and laboratory examinations are entirely negative Where pneumoencephalography has been carried out in cases of this type in this series it has usually shown no abnormality and has rarely had the beneficial effect on the headache which has been claimed for it While at first sight it appeared that the post-traumatic headache of chronic type was more frequent after closed injuries, more careful examination of the figures revealed that its incidence was about the same in all types of injury when calculated on the basis of those patients who had lost consciousness Approximately 20% of the patients who had been unconscious in each of the groups of closed head injury (many of these admitted months after the injury), compound fracture, and cerebral penetration showed this sequela It seems then that one important factor predisposing to the complication is loss of consciousness, so that the syndrome of headache, vertigo, tinnitus, &c is better named post-concussional than post-contusional

Apart from this nothing can be said as to the ætiology of the commonly recurring symptoms of the post-concussional syndrome There is almost certainly a lesion in the brain to account for the syndrome in some cases, but it is perhaps no more demonstrable than that of cerebral concussion itself or of "idiopathic" epilepsy Indeed it may be even more difficult to demonstrate since electroencephalography will show abnormal electrical activity in the cortex of the epileptic brain, whereas no such change is to be found in many cases of post-concussional syndrome Whether or not there be a lesion in the brain to account for the syndrome it does seem that constitutional factors are important in its development, for in many patients the personal and family history will show evidence of functional nervous disease

Over 20% of the definitely selected group of closed head injuries exhibited cranial-nerve palsies Every nerve with the exception of the eleventh was affected although the third and sixth nerves and the seventh and eighth were most commonly involved While a longer period is required to follow up the cases it would seem that the prognosis is on the whole favourable Certainly it seems that injury to the purely motor cranial nerves occurring in association with skull fracture is as likely to be followed by spontaneous recovery as is a radial-nerve lesion complicating a fracture of the humerus

It has been pointed out above that 13% of the closed head injuries was associated with evidence of focal brain injury It has also been suggested that the type of force which produces a generalised cerebral injury will often exert its maximum effect at one point—hence the origin of the local cerebral injury This does not necessarily mean that the focal damage is in relationship with a fissured fracture (as it probably always is in depressed fractures) It is well known that the injury to the brain by contre coup may be much more severe than that beneath the skull at the point which received the direct trauma The actual type of lesion which is responsible for the signs of focal damage will vary and on its pathology will depend the severity of the signs, their duration, the ultimate prognosis and the correct treatment of the individual patient For example, 2 of the patients had chronic subdural hæmatomata, evacuation of which resulted in the complete disappearance of the neurological signs

It may be well to emphasise again that this is a selected group of cases The scalp wounds and closed injuries admitted to the neurosurgical wards were the more serious ones—the less severe injuries being admitted to general surgical wards or perhaps never evacuated to the base at all This means that the incidence of focal nervous disturbance in both groups is higher than would be the case in an unselected group of patients On the other hand from the point of view of mortality statistics it may again be pointed out that the severest injuries, dying within hours of the trauma, would never reach the base hospital either, so that mortality figures will tend to be too low The mortality in the various groups of open injury is set out in the table Of the 101 closed head injuries 63 were relatively recent injuries, the others being cases of post-concussional syndrome, &c There were 3 deaths in these 63 cases giving a fatality-rate of 4 8%

Summary

A consecutive series of 250 head injuries admitted to an E M S neurosurgical centre is analysed

Since many scalp wounds are lacerated and not incised there is often evidence of associated brain damage

Scalp wounds must be adequately explored When circumstances prevent immediate exploration the final treatment can and should be delayed until it can be carried out thoroughly

Since wide excision of the margins of a scalp wound is never necessary its suture will usually present little difficulty When a defect in the scalp is present it often be closed by the mobilisation of scalp flaps this be impossible drilling of the exposed outer table the skull will promote the rapid covering of the bone granulation tissue and thus speed epithelialisation

Adequate debridement is important in com depressed fractures of the skull

Leakage of cerebrospinal fluid is not uncommon fractures of the base of the skull but was not seen fractures of the vault in this series Leakage into ear probably always ceases spontaneously A decision as to the correct treatment of cerebro rhinorrhœa cannot be given, but in the early traumatic period a conservative attitude seems justifi

Deeply placed foreign bodies, which are usually will rarely in themselves produce symptoms or Ill-advised attempts to remove them may lead to sub brain damage and permanent defect in nervous funct

Eleven patients who developed cerebral fungus recovered Treatment is mainly by measures designed to lower intracranial pressure

Chemotherapy with the sulphonamides, both local and general is of value in all open injuries

Depressed skull fracture and cerebral penetration result from a localised impact of considerable violence, whereas other types of open and all closed fractures are more often the result of widespread force which produces a general deformation of the skull This may explain the high incidence of focal cerebral damage, often without cerebral concussion, in the former types of injury, and the high incidence of cerebral concussion without focal cerebral damage in the latter group

Lumbar puncture is valuable for both diagnosis and treatment in suitable cases of closed injury

Efficient treatment in the immediate post-traumatic period may be important in preventing the post-concussional syndrome The psychological background of the individual patient has also an important bearing on the occurrence of the syndrome

From the experience in this series the prognosis in post-traumatic cranial-nerve paralysis seems usually to be good

Focal signs are not uncommon in closed head injuries Not every patient showing such signs, even when they are severe, will require operative treatment

I wish to acknowledge my gratitude to Prof Paterson Ross for the opportunity of investigating and treating the majority of the patients included in the series and for his help in many other ways

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CLOTTING AND FILTRATION OF CITRATED PLASMA

MONTAGUE MAIZELS, M D LOND, F R C P
(*South-eastern London Blood Supply Depot*)

UNFILTERED citrated plasma has proved of great value in the treatment of shock Its disadvantage is that even with the most careful processing it sometimes becomes infected, and since sterile unfiltered plasma is naturally cloudy infection cannot be detected by observation alone—at least until the growth is very heavy For this reason filtration has special advantages, it considerably reduces the risk of infection and leaves the material clear so that infection can readily be detected by the appearance of opalescence Filtered plasma appears to have the same therapeutic value as unfiltered

Unfortunately, the passage of plasma through Seitz bacterial filter pads presents difficulties Clotting is apt to occur and to limit the amount of fluid that can be passed through a filter This clot develops sooner or later in the filtered material even when it is stored at room temperature The change is hastened by cold, and frosty weather is usually followed by a crop of clotted samples The mechanism of this clotting is obscure and differs from that of physiological clotting It is discussed by hby Buttle and Whitby (1940) who state that it is to the crude asbestos present in all makes of bacterial er pads it is certainly not due to calcium derived from pads since the calcium content of plasma before and er filtration is almost unaltered Bushby Buttle d Whitby (1940) find that clotting can be diminished frequently washing the filter pads with a solution of stic soda (N/30) and sodium citrate This procedure dified by Stanbury (unpublished) is said to give a more ble plasma which remains clear for months But even e faint opalescence and small tags of protein material y appear and gross clotting follows in time , and it is be expected that an unstable protein like fibrinogen uld have a special tendency to denature For these asons it seems likely that plasma which has had its rinogen removed and is converted into serum would be ore stable than unclotted plasma

The difficulties of storing filtered plasma have resulted an extensive use of filtered serum, which has the same nical value as filtered plasma, is equally free from ndesirable reactions and is much more stable Nevertheless filtered plasma will still have to be used , severe emorrhage is common in air-raid casualties and large tocks of citrated whole blood have to be available onsequently there is a steady potential supply of citrated lasma that must be salved The ideal method of storing his material is to dry it immediately after filtration and o secure a perfectly stable product At present, however, it is not possible to do this on a sufficiently big cale to deal with all the plasma available and a method s still needed by which filtered citrated plasma can be onverted into a product which though fluid is still quite table

Two methods of clotting citrated plasma have already been reported Picken (1941) clots plasma by the addition of serum the action apparently being ascribed to preformed thrombin present in the serum He finds that it requires five volumes of serum to clot one of plasma In our opinion this is not an economical method and is quite impracticable except at blood-depots where large supplies of serum are available Clegg and Dible (1940) add calcium chloride to citrated plasma until there is a sufficient excess of calcium over citrate to cause clotting An addition of 60 mg per 100 c cm is needed and the final overall calcium content varies between 65 and 80 mg per 100 c cm The method is simple and the authors state that in spite of its high calcium content the serum is non-toxic · this will doubtless be so in most cases but on general grounds it would appear undesirable to issue material containing so much calcium if a product with a lower calcium content became available

METHOD

The method described here combines the processes of Clegg and Dible (1940) and of Picken (1941) with an apparent economy in both calcium and serum the one seeming to reinforce the other so that the total effect of the two combined is in excess of what might be expected from each separately The mixtures of serum, plasma and calcium shown in table I will all clot completely Plasma used was derived from time-expired blood prepared according to the present Medical Research Council method (1940) 100 c cm 3% sodium citrate, 20 c cm 15% glucose solution and 420 c cm blood

TABLE I—CALCIUM REQUIRED TO CLOT MIXTURES OF SERUM AND PLASMA

Serum (parts)	Plasma (parts)	Calcium added	Final overall calcium
		mg per 100 c cm	
2	1	9	18
1	1	15	23
1	1 5	19	27
1	2	23	31
0	1	46	53

It is not possible to state without clinical trial which of these mixtures is most suitable for use The first four all have reasonably low calcium contents and the second and third are economical of serum The method used by us for a mixture of 1 5 parts of plasma and 1 of serum (the third in the table) is as follows

A concentrated solution of calcium chloride is prepared and its calcium content must be estimated either as calcium or as chloride This solution is diluted until it contains 10 g Ca or 27 8 g $CaCl_2$% A Winchester-quart bottle capped with a perforated screw top and rubber washer is then taken and two marks are made on its outside, one corresponding with the 1200 c cm and the other with the 2000 c cm level Some glass beads and 3 8 c cm of the calcium chloride solution are placed in the bottle, which is capped and autoclaved When the bottle is cold it is filled with plasma and serum and any technique may be used which affords complete asepsis First plasma is run in from the bottles of time expired blood up to the 1200 c cm mark Separation of plasma from cells is quite crude and may include the intermediate " buffy " layer and a proportion of erythrocytes Next, serum is run in to the 2000 c cm mark. Here also separation is complete; every trace of serum is removed even at the expense of removing a number of red cells Cellular elements (possibly platelets) present in the mixture are mainly included in the clot and they appear to aid its contraction The contents of the Winchester having been mixed the bottle is left inverted in a warm room (22° C) overnight and then for two days in the cold room After this time, a small compact clot holding most of the red cells in the mixture will be evident and the clot-free fluid which contains few erythrocytes may be separated from it almost completely

There are some who may object to leaving the plasma-serum mixture overnight at room temperature on the grounds that the growth of bacteria will be encouraged. If an aseptic technique is followed this objection is not valid However, if desired. it will probably suffice to leave the material in a warm room for four hours and then for several days in the cold If this is done it is likely that a large bulky clot will form and not contract. Nevertheless it is easy to obtain most of the fluid from the bulky clot by slinging the inverted bottle from the ceiling and allowing the fluid to drain for two or three hours from a needle thrust through the perforated cap and rubber washer It will of course be necessary to insert a second and longer needle into the inverted bottle to provide an air-inlet The glass beads prevent the clot from blocking the outlet needle and also strain off a proportion of free erythrocytes When the clot-free fluid has been collected it is strained through a tamped-down pad of Perfecta Paper pulp (a procedure in use at the Wellcome Research Institute) and then passed through a bacterial filter pad The calcium content of the final product is about 28 mg per 100 c cm

Using such an artificial serum, more than 60 c cm filtrate was obtained per 1 sq cm of pad, and filtration was still proceeding freely when the experiment was discontinued No trace of clotting appeared in the filtrate or in the pad and the filtrate remained bright, transparent and free from clot for over fourteen weeks in the cold room Since cold accelerates clotting due to filtration it may be presumed that this filtered material when stored at room temperature will remain as stable as filtered serum That the addition of a large excess of calcium had no effect on the product is further evidence that remote clotting is unlikely

The immediate effects of filtration on ordinary citrated plasma and on plasma-serum-calcium mixtures were as follows The first 500 c cm of filtered plasma collected slowly and a clot appeared immediately , the next 100 c cm filtered very slowly and clotted at once , filtration then ceased owing to the presence of clot in the filter pads In the case of fluid derived from a mixture of plasma serum and calcium on the other hand 6500 c cm. filtrate was collected quickly and without any clotting The area of the filter pad was the same in each case—80 sq cm

The total calcium of the preparation just described was 28 2 mg per 100 c cm which is considerably less than that of Clegg and Dible's (1940) material and is not likely to cause serious toxic effects The material, moreover has the advantage that it provides a stable fibrinogen-free product and although serum has to be used in the process the therapeutic effect of this serum is added to that of the plasma From one aspect indeed there is a saving of serum since during the ordinary process of separation from blood-clot it is usual to remove only the cell-free upper portion of serum and to leave a fairly considerable cell-rich residue behind which is usually wasted When however serum is used to clot plasma, the whole serum may be used including the dregs It is also possible to manage the initial serum separation so that the large clear portion is directed into one vessel for primary filtration and storage, while the small blood-stained residue is diverted into a second vessel and used to clot a plasma and calcium-chloride mixture A further advantage of the present method lies in the decrease of agglutinating titre resulting from mixing time-expired group O plasma with serum from groups A, B and AB The process is certainly more complicated than the filtration of plasma in that the mixing of serum and plasma involves an extra manipulation, but once this has been accomplished filtration is simple and straightforward, whereas the standard filtration of unclotted plasma demands the frequent washing of pads to secure a reasonably stable product

No definite figure can be given for the amount of calcium required to clot a given mixture of serum and plasma The figure will vary with the amount of thromboplastic materials in plasma and serum and also with the relative amounts of citrate and calcium present in the plasma after storage The decrease in prothrombin which occurs in old plasmas may call for extra calcium On the other hand, during storage citrate and calcium may diffuse into the red cells from the plasma, whose citrate and calcium contents will fall The amount of calcium that must be added to produce clotting will then depend on the decrease of citrate relative to that of calcium

In view of possible variations in plasma citrate and calcium, this question was considered more fully There is in a bottle of blood 100 c cm 3% citrate, 20 c cm 15% glucose and 420 c cm of blood containing about 185 c cm of cells and 235 c cm of plasma If observations are made immediately after collection, before citrate has had time to diffuse into the erythrocytes, the 3 g sodium citrate will be distributed between 100 c cm citrate, 20 c cm glucose and 235 c cm plasma—that is, 3 g in 355 c cm or ·845 mg per 100 c cm It is known that during storage blood cells swell owing to the entry of water and salts if penetration of citrate is relatively less than that of water, plasma citrate will rise, if the entry is more, plasma citrate will fall

Plasma citrate was estimated by the method of Pucher, Sherman and Vickery (1936) Hydrogen peroxide was preferred to ferrous sulphate for decolorising the potassium permanganate and several standards were set up They consisted of stored serum to which the appropriate amounts of citrate solution were added After twelve days' storage, ten plasmas contained 780 mg sodium citrate per 100 c cm, with a standard deviation of ± 55 mg per 100 c cm In another experiment, two plasmas separated from a sample of blood immediately after collection contained 825 and 850 mg sodium citrate per 100 c cm Ten days later, the contents were 850 and 770 mg per 100 c cm Similar observations apply to calcium serum and undiluted plasma contain about 10 mg Ca per 100 c cm, 235 c cm plasma diluted with 120 c cm of citrate glucose solution should contain 6 6 mg Ca The actual figures for two fresh citrated plasma were 6 6 and 6 8 mg per 100 c cm, for five plasmas stored between 5 and 10 days 6 8 ± 0 2 mg per 100 c cm, and for five plasmas stored between 11 and 16 days 6 5 ± 0 3 mg per 100 c cm

It may therefore be said that such citrate and calcium as leaks into red cells during storage, in the absence of mixing and shaking, is accompanied by a more or less proportional amount of water In agreement with this, it has been found that the amount of calcium required to clot a mixture of plasma and serum did not vary during the first twelve days of storage

It must also be noted that clotting is a relative process depending on time and temperature A mixture showing moderate clotting at twenty-four hours may show considerable clotting at seventy-two hours, unless it is kept in the cold, when the increase of clotting with time is very slow If, then, a mixture of plasma and serum is kept for a longer time at room temperature, it is possible that less serum or calcium might be used than is indicated in table I But in our experience, if clotting is not adequate after sixteen hours, subsequent change, even though considerable, is rarely complete and such fibrinogen as remains will be turned into fibrin after passage through the bacterial filter pads and show itself as a slight diffuse cloudiness or as tags of protein in the filtrate

DISCUSSION

The figures in table I for the clotting of plasma in vessels allow a certain margin of safety, the calc being about 2 mg per 100 c cm higher than the experimental value found to be effective The ex ments on clotting in bulk were based on earlier work which one ounce "flats" were used for the sake economy It required relatively less calcium to cl these smaller amounts of plasma, possibly because t process is hastened by the nearness of the vessel w to all parts of the plasma The data for clotting sma amounts of plasma-serum mixtures are rather mo accurate than those set out in table I and allow theoretical consideration (table II)

A very small change in the amount of calcium adde may make all the difference between slight and complet clotting In the second experiment in table II the simp mixture of plasma and serum gave a diffuse tenuo clot, the addition of 1 5 mg Ca per 100 c cm resulted in firm contraction In the seventh experiment clottin was very incomplete with 38 mg Ca per 100 c cm an quite complete with 42 mg Clotting is considered com plete when fluid removed from clot produces no mor fibrin when further calcium is added

Column 4 of table II shows total calcium, which derived from the known calcium added and an assumed figure of 10 mg per 100 c cm for the natural Ca content of serum and of 6 7 mg per 100 c cm for citrated plasm —an average experimental figure Column 6 shows the overall citrate in millimols based on the average figur of 780 mg per 100 c cm for citrated plasma during the first twelve days of storage In view of the fact that the experiments were carried out on pooled samples, the error in assigning average values for calcium and citrate are probably small, and the assumptions allow the establishment of an absolute relation between calcium and citrate This relation is not a simple one, since clotting depends on the presence of ionised calcium In the presence of citrate a small proportion of the calcium remains as a positively charged ion, the rest forms part of a negatively charged citrate-calcium complex (Hastings et al 1934) which is inactive in the clotting of blood The dissociation of calcium citrate into *Ca*++ and the inactive citrate-calcium anion may be derived from the equations of Hastings and his colleagues The situation in plasma and serum, however, is complicated by the presence of proteins which also form complexes with calcium probably similar to those formed by citrate, and which are chiefly responsible for the un-ionised calcium of normal uncitrated plasma and serum McLean and Hastings (1935) give data for calculating ionised calcium in the presence of protein The following approximate equation, derived directly from those of Hastings and his colleagues enables Ca^{++} to be calculated in the presence both of citrate and protein

$$[\text{Total calcium}] - [\mathrm{Ca}^{++}] = \frac{[\mathrm{Ca}]^{++} \times [\text{total citrate}]}{[\mathrm{Ca}^{++}] + \mathrm{K}/(\text{citrate}) \times 10^3} + \frac{[\mathrm{Ca}^{++}] \times [\text{total protein}]}{[\mathrm{Ca}^{++}] + \mathrm{K}/(\text{protein}) \times 10^3}$$

$$\left.\begin{array}{ll} {[\mathrm{Ca}^{++}]} & = \\ {[\text{Total calcium}]} & = \\ {[\text{ ,, citrate}]} & = \\ {[\text{ ,, protein}]} & = \end{array}\right\} \begin{array}{c}\text{concen-}\\ \text{tration}\\ \text{of}\end{array} \left\{\begin{array}{ll}\text{ionised} & \text{calcium}\\ \text{total} & \text{,,}\\ \text{,,} & \text{citrate}\\ \text{,,} & \text{protein}\end{array}\right\} \begin{array}{c}\text{in millimols}\\ \text{per litre}\end{array}$$

K/(citrate) is the dissociation constant of the reversible reaction

$\mathrm{Ca\ citrate}^{-} \rightleftharpoons \mathrm{Ca}^{++} + \mathrm{Citrate}^{=}$ It equals 0 0006

K/(protein) is the dissociation constant for $\mathrm{Ca\ protein} \rightleftharpoons \mathrm{Ca}^{++} + \mathrm{protein}^{=}$ It equals 0 006 The fact that one constant is ten times the other is fortuitous

Protein is calculated from an average figure of 7% for pooled serum and 4 65% for pooled citrated plasma The figure is converted into milli-equivalents per litre by means of the factor 2 43 (Van Slyke et al 1928) and the number of milli-equivalents divided by two, according to McLean and Hastings (1935) gives the value in milli mols The conversion is based on their hypothesis that protein behaves towards calcium as though it were composed of a number of negatively charged divalent ions This hypothesis they support by experimental evidence

Ca^{++} has been calculated from the above equation, simplified by the substitution of millimolar contents for llimolar concentrations this does not introduce preciable inaccuracy The effect of plasma and serum agnesium on calcium has not been considered according to McLean and Hastings (1935) the action of magsium is negatived by the presence of the natural citrate und in small amounts in normal plasma and serum

It will be seen (table II, column 8) that the figure for nised calcium is almost the same in all the plasma-serum ixtures, whether the proportion of serum be high or low is difficult to escape the conclusion that when serum used to clot plasma the action is not due to preformed serum thrombin but to the natural content of serum calcium which becomes available for the plasma in the serum-plasma mixture and which with any calcium otherwise added helps to overcome the anti-coagulating effect of the citrate If the clotting effect of preformed serum thrombin were important it would not be necessary, in serum-rich mixtures, for so much thrombin to be supplied by the plasma: less plasma prothrombin would need to be converted into thrombin and less calcium would have to be added to ensure complete clotting This would result in a fall of Ca-- The absence of such a fall indicates as we have seen, that the clotting effect of preformed serum thrombin is unimportant This is to be expected on general grounds, for while enough thrombin can be formed in one volume of uncitrated plasma to convert the whole into serum, once the conversion is complete so little active thrombin is left, that it now requires five volumes of serum to clot one of plasma

TABLE II—CLOTTING AND IONISED CALCIUM

erum (parts)	Plasma (parts)	Ca added	Total Ca	Total Ca	Citrate	Protein	Ionised calcium
		mg per 100 c.cm		mM.p.l			
5	1	0	9 4	2 35	5 1	8	0 29
4	1	1 5	10 8	2 7	6	7 9	0 3
2	1	6	14 9	3 73	10 1	7 6	0 27
1	1	13 5	21 9	5 48	15 1	7 1	0 29
1	1 5	18	26	6 5	18 2	6 8	0 29
1	2	21	28 8	7 2	20 2	6 6	0 29
0	1	42	48 7	12 2	30 3	5 6	0 36

mM.p l = millimols per litre

In spite of this conclusion however one must not overlook the fact that serum has some effect in clotting plasma other than that due to its calcium content for in the last record of table II where plasma is clotted by calcium alone in the complete absence of serum sufficient calcium must be added to produce a sharp rise in the ionised calcium If a certain minimum of serum is present much less calcium is needed to produce complete clotting and Ca-- falls but further increase in serum is not accompanied by a corresponding decrease in ionised calcium Apart from this obscure qualitative effect, the chief use of serum is to add calcium to citrated plasma and aid clotting without raising the calcium content of the mixture above the physiological level and without decreasing the protein content

Weaker Citrate Solutions as Anticoagulants

Harington and Miles (1939) used 180 c cm of a solution containing 0 85% sodium chloride and 1 05% sodium citrate to prevent the clotting of 360 c cm blood or 0 53 g citrate per 100 c cm blood The M R C recipe at present in use employs 100 c cm 3% citrate for 420 c cm blood or 0 72 g citrate per 100 c cm blood Both preparations are efficient in preventing blood clotting, but while the higher citrate may have a special value in stabilising plasma after filtration through bacterial filter pads, it has a definite disadvantage if the material is to be converted into serum with either calcium or serum or a calcium serum mixture If the straight filtration of plasma were ever abandoned in favour of a conversion to serum before filtration then the following citrate preparation would be suitable 100 c cm of a solution containing 2 22 g sodium citrate, and 0 2 g sodium chloride to 420 c cm blood or 0 53 g sodium citrate to 100 c cm blood The use of such a solution would allow of considerable reductions in the amounts of calcium required to produce complete clotting, as a comparison of tables III and I will show

TABLE III—CALCIUM AND SERUM REQUIRED TO CLOT PLASMA

(Plasma from 420 c cm blood with 100 c cm 2 22% Na citrate and 20 c cm 15% glucose solution)

Serum (parts)	Plasma (parts)	Ca added	Final overall Ca
		mg per 100 c cm	
2	1	5	13 9
1	1	11	19 4
1	1 5	13	21
1	2	17	24 8
0	1	35	41 7

In order to allow a margin of safety the figures in table III are slightly higher than the experimental values, which are shown in table IV and from which the values for ionised calcium are calculated Citrate in this series was estimated directly Duplicates did not agree very well (22 4 and 24 2 mM.), but the error will have no effect on the relative values for Ca--, while the absolute effect will be not more than ± 6%

TABLE IV—CLOTTING AND IONISED CALCIUM

Serum (parts)	Plasma (parts)	Ca added	Total Ca	Total Ca	Citrate	Protein	Ionised Ca
		mg per 100 c.cm		mM p l			
2	1	3	11 9	2 98	7 8	7 6	0 26
1	1	9	17 4	4 35	11 7	7 1	0 28
1	1 5	11	19	4 75	14	6 8	0 27
1	2	14	21 8	5 45	15 5	6 6	0 28
0	1	30	36 7	9 17	23 3	5 6	0 32

It will be seen that the figures for ionised calcium required to produce complete clotting of plasma in this series are as in table II about 0 28 mM p l in all systems except the last in which serum is completely absent and where Ca-- is definitely raised

Clotting by Dialysis

The clotting of plasma by dialysis is at present quite experimental If citrated plasma is dialysed in Cellophane bags against a solution of sodium chloride (0 8%) and calcium chloride it is possible to lower the citrate content of the plasma while the calcium content may be varied at will, according to the amount of calcium chloride added to the saline solution Thus 1 volume of plasma containing 780 mg sodium citrate per 100 c cm will clot when dialysed against 2 75 volumes of saline containing 15 mg calcium while if a plasma with weaker citrate (600 mg per 100 c cm) is used only 2 volumes of saline will be needed The final plasma calcium is about 13 mg per 100 c cm Dialysis is carried out in the cold room After two days, the cellophane bags are hung up at room temperature for a few hours to clot, and then returned to the cold room for clotting to complete itself Dialysis is not continued during the second period in the cold room

Clotting by means of dialysis involves a reduction of sugar potassium, magnesium and other substances in the plasma As the first two are greatly increased in time-expired plasma, a reduction is advantageous Loss of magnesium and bicarbonate could be made good by adding magnesium salts and bicarbonate (or possibly sodium lactate) to the saline though it is doubtful whether these particular compensatory modifications are necessary On the other hand dialysis may well cause a decrease in other crystalloids whose importance is not at present appreciated. Finally, it must be emphasised once again that clotting plasma by dialysis is still experimental It is not certain that consistent asepsis can be maintained during the processing nor is it known if decrease in crystalloids during dialysis impairs the therapeutic value of the preparation

Summary

Citrated plasma may be clotted by serum alone or by calcium salts If serum and calcium are combined clotting may be obtained with an economy of serum and with only a moderate increase in total calcium

Citrated plasma may also be clotted by dialysis against 2 75 volumes of saline containing 15 mg per 100 c cm calcium This method does *not* require serum and the final total calcium is only slightly greater than normal But it does involve the decrease of crystalloids which may conceivably be of physiological importance Moreover the processing of material in an aseptic manner may be difficult At present, clotting of plasma with mixtures of serum and calcium is the method of choice

In the absence of serum, about 0 34 millimol ionised calcium per litre is needed to clot plasma If a small amount of serum is added, only 0 28 millimol ionised calcium per litre is needed, but further increase in serum does not cause a corresponding fall in the ionised calcium needed for complete clotting

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FLEXED PLASTER SPICA
FOR FRACTURED FEMORAL NECK

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THE treatment of fractures of the neck of the femur depends on the age and general condition of the patient, the site and angle of the fracture, and on the presence or absence of impaction, displacement or comminution It is dangerous to confine an old person with a fractured hip to bed, because of the risk of bedsores, pneumonia, and mental and physical deterioration In the days before good reduction and fixation, when fracture of the neck of the femur was regarded as the "unsolved fracture," the case-mortality was 16% (Nix 1916) to 18% (Speed 1916) About forty years ago, Royal Whitman of New York pointed out that fractures of the neck of the femur could be reduced by manipulation and fixed in abduction, extension and medial rotation of the hip, with the expectation that bony union would take place in 50% of the intracapsular fractures This was a great step forward, but even so the mortality of this method has been 12–15% (*Lancet*, Sept 13, 1941, p 316) Lofberg (1924) reports the end-results of the abduction method in 306 cases of fracture of the neck of the femur, 67% of the medial fractures united by bone, and all the basal fractures In the abduction fracture at the subcapital level the fragments are impacted at the outer side Conservative measures may be employed with confidence in obtaining bony union in such cases Adduction fractures may occur at any level The effect of muscle-pull and weight-bearing on this class of case is to drive the fragments past one another, especially if the fracture-shaft angle is small Careful and complete immobilisation of the reduced fracture is essential The position of the fracture line, its inclination, and the presence or absence of comminution are important in prognosis, whatever method of treatment is employed Not only transverse fractures of the neck of the femur are encountered but also spiral, oblique and comminuted fractures Leadbetter (1933) points out that it is as difficult to maintain position in a spiral and comminuted fracture of the neck of the femur as in any other bone Shatara (1941) finds that subcapital and comminuted fractures have been disappointing in their response to internal fixation The nearer the fracture to the head of the bone, the poorer is the blood-supply and the more difficult to maintain reduction

What is known as the fracture-shaft angle may be taken as an accurate index of the thrust and shearing forces to which the fracture is subjected One line of the angle is the axis line of the femoral shaft, and the other follows the fracture-surface on the shaft fragment, as seen in the anteroposterior film of the hip when medial rotational displacement has been corrected In connexion with Pauwel's angle also it has to be b mind that there may be considerable shearing concentrated in the angle shown in the lateral The fracture-shaft angle must be given due value assessing indications for correct treatment, if op is contemplated In a critical review of the results of the operative treatment in 75 fractures treated by closed pinning, Eyre-Brook Pridie (1941) consider that if there is a low fra shaft angle, below 30°, the case requires more Smith-Petersen's triflanged pin alone , either the tion of a bone-graft is required or the case should treated by subtrochanteric sliding osteotomy internal fixation can be applied to most intra fractures, it is not to be recommended in some

Internal fixation (Smith-Petersen et al 1931, 1935, Putti 1940) is the method which has first claim most adduction fractures of the narrow part of the of the femur, and it is often chosen for uncom displaced fractures of the broad part But in spite the good results obtainable in expert hands by this method studies of end-results now beginning to appea make it clear that intracapsular fractures of the neck of the femur still present a difficult problem A commission set up by the American Academy of Orthopædic Surgeons (1941) has analysed the late results of internal fixation in 247 subcapital and transcervical fractures Bony union followed in 169 cases (70 1%), non union in 30% The analysis of 923 cases treated by operation revealed a mortality of 11 6%—a figure very similar to that obtained with the Whitman method Arthritic changes developed in a quarter of the cases in which bony union was obtained In the series of Eyre-Brook and Pridie (1941), bony union occurred in 70% of the intracapsular cases

From a considerable personal experience of nailing intracapsular fractures I find that the majority unite by bone, but I have been disappointed by the commonness of late arthritis Cases of aseptic necrosis have not occurred, probably because the subjects were not young All cases of fracture of the neck of the femur do not live on uninterruptedly well after successful pinning Bony union from conservative treatment is the best obtainable because there are no unfortunate immediate and late complications to be feared In view of the varying circumstances and conditions in which fractures of the hip are treated, conservative methods can be advised with a good deal of confidence on account of the excellent end-results achieved in a high proportion of cases Cases occur in remote parts of the country and in the Outer Islands where expert care by operation is not always readily available If an intracapsular fracture of the neck of the femur is well reduced and held, it has a good chance of uniting by bone If bony union does not take place it is possible to appreciate the fact in time and resort to nailing Actually, half the intracapsular fractures of the femoral neck unite by bone with conservative measures With new facts coming to light, it should be possible to recognise the type of case favourable for obtaining bony union by a conservative method, and the type which will give poor results by operation

It may be objected that while good closed reduction to a hair-line may well be obtained by the appropriate manœuvre, adequate fixation cannot be obtained in a plaster or appliance for intracapsular fractures The reply to this is that in the event of really good reduction —possibly completed by Cotton's (1924) impaction—of an intracapsular fracture, any movement which may take place subsequently at the hip is more likely to occur at the joint than at the fracture

HIP-FLEXION METHOD

Plaster fixation of the reduced fracture in flexion of the hip should help in solving the problem of treatment It offers special advantages in some cases, and even may be the method of choice for a particular case It provides a middle course between internal fixation and the prolonged confinement to bed necessitated by the Whitman extended and abduction position, the Wilkie butterfly splint or the Roger Anderson well-leg traction method for basal or pertrochanteric fractures In impacted fractures of the broad part of the neck of the femur, it may not be advisable to undo the impaction mobilisation in a light, close-fitting plaster spica plied with the hip in flexion and moderate abduction kes it possible for the patient to be lifted out of bed ily, to change her position in bed, and to lie for a little ch day in the prone position These are outstanding vantages If the nurses are asked how they like the ethod, they reply that it is most satisfactory They nd it easy to handle the patient and to look after the crum The patient and household, too express satis- ction It saves the financial drain of a long period in rsing-homes and hospitals for the patients can be nt home in a few days and it is a method within the mpass of the general practitioner who lacks hospital surgical facilities It is peculiarly applicable to barely built subjects to cases of early or reduced ado- scent epiphyseal coxa vara to fractures of the narrow art of the neck of the femur (both varieties) and to basal nd trochanteric fractures after reduction of the dis- laced cases It can also be applied to subtrochanteric racture if the fracture is oblique from the outer side nwards and downwards

The method is referred to in the textbooks but has not been in common use because light close-fitting plasters were not employed when the method was first described. Then plasters were thick heavy and cumbersome applied over thick padding, so that it became no easy matter to lift the patient out of bed, especially if she was stout and heavy But plaster technique has improved much in recent years Fixation in plaster of the reduced or impacted fracture of the femoral neck is the only conservative method, except the Bradford (1922) abduction splint which allows the patient to leave her bed daily and lead a life of comfort and partial independence during the healing stage

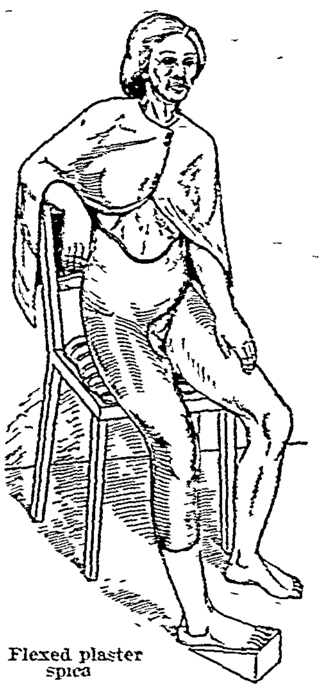
CASE-HISTORY

A woman of 84 had a fracture of the middle of the neck of the femur with considerable displacement An hour before reduction Omnopon, gr ⅓, was given hypodermically. A small dose of procaine hydrochloride (Neocaine) 80 mg, was given intrathecally Stockinet (a thin combination suit or underclothing will do) was drawn on to the limb and trunk The bony prominences of anterior and posterior iliac spines, the head of the fibula and the sacrum and lumbar spines were covered by strips of sticky white felt applied to the stockinet The patient was lifted on to a pelvic rest, the head and shoulders being supported on a padded box. If a pelvic rest is not available, a small upturned basin is used to support the pelvis The sound limb was held by an assistant The reduction of the fracture was performed by the Leadbetter manœuvre.

To apply this method, the assistant supports the unaffected limb in moderate abduction and steadies the pelvis The surgeon faces the injured hip and flexes the knee and hip to a right angle He grasps the ankle with one hand and supports the flexure of the knee on his other forearm By standing on a platform of sufficient height to permit of his holding the limb thus with his body in a half-stooping position, the surgeon overcomes the shortening and practically all the displacement by straightening himself up No additional force is required, a steady lift suffices, keeping the limb in a little lateral rotation while doing so The surgeon now steps off the platform, bringing the hip and knee slowly and steadily into the extended position, at the same time carrying the hip into about 15° medial rotation and then into the abducted position An assistant measures the lengths of the limbs, to see that shortening has been corrected Leadbetter s clinical test for reduction is applied This consists in noting that when the heel of the otherwise unsupported limb is lying upon the palm of the surgeon's open hand, the limb no longer rolls out into lateral rotation.

In this case one felt confident that complete reduction had been obtained and equally confident that, by now gently flexing the hip by about 50° to 60° and reducing the degree of abduction to about 20° from the midline, movement would be more likely to take place at the hip joint than at the site of fracture So it proved The knee was kept flexed by about 25° from the extended position, so that the lower leg acted as a crank handle to maintain position X ray films of the hip were taken in two planes first in the extended and then in the flexed position. It was found that a hair line reduction had been obtained.

A close fitting light and carefully moulded short plaster spica was applied (see figure) Such a plaster need be only about ¼ in thick, save for reinforcement by slabs ⅛ in thick applied to the anterior, posterior and lateral aspects of the hip The foot and ankle have a separate, removable posterior plaster splint made for use in bed It is carried about 1 in. beyond the toes, to keep the weight of the bedclothes off the foot In moulding the plaster spica of the hip the knee and lower third of the thigh are compressed laterally by the palms of the hands Firm anteroposterior compression is used at the mid and upper thigh It is also moulded firmly between the trochanter major and the iliac crest and above the iliac crests In applying the plaster it is important to cover the buttock adequately, this is often done incompletely



Flexed plaster spica

The patient was lifted out of bed two days later, to sit up comfortably in a chair all day This routine was carried out daily Soon after the application of the spica part of the casing was cut out anteriorly over the lower leg and knee to permit of motion in the knee for a short period every day; quadriceps drill was started, and a domette bandage used to hold the knee back again in 25° flexion She was sent home a week after she had first got up The district nurse attended her every morning, and, with the assistance of the patient s daughter, helped her into a chair for the day The patient was soon able to give a good deal of assistance She went on uninterruptedly well, bony union in perfect position took place, and the leg is as good as ever There is full movement in the foot, knee and hip, and the patient is active and well

DISCUSSION

It is worth digressing to note that fractures through the broad part of the neck of the femur and the trochanter major are not unattended by a real risk of fatal pulmonary embolism This risk seems to be lessened if reduction is performed within the first 48 hours after injury, 7–10 days after the fracture is the dangerous period I have notes of 5 cases occurring during a period of 2 years, of proved fatal pulmonary embolism arising at the time of attempted reduction of basal and trochanteric fractures in old female subjects The embolism took place in each case at the time of attempted reduction, 7–10 days after the accident If it is decided to reduce a fracture in this region it should be done forthwith or after a delay of three or four weeks The danger is a real one, and relatives should be warned of it.

It is commonly imagined that the abduction method of treating fractures of the neck of the femur consists only in carrying the limb out into abduction Reduction cannot take place until the shortening has been manually corrected the trochanter and shaft have been lifted forwards and lateral rotation has been corrected, it is then that abduction is carried out The Leadbetter manœuvre and test should be known to all who may have to deal with these injuries

Persistent local tenderness is a diagnostic sign in these cases of fracture of the femoral neck which often occur in stout subjects in whom the classical features of shortening deformity and complete loss of function are absent. The pain is often referred to the thigh and knee and not to the hip itself

Moore (1928) has employed the plaster fixation method routinely and successfully for many years He states that owing to the position of flexion abduction and medial rotation the capsule and muscles of the hip are used advantageously in maintaining reduction, and that flexion puts the gluteus maximus and medius on the stretch, thus forming a strong natural hammock and preventing backward displacement and eversion of the thigh He urges the use of spinal anæsthesia in reduction Campbell (1919) reported the successful use of the method in 3 cases Judet (1921) also reported favourably on it Cannaday (1930) reports that for several years he has advocated and practised the application of a plaster case in a modified Whitman position He calls it the sitting Whitman position

My own experience of the flexion method, though not extensive, has been satisfactory, and I have been favourably impressed by the comfort and well-being of the patients The method can control the reduced fracture effectively, but if there is doubt about this, the other thigh can be included and a cross-bar for lifting incorporated just above the knees It is possible to attempt reduction under morphia alone, but the addition of a local or spinal anæsthetic is preferable

Plaster fixation is the revival of an old method, but with a difference It is applied after accurate reduction, controlled by improved X-ray technique, and relies on the efficiency and lightness of a close-fitting plaster

SUMMARY

Fractures of the neck of the femur are important and common injuries, associated even now with considerable mortality and disablement

Reduction and immobilisation, combined with as much normal activity of the body and limb as possible, are the immediate objectives of treatment

The hip-flexion method with plaster fixation has a part to play in achieving these aims, and in promoting union

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ACUTE BACTERIAL ENDOCARDITIS

TWO UNUSUAL CASES

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Two atypical cases of acute bacterial endocarditis, each possessing distinctive features, have recently come to our notice

CASE 1 —A married woman aged 60 Her past history was given by her husband, an intelligent observer She was quite well until Jan 4, 1941, when she was taken ill in the night and vomited, complaining of severe pain in the left chest and back She remained in bed, and on Jan 6 complained of sudden severe pain in the left foot, which went white, and then became blue as the pain decreased On the evening of Jan 11 the same phenomenon occurred in the right hand On Jan 6 small purpuric spots had appeared in the skin over both patellæ, and on the same day her nose and the surrounding 1½ in of the face had become faintly blue She complained of no pain in the nose until Jan 11 when it had become deeply discoloured (fig 1)

When admitted to hospital on Jan 12 her pulse rate was 124, temperature 96 4° F, respirations 30 The pulse was regular in the left arm, but in the right arm no pulsation was palpable in the radial artery or ante cubital fossa In the left foot, which was cold and blue, pulsation in the dorsalis pedis artery was present and equal to that in the right foot The nose was a deep purple and tender, and the skin around it was discoloured by petechiæ The heart was enlarged towards the axilla, with the apex beat 1 in outside the midclavic line The heart sounds were distant, but both could be hea in all areas, there was a soft blowing systolic murmur at t apex conducted to the axilla Blood-pressure 130/80 mm H The patient was drowsy on admission and gradually becam more so The nose became more deeply purple, and the bluen of the right hand spread slowly up the forearm A blo count on Jan 14 showed red cells 3,000,000 per c mm, wh cells 42,000 (neutrophils 84 8%, lymphocytes 3 1%, mon cytes 4 1%, no eosinophils or basophils, myeloblasts 2 3%, premyelocytes 2 3%, myelocytes 2 7%, metamyelocytes less than 1%), in counting 300 white cells 1 megaloblast, 1 early erythroblast, 2 late erythroblasts and 1 normoblast were seen Polychromasia, punctate basophilia, anisocytosis and poikilocytosis were noted

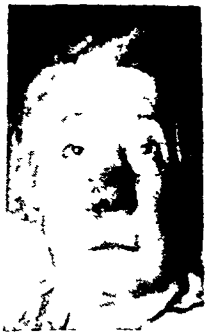

FIG 1—Nasal discoloration due to infarct

By Jan 18 pulsation in the right dorsalis pedis artery was no longer palpable and cyanotic patches had appeared on the left thumb, index and second fingers from deep hæmorrhages Shortly before her death on Jan 23 the skin of her alæ nasi was becoming detached. Throughout her illness she was afebrile

At *autopsy* the findings were those of acute bacterial endocarditis The right pleural cavity contained 140 c cm of blood-stained fluid The heart weighed 13 oz, myocardium flabby and pale Infected clot in tip of right ventricle, attached to the wall of the chordæ tendineæ Tricuspid and mitral valves normal Ulcerating vegetations, in one of which masses of cocci were found, were growing on each cusp of the aortic valve Coronary arteries normal Numerous red infarcts in both lungs Sections showed emboli with clumps of cocci in both kidneys and the spleen

Clinically this seemed to be a case of multiple emboli being thrown off into the blood-stream from the endocardium The blood-count notable for the large number of primitive white cells, was against a diagnosis of endocarditis, and so were the following clinical points she was afebrile throughout, there was little evidence of valvular disease of the heart, the exactly symmetrical cyanosis of the nose was perplexing, in view of the organ's bilateral vascular supply, the occurrence of the pulmonary emboli before the systemic emboli was difficult to explain

In the light of the autopsy findings the absence of fever remains inexplicable There should perhaps have been some indication of the aortic involvement on auscultation, but no murmur was heard in spite of repeated examination with this point in mind The case serves to emphasise the fact that signs in the heart are often lacking in cases of endocarditis The symmetrical cyanosis of the nose had arisen from a single small embolus obstructing the bifurcation of a branch of the external maxillary artery into the lateral nasal and superior labial arteries on one side Thrombosis had occurred subsequently along the superior labial artery to the junction at the bifurcation on the opposite side, thus effectively obstructing the arterial circulation to the area affected The pulmonary infarcts were secondary to systemic emboli blocking branches of the coronary artery, with the resulting infarction of the myocardial tissue they supplied Vegetations formed on the damaged endocardium at the apex of the right ventricle and portions were carried into both lungs The clot formed on the endocardial aspect of one infarct supplied a ready nucleus for the incubation of the causal organism, and the dislodgment of this first thrombus left a suitable starting point for further thrombi to form

CASE 2 —An unmarried woman, aged 21, was sent into hospital as a case of pericardial effusion She was well until Feb 2, 1941, but that evening complained of pain in her back, running up both sides of the vertebral column, into the neck, and over the head She had had vague pains in her abdomen and legs. On Feb 3 she went to bed where she remained until seen by her doctor, who sent her into hospital on Feb 7 At 14 she had been in an orthopædic hospital for a Hibb's spinal grafting operation for Pott's disease She ad not had rheumatic fever or any other diseases relevant to he present illness.

On admission the pulse rate was 112, temperature 101·2° F., espiration 28. She was complaining of pain in the left chest which checked full inspiration. She was very cyanosed about he face and lips; her respirations were laboured, with the alæ nasi working. Tongue coated; pharynx flaked with pus. Pulse regular; apex beat in third interspace, 1½ in. within the midclavicular line. The whole heart appeared to be rotated by the kyphoscoliosis resulting from the spinal caries, so that the apex was displaced upwards and inwards. The first and second sounds were well heard at all areas, but faded in intensity on inspiration. First sound loud and slapping at all areas. A blowing systolic murmur was heard at the apex and conducted to the axilla. At the aortic and pulmonary areas, a diastolic murmur was heard. There was no pericardial friction, or other exocardial sound. The chest was difficult to examine on account of the spinal graft. There was definite dullness on percussion at both bases, with poor movement and greatly diminished air entry at the right base. These findings, with the raised temperature, pulse, and respiratory rates suggested bronchopneumonia. No other abnormal findings.

She was started on a course of sulphapyridine, but this had no effect on her temperature, which fluctuated between 100° F. and 103° F., and the drug was stopped after 12 g. had been given.

Blood count on Feb. 8 showed white cells 4300 (neutrophils 74%). Blood culture in glucose broth medium on Feb. 7 gave a heavy growth of *Staphylococcus aureus*, within 48 hours of incubation. Blood count on Feb. 9 showed an increase in white cells to 11,000 (neutrophils 82%). She slowly deteriorated and died in coma on Feb. 10.

At *autopsy* the lungs contained multiple red infarcts, the parenchyma being congested and œdematous. There was a small effusion in both pleural cavities. The heart was of normal size; musculature of the ventricular walls of average consistence, the right ventricular muscle being definitely thicker than the left. The interventricular septum was deficient in the upper third. Aortic and mitral valves normal. The pulmonary valve consisted of only one cusp, with two rudimentary attempts at division. Lying in the pulmonary arterial wall immediately distal to the valve were two depressions in which lodged two large thrombi (fig. 2). This was evidently the source of the pulmonary infarcts. Minute beaded nodules could be seen along the free margin of the single pulmonary cusp, indicative of an early valvular infection. The pulmonary artery itself was much narrowed in the first inch of its course.

The girl had apparently led a perfectly normal life up to the time of this illness, and had not been at all incapacitated by such a grossly deformed heart, beyond getting somewhat blue in the face when climbing stairs.

In her "Atlas of Congenital Diseases of the Heart," Maud Abbott does not mention any reported case of a single pulmonary-valve cusp, but the condition is referred to as a rarity in pathological works. This case also bears out the teaching that it is uncommon to find bacterial endocarditis affecting the right side of the heart except in the presence of congenital cardiac deformity. We wished to keep the heart intact as a museum specimen so the depressions in which the thrombi had formed were not explored. It is, however, reasonable to suppose that vegetations had developed at the valve bases at the same time as those on the cusps, and that these had led to the formation of the thrombi. The infection was with *Staph. aureus* which is uncommon in bacterial endocarditis. Section of the diseased valve confirmed the presence of endocarditis and of bacteria.

We are indebted to Miss Margaret Williamson for the illustration of the heart, and to Dr. Raymond Greene for the photograph (originally in colour) illustrating the first case.

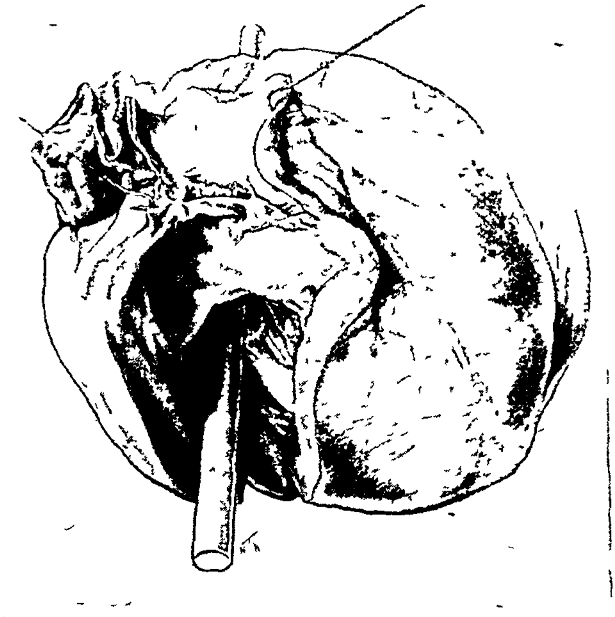

FIG. 2—Heart showing single pulmonary cusp, and depressions behind it containing thrombi.

Medical Societies

ROYAL SOCIETY OF MEDICINE

AT a meeting of the Section of Surgery on Dec. 3, with Mr. E. ROCK CARLING, the president, in the chair, a discussion on

Effects on the Kidney of Trauma to Parts other than the Urinary Tract

was opened by Dr. E. G. L. BYWATERS. Outlining the various types of excretory impairment following trauma, Dr. Bywaters pointed out that the oliguria common after most severe traumata, as well as the albuminuria, hyaline casts and transitory rise in blood-urea concentration sometimes seen, is a functional impairment, due to extrarenal causes, and that renal tubular function itself is seldom impaired. He drew an analogy with the azotæmia of gastro-intestinal hæmorrhage, where one or more of four factors—increased urea formation, decreased filtration pressure, decreased renal blood flow, and decreased renal reserve—may in any given case be involved. After referring to the renal damage following burns and traumatic liver necrosis, he gave an account of crushing injury or compression syndrome, based on 60 cases collected by the M.R.C. through observers throughout the country. This syndrome was first described in Germany during the last war, and it occurred unrecognised after the Messina earthquake in 1909; it was not, however, referred to in Anglo-Saxon writings, despite its occurrence in mining accidents, as McLelland has recently recorded from Canada, and after traumatic injuries to main vessels in civil life. Most cases show no fall of blood-pressure, yet many of these have a reduced blood-volume with hæmoconcentration and compensatory vasoconstriction. This type, only recognised on careful observation, was illustrated by a "crush" case observed by Riddell and Dow without "shock," in which myohæmoglobinuria and temporary azotæmia was associated with loss of a litre of plasma into the tissues and little external sign except some tenseness of the skin over one trochanter. The most important biochemical feature of these cases is the tendency of urinary urea and chloride to approximate to that in the blood, pointing to tubular dysfunction. The associated fall in alkali reserve and rise of serum potassium and phosphate possibly may be partly due to absorption from damaged tissue. Biochemical evidence of recovering tubular function has been seen in a fatal case; death is often sudden and associated with cardiac irregularities not unlike those seen in experimental potassium poisoning. Dr. Bywaters then demonstrated the pathological appearances, particularly emphasising the pigmented casts in the collecting tubules and the necrosis seen in the distal convoluted tubules and in Henle's loop at the boundary zone, with discharge of hyaline casts into the interstitial tissue. This renal change is not specific, for it has been seen after septic abortion, in severe cachexia, in idiopathic paralytic myohæmoglobinuria, and in mismatched transfusion. The pigment excreted in "crush" cases, however, is not hæmoglobin but myohæmoglobin, whose renal clearance thigh He urges the use of spinal anæsthesia in reduction Campbell (1919) reported the successful use of the method in 3 cases Judet (1921) also reported favourably on it Cannaday (1930) reports that for several years he has advocated and practised the application of a plaster case in a modified Whitman position He calls it the sitting Whitman position

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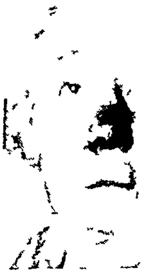
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Major DANIEL MACNEE, Mr J. C. F. LLOYD WILLIAMSON (in conjunction with Dr J. M. JAMES) and Mr W. H. GRAHAM in turn described cases they had had under their care in each of which after a traffic accident with traumatic rupture of the main leg arteries the patient had survived the immediate shock, and that due to subsequent surgical treatment by means of massive transfusions, only to die several days later in uræmia. In the kidney changes very similar to those of crushing injury were found, although in none of the four cases had compression lasted longer than a few minutes. It was mentioned in the discussion on these cases that the pigment of the urine had not yet been identified.

Mr RUSCOE CLARKE presented a case of minor renal disturbance discovered by careful biochemical study in a patient with a major limb injury from an automobile accident. An initial period of oliguria preceded amputation in spite of normal blood-pressure. After amputation the urinary output and urea concentration rose in spite of a fall in blood-pressure. Further specimens of concentrated urine contained numerous hyaline casts. Recovery was uneventful without further sign of renal involvement. The disturbance was presumably pre-renal, associated with incipient shock. The case illustrates the type of minor renal dysfunction following trauma which may easily be overlooked.

Mr GUY BLACKBURN bore witness to the value of sodium sulphate and alkali, urging the importance of correcting the acidosis seen in these patients; he castigated those who have called this the "continuous interference syndrome" and thought that the policy of healthy neglect is mischievous. Anuria may be due to sulphapyridine, but is in some cases not a failure to secrete but an inability to pass urine; he advocated instead of the daily catheterisations sometimes necessary the institution of tidal drainage.

In England Now

A Running Commentary by Peripatetic Correspondents

Two of the first babies I delivered after I had settled in this practice left school this summer. Mary is going to my old hospital to nurse, Joan has started at the university. I am fond of them both, but Mary's decision brought back vividly my time in the private wards when for four weeks I lay on my back and a number of probationers, staff nurses and two sisters came at odd times to minister to me physically or stimulate my inquiries. So competently did they dispel my aches and pains by the way they dressed my wounds or rolled me about that I decided there and then that I would value my own surgical skill less and attribute a good deal more to the nurses. I even wished that every surgeon who is rude and cantankerous to his staff should fall into the power of those he fumed at, so that he might appreciate their skill.

But my time as a patient left me with other queries. What is it that makes some nurses good and others bad? Is finance alone (as some seem to think) the key to attracting better probationers? From my experience I am clear that the nursing school counts. This is not mere pride in my alma mater. Those who controlled me so quietly were not merely efficient automata, they were also intrigued with their duties. Sisters, tutors and ward sisters had given them an interest in their patients not merely born of necessity. In other words, they were motherly and all-expectant, but they brought what must be called intellectual stimulus to their job as well. The sentimentally sympathetic one bored me; the best educated one alarmed me. The former seemed to be treating me rather as I suspect she treated her dolls till the age of 12. The latter had ideals and ideas, but she didn't carry out the heroic and her plans for the future she had to admit were absurd. It all sounds very well on paper, and she might convince audiences but not colleagues. The first hadn't grown up; the second was in nursing from mistaken motives. The one had little use for intellect, the other had hardly any conception of "understanding."

As one reads the reports of those who want to attract more women into the nursing profession, one wonders whether salaries loom as large as they are said to and how far the tales that "nursing is a glorious profession" stir the adolescent. As far as discreet inquiries could go, none of my mentors had private means but the glamour motive of Florence Nightingale had loomed fairly large. Are the words "glorious profession" really representative? Just as the university graduate speaks glowingly of his three years as a student, so the nurse waxes enthusiastic over the life in hospital. Does finance count much? Big salaries may attract potential nurses into other posts. I doubt if poor pay discourages many enthusiastic schoolgirls. Their idealised nurse may be a creature "that never was on sea or land," and the new probationer's first contact with an unimaginative ward sister may set the tone for all her future musings on her profession. I am concerned not so much for finance, nor for the junior, but for the equipment of the trained nurse who as a sister in her own or another hospital will influence so greatly the probationers she trains.

What is it that we ask from our nursing students? Physical labour, rigid compliance with a certain tradition, keen observation, a willingness to suffer criticism, thanklessness. We offer the satisfaction of well-earned fatigue, gratitude from patients and a keen development of the five senses that converts the senior sister into an acute observer (more acute than any man doctor usually is), with friendship and a deep-seated realisation of the maternal instinct. When Mary's friend Joan goes to the university, what is she offered over and above learning? Some insight into scientific methods and a closer understanding of great minds, the ability to connect more and more of the jigsaw of experience and to see where economics influences politics, geology directs trade, human incompatabilities affect national aspirations. Most important of all, she discusses with her colleagues, not the crushes of schoolgirls, but the interconnexion of all she studies with the world she learns of in the debating hall or from the social and cultural difference of students drawn from divergent schools.

It is easy to assume that Joan's experience at the university is better in quality than Mary's in hospital. We hear a good deal of "nurses only interested in young men," sometimes derogatory remarks of a nurse's intellectual attainments. If Mary will in four years be a skilled nurse with an eye on the marriage market, and Joan a first-class private secretary with an eye on the money market, can we say that one will represent a higher type than the other? Even suppose Joan becomes a blue stocking, will she be any better or worse than Mary? But I do admit that Mary might have more cultural interests and Joan have more real experience of human frailties. Joan's deficiencies were thought to be made good in the old days if she came and "slummed" for six weeks. I am not clear that anyone helps to broaden the cultural experience of the Marys. Nurses' libraries are improving, so are the periodicals in them—but free theatre tickets usually come for the worst and not the best plays (are there ever tickets for concerts?). Mary says she is too tired to think of much beyond nursing; Joan believes that by midnight discussions she comes to know about "life." At present the culturally interested nurse is as rare as the effectively useful blue stocking, and matrons and dons might well remember it. The nurse can chatter and gossip, the women students build new Utopias of the imagination. The latter will not necessarily make good teachers or good social workers, any more than the former can contribute to their convalescing patients' interests or their juniors' enjoyment of art (in its widest sense).

The don is a person of authority in her own right. Is the sister? I am inclined to believe that in general she is not. Exceptions there certainly are, but I can't help feeling that what prevents Joan being a nurse (and her mother was a good one) is that she senses that a university career will lead on to something more creative than Mary's career. Mary will ultimately be responsible to a doctor. This is not the freedom towards which Joan is attracted. Nursing is a pseudo-profession remaining the handmaid of the medical profession. It attracts, therefore, not only those who are delighted in its scope but those who shelter under its wings. We know the latter type of doctor. Our view of the nurse may need altering—our attitude to her certainly does.

* * *

He is registered as a rabbit-trapper but might with equal truth be described as a game keeper or a poacher or a combination of all three; a little lean gnome-like is 25 times as great accounting for the lack of plasma pigment The myohæmoglobin comes with other autolytic products from muscle Microscopically there are three types of muscle necrosis—first that due to direct pressure ischæmia where the line bounding the necrotic zone corresponds with that in the skin secondly that probably due to rise of intrafascial tension, where the whole muscle is necrotic irrespective of skin areas , and thirdly where there is necrosis of isolated fibres only The last may be due either to vasospasm, illustrated by a case with perivascular hæmatoma, lack of limb swelling and little if any hæmoconcentration, or to traumatic arterial rupture with limb ischæmia, illustrated by a case seen with Mr W H Graham, following a traffic accident without prolonged compression In a given case any or all of these varieties may be present Apart from the importance of muscle ischæmia, pathogenesis still remained as obscure as that of the anuria of mismatched transfusion, but experiments on dogs by Professor Winton and on rabbits at the London Postgraduate Medical School indicate that there are two factors necessary one producing tubular damage and the other, possibly, obstruction Prognosis is difficult depending on the extent of injury, the rise of blood-urea, and the establishment of a diuresis A third of the cases have recovered Improvement here Dr Bywaters suggested will depend on thinking of renal failure immediately after, or even before, admission, instead of about the fourth day, and protection with alkalis and adequate diuretics before treatment of the shock and the local ischæmia He concluded by emphasising the present ignorance, particularly of the early stages, and pleaded for earlier and more detailed observations

Mr **R H R Belsey** discussed the surgical treatment of the local lesion in relation to the more general changes, and urged the extreme need for detailed observations recorded at the onset of injury and treatment fully investigated cases are still too few for treatment to be other than speculative He cited the changes observed in the crushed limb—œdema with muscle pallor, and necrosis, sometimes corresponding to the areas of direct pressure , an increase of tension within the fascial compartments of the limb , peripheral arterial pulsation sometimes absent when the case is first seen, or an initially weak pulse becoming progressively obliterated Sometimes, however, the pulse is normal, and in one case was stronger than in the uninjured limb At autopsy there is rarely evidence of thrombosis or gross damage to the main arteries of the limb, although in a few instances rupture of a major vessel has been found Intense arterial spasm, demonstrated at operation, seems to be a common cause of the ischæmia Loss of nerve function has been recorded in the majority of cases, probably due to ischæmia rather than to direct pressure, but this usually lasts only 6–12 weeks The skin shows erythema and later blebs, but as a rule evidence of gross trauma is slight From these observations he deduced that the muscle necrosis is ischæmic in origin, due probably to traumatic arterial spasm and possibly to direct pressure also , that with restoration of the blood-supply to the limb there occurs a flooding of the circulation with a hypothetical toxin, and passage of plasma from the blood into the damaged tissues of the limb, resulting perhaps in an increase in subfascial tension Mr Belsey then put four queries, answers to which are necessary to plan rational treatment How long a period of ischæmia is needed to produce necrosis ? He has recently seen a case trapped for 45 min only, although reflex vascular spasm may have been present for longer Is "toxin" production continued after restoration of limb circulation ? At what stage does renal damage take place ? Is muscle necrosis the sole cause of the renal damage ? Searching for collateral evidence, he has found no mention of renal damage in cases of Volkmann's contracture or in the case-records of all patients with limb fracture admitted to a general hospital during the last ten years (although this will not surprise anyone who has ever attempted to elicit vital information from hospital case-notes) Allen's experimental work on refrigeration in ligated limbs may throw some further light on treatment It is difficult to assess the effect of surgical treatment especially when many forms of therapy have to be used concurrently He asked for detailed and accurate observation of all cases and deprecated the tendency to record only cases that recover and to suppress the failures Operative treatment has been little employed as yet probably [illegible] thought quite rightly Primary amputation has been performed in three cases, two of which were fatal and recovered Decompression of the limb by incision the deep fascia has been done in seven cases, of which only three have been recorded , three died and [illegible] survived Decapsulation of the kidneys has been performed in one case with established renal failure, but the patient died Two distinct problems emerge—to save the patient's life, and to save his limb The two aims may be mutually antagonistic in that restoration of the circulation to the crushed limb may lead to a sudden flooding of the body with toxin Mr Belsey then briefly described five cases admitted to St Thomas's Hospital Sector One case with both legs crushed was given "rest and quiet" only until the fifth day, when muscle decompression was performed , she died next day Another with a crushed arm, was also decompressed, and recovered satisfactorily A fourth case will delight the non-interventionists for despite extensive damage and a blood-urea of 460 mg per 100 c cm the patient recovered The most recent case was crushed for 45 min only and showed multiple fractures, myohæmoglobinuria and typical post-mortem findings No evidence has yet been published that surgical treatment has played any part in saving life, and the picture is still too confused for any conclusions on treatment He pleaded for more objective observation and less speculation on treatment

Dr **John McMichael** reviewed the present ideas on treatment Since there is strong clinical and experimental evidence of the importance of autolytic products from muscle in the genesis of renal failure, a rational approach would be to ensure a good flow of urine by warm drinks before release Since these hypothetical noxious substances are only absorbed after re-establishment of the circulation to the leg a tourniquet may be valuable until such a protective diuresis has been established Further slowing of autolysis can be achieved by surrounding the limb with ice which by slowing metabolism will also avert incipient gangrene Sodium citrate and bicarbonate given in adequate dosage will combat the invariable acidosis and may thereby minimise renal damage It may also prevent pigment precipitation Other diuretics have been tried but there is little evidence to favour one more than another

Mr **David Patey** remarked that, as far as surgical experience in this country is concerned this is an entirely new problem He objected to the current use of the phrase "crushing injury" because, in the cases he has seen, there has been no crush in the surgical sense he prefers the term "compression syndrome" The policy of healthy neglect he thought dangerous, and cited a case to support this belief , only by continued observation in the early stage can serious cases be distinguished from trivial ones He then propounded the theory on which was based the treatment used in the two cases published in The Lancet (1941, 1, 780)—that renal damage may be due, not to the passage of substances from muscle to blood but the reverse , since those initial attempts to restore fluid from the limb back into the general circulation he has had no further cases

Mr **V H Riddell** said that early protection of the crush case implies early recognition This can only be achieved by a thorough examination of every case, for in some there is no symptom and only the slightest external sign, such as a transient erythema, to mark a deeper lesion which will later produce renal damage He directed attention to the oliguria seen after other types of shock, including that of surgical trauma the occasional presence of albuminuria red cells and casts in the urine of air-raid casualties which has recently been recorded by Grant and his co-workers Mr Riddell is now making a routine study of all urine passed after severe operative trauma

Prof **J Shaw Dunn** spoke on the pathology of the condition, emphasising the localisation of the necrosis to that part of the nephron used for concentration and acidification He pointed out the similarity to the tubular necrosis evidenced in animals by phosphate and uric acid, and agreed with the treatment proposed by the previous speakers

Mr **R H O B Robinson** asked for information on the value of oxygen therapy and sodium sulphate

THE LANCET

LONDON SATURDAY, DECEMBER 13, 1941

QUARANTINE AND MAN POWER

THE Post Office with its 260,000 workers, is the argest employer of labour in the country Its well-rganised medical branch is as qualified to comment n the health of the adult workers as is the school nedical service on the health of the child In this ssue Dr W L SCOTT records impressive figures vindicating the policy of the Post Office in allowing healthy contacts of infectious diseases to remain at work There is nothing new in the procedure whether applied to school children or adult workers, nor is rigid, indiscriminate quarantine for contacts in hospital wards practised today by experienced administrators But, though the Post Office has been employing this policy with conspicuous success for over 30 years, there are still many industrial concerns units of the fighting and other services, and educational authorities which insist on exclusion of healthy contacts from work or school, many hospital beds are temporarily lost and many patients unnecessarily detained because of the imposition of rigid quarantine The cost to the country must be enormous and the time is opportune to review the position

Quarantine, as applied to persons, is the limitation of the freedom of contacts to mix with others until it is certain they have not contracted the disease to which they have been exposed In its most rigid application contacts are segregated for the longest usual incubation period of the disease, and it is worth remembering that some of the mildest infections have the longest incubation periods A modified procedure consists in excluding contacts from school or work without, be it noted, controlling their movement or company during their enforced absence A serious criticism of this method is that school-children, compelled to remain at home, play with their younger siblings of pre-school age who are much more susceptible than children at school Instead of adopting either of these measures, we may allow the contact to remain at work or school provided he is kept under observation The first examination of the contact, preferably made by the medical practitioner in attendance on the patient, serves to detect missed and abortive cases and chronic carriers The Post Office require their medical officer to carry out such an examination in the case of contacts of diphtheria and scarlet fever Subsequent daily observation during the incubation period aims at detecting the earliest symptoms of the disease In the case of school children it is conveniently left to the school teacher or school nurse, if a doctor is not in daily attendance Adults can report the appearance of symptoms and daily observation is not necessary except in special circumstances Boys and girls in the Post Office are kept under observation by their supervising officers

Any procedure which experience shows to be efficient for the control of infectious diseases among school children, with their greater susceptibility and more frequent exposures, should be adequate for the more immune adult It is therefore pertinent to note that in the official code[1] quarantine of contacts is recommended for one disease only—smallpox (To this exception the Post Office add plague typhus and cholera—diseases omitted from the "no quarantine" code because of their rarity) This policy has been extensively adopted in public and county schools Medical officers of health[2] and school medical officers who have used the method rarely if ever have recourse to "school exclusion" and its more extensive application "school closure" It could therefore be anticipated that results among adults would be even more favourable SCOTT's paper confirms this expectation and is of particular value because statistics bearing on this subject are scanty A follow-up over 10 years showed that of 17,844 contacts of scarlet fever, 1 in 251 (0 39%) subsequently developed the disease This figure fell to 1 in 431 (0 22%) when the very modified quarantine was abolished Corresponding figures[3] for other diseases during the same period were —

	No of contacts	*Subsequently developed the disease*
Diphtheria	7,000	1 in 774 (0 13%)
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Interesting as these figures are as evidence of the slight danger to adult contacts, they are not so important as the number of employees who contracted the disease from contacts, for it is to avoid such spread that quarantine is imposed SCOTT[4] in an earlier paper showed that there was no recorded case of a healthy contact transmitting any of the infectious diseases scheduled by the Post Office This conforms with the modern view that the dangerous disseminators of infectious diseases are chronic carriers, missed and abortive cases, by comparison the healthy contact plays an insignificant part In hospital practice there is wide variation in the use which is made of this and other modern knowledge in the management of contacts There are still many hospital authorities which, on the appearance of a single case of infectious disease, impose rigid quarantine without regard to the seriousness and infectivity of the disease, the age of the contact or his state of immunity Consideration of these factors would permit the release of a high percentage of hospital contacts It must, however, be admitted that advice sufficiently definite to be of value to those without special knowledge of infectious diseases is extremely scarce in medical literature

In a country at total war the importance of SCOTT's paper is that it provides convincing evidence of the enormous loss of healthy man-power for which the old method of quarantine is responsible When modified quarantine for contacts of scarlet fever was the Post Office rule, it resulted in a loss of one working day for each contact, and a total annual loss of 5 2 man-years Had the usual quarantine period of 7 days been imposed, the loss would have been equivalent to about 35 man-years per annum Loss of working time is today the vital concern not only of the individual worker or employer but of the nation Let us offer the MINISTER of LABOUR a present next year of 35 man-years of labour for every quarter of a million creature with a brown wrinkled face looking more than his 45 years Before and during the last war he was a serving soldier During the troubles in Ireland he was taken prisoner by Sinn Feiners and told every night for a week that he was to be executed next morning Such things try a man so he knocked the sentry out with a candlestick and made a dash for it, escaping with nothing worse than a deflected septum He has been a great runner in his time at all distances up to a mile He even won an inter-Services cross-country race when he had been made so tight beforehand by his admirers that he had to stop and vomit at intervals during the contest Not so long ago he and his two growing sons, who have inherited his fleetness, shared all the prizes at a small athletic meeting He has also tried his hand as a jockey and played soccer and boxed for the Army As a gamekeeper he has had many a heroic encounter with poachers and diddekis (as he calls gipsies) in which, if he is to be believed, he always came off best though not necessarily unscathed He owns three scruffy little bitches, two spaniels and an elderly fox-terrier They all look hungry but are happy, obedient and obviously devoted to him To see him handle ferrets and fitches is a lesson in deftness, if they won't go down a hole he kicks their noses gently or flicks them in with his cap, nor do they protest when picked up and carried by their tails With pride he described how the old terrier bitch had fought two foxes and two badgers in an earth for 36 hours on end and then had to be dragged off In some ways he himself resembles a terrier especially when he has his ear to the ground over a "burry" Very handy with a shotgun he is and kills 8000 rabbits a year mostly by shooting He claims to be the only man in England to have been shot at by a rabbit It seems that one day he laid his loaded gun down in a ditch while he went to pick up a ferret Simultaneously a bolted rabbit jumped out on to the triggers and fired the gun, but the rabbit missed and did not stay to give him the other barrel Uncivilised you might call him, but undoubtedly a happy and well-adjusted person He has a very nice set of teeth but only wears them on ceremonial occasions

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Reviews of Books

Principles and Practice of Chromatography

L ZECHMEISTER, California Institute of Technology, and L CHOLNOKY, lecturer at the chemical institute, University of Pecs, Hungary London Chapman and Hall Pp 362 25*s*

CHROMATOGRAPHY is based on the fact that different substances in the same solution, when brought into contact with an adsorbing substance, are adsorbed to different degrees The technique was devised and developed by the Russian botanist Tswett in the first decade of this century, but only in the last ten years has it become popular The method is to run the solution slowly through a tube packed with adsorbent, when the substances are adsorbed, not evenly but in separate rings, forming a "chromatogram" This is "developed" by passing pure solvent through the column, when the rings of adsorbed substance travel farther down and move wider apart The different substances are then recovered separately from the adsorbent, in one of two ways The column may be removed from the tube, cut up so as to separate the rings or groups of rings, and the adsorbed substances eluted by suitable solvents from each portion of adsorbent alternatively, the adsorbent is left in situ, and the different substances eluted separately by different solvents, or skilful use of a single solvent The method has great scope Aqueous or organic solvents may be used There is a wide range of adsorbents—alumina lime and sugar being common ones As to the adsorbable substances, it is naturally easiest to work with those which are brightly coloured but methods have been developed for the chromatography of colourless compounds Thus a pigment may be added which is adsorbed to the same degree as the colourless substance, or the latter may be converted into a coloured derivative, or the chromatogram may become visible in ultraviolet light Chromatography is widely used for the separation of mixtures, for testing the homogeneity of a substance or the identity of two substances, or for the concentration of a substance occurring naturally in great dilution Biochemists employ it to isolate vitamins and hormones from their natural sources and to separate carotenoids from serum, pharmacists, for the assay of alkaloids in tinctures, and of vitamins A and D in fish oils, or for the detection of added dyestuffs in food and wines

Professor Zechmeister and Dr Cholnoky have made wide and significant contributions to the subject Mr A L Bacharach and Mr F A Robinson are to be congratulated on a fine translation, and they have included some valuable hints on obtaining suitable adsorbents in England It is a pity that the excellent photographs could not be in colour

Common Skin Diseases

(6th ed) A C ROXBURGH, M D Camb, F R C P London H K Lewis and Co Pp 436 16*s*

THIS medical best-seller has been brought up to date and sections on thorium X and dermatomyositis have been added The section on the treatment of scabies has been revised and it is noteworthy that, while describing more modern methods in detail, the author still adheres to the view that sulphur ointment properly applied will always cure scabies He describes two clinical types of impetigo, and over the vexed question of whether it is streptococcal or staphylococcal in origin he remains moderate No stress is laid on the differential diagnosis between impetigo and impetiginised seborrhœic dermatitis of the face, which is important from the point of view of treatment The book finishes with a short section on the avitaminoses which suggests, quite accurately, that our knowledge of the relationship between vitamin deficiencies and diseases of the skin is still rather vague

Dental Materia Medica, Pharmacology and Therapeutics

(2nd ed) WALTER J DILLING, M B Aberd, and SAMUEL HALLAM, L D S R C S London Cassell and Co Pp 348 13*s* 6*d*

A SECOND edition of this excellent handbook is welcome A book on pharmacology must be kept up to date to be of practical value, and the authors have spared no pains in revision The new accounts of the sulphanilamides, antiseptic dyes, buffered local anæsthetics and of the analeptics are well done, and the section on vitamins, which incorporates the recent advance in knowledge, particularly regarding P, E and K, is helpful The work on premedication is clear and concise, though not all will agree that it is wise for a dentist to use many of the drugs except in collaboration with the patient's doctor Professor Dilling points out that unusual symptoms in procaine hydrochloride injection are generally due to the rapid absorption of adrenaline which procaine promotes, though to a less extent than cocaine For years many dentists have recognised this from clinical evidence, but the hypodermic preparations still contain adrenaline The first-rate therapeutic notes in this book make it a real clinical guide

Cardiac Classics

F A WILLIUS, M D, chief of the section of cardiology, Mayo Clinic, and T E KEYS, M A, reference librarian at the Clinic, London Henry Kimpton Pp 858 50*s*

IN the attempt to keep pace with present developments the original writings of the historical giants of medicine are seldom read except by librarians and bookworms But many classical papers teach lessons in observation and lucid expression from which any member of the profession may profit We warmly welcome, therefore, this collection of 52 papers by 51 authors whose work in the past three centuries has done most to further knowledge of the circulation In the first paper—Harvey's "De Motu Cordis," which is reproduced in full—the superbly simple experiment to demonstrate the direction of blood flow in the veins of the arm, which reversed previous conceptions, is a perfect example of observation and description The last paper, by J B Herrick who is still with us, contains the first clinical picture of coronary thrombosis Other contemporaries "must remain patient until some future compilers honor them" A short biography of each author is appended, 27 of the 51 are British

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Reviews of Books

Principles and Practice of Chromatography

L Zechmeister, California Institute of Technology, and L Cholnoky, *lecturer at the chemical institute, University of* Pecs, Hungary London Chapman and Hall Pp 362 25*s*

Chromatography is based on the fact that different substances in the same solution, when brought into contact with an adsorbing substance, are adsorbed to different degrees The technique was devised and developed by the Russian botanist Tswett in the first decade of this century, but only in the last ten years has it become popular The method is to run the solution slowly through a tube packed with adsorbent, when the substances are adsorbed, not evenly but in separate rings, forming a " chromatogram " This is " developed " by passing pure solvent through the column, when the rings of adsorbed substance travel farther down and move wider apart The different substances are then recovered separately from the adsorbent, in one of two ways The column may be removed from the tube, cut up so as to separate the rings or groups of rings, and the adsorbed substances eluted by suitable solvents from each portion of adsorbent alternatively, the adsorbent is left in situ and the different substances eluted separately by different solvents, or skilful use of a single solvent The method has great scope Aqueous or organic solvents may be used There is a wide range of adsorbents—alumina lime and sugar being common ones As to the adsorbable substances, it is naturally easiest to work with those which are brightly coloured but methods have been developed for the chromatography of colourless compounds Thus a pigment may be added which is adsorbed to the same degree as the colourless substance, or the latter *may be converted* into a coloured derivative, or the chromatogram may become visible in ultraviolet light Chromatography is widely used for the separation of mixtures, for testing the homogeneity of a substance or the identity of two substances, or for the concentration of a substance occurring naturally in great dilution Biochemists employ it to isolate vitamins and hormones from their natural sources and to separate carotenoids from serum, pharmacists, for the assay of alkaloids in tinctures, and of vitamins A and D in fish oils, or for the detection of added dyestuffs in food and wines

Professor Zechmeister and Dr Cholnoky have made wide and significant contributions to the subject Mr A L Bacharach and Mr F A Robinson are to be congratulated on a fine translation, and they have included some valuable hints on obtaining suitable adsorbents in England It is a pity that the excellent photographs could not be in colour

Common Skin Diseases

(6th ed) A C Roxburgh, M D Camb, F R C P London H K Lewis and Co Pp 436 16*s*

This medical best-seller has been brought up to date and sections on thorium X and dermatomyositis have been added The section on the treatment of scabies has been revised and it is noteworthy that, while describing more modern methods in detail, the author still adheres to the view that sulphur ointment properly applied will always cure scabies He describes two clinical types of impetigo, and over the vexed question of whether it is streptococcal or staphylococcal in origin he remains moderate No stress is laid on the differential diagnosis between impetigo and impetiginised seborrhoeic dermatitis of the face, which is important from the point of view of treatment The book finishes with a short section on the avitaminoses which suggests, quite accurately, that our knowledge of the relationship between vitamin deficiencies and diseases of the skin is still rather vague

Dental Materia Medica, Pharmacology and Therapeutics

(2nd ed) Walter J Dilling, M B Aberd, and Samuel Hallam, L D S R C S London Cassell and Co Pp 348 13*s* 6*d*

A second edition of this excellent handbook is welcome A book on pharmacology must be kept up to date to be of practical value, and the authors have spared no pains in revision The new accounts of the sulphanilamides, antiseptic dyes, buffered local anæsthetics and of the analeptics are well done and the section on vitamins, which incorporates the recent advance in knowledge, particularly regarding P, E and K, is helpful The work on premedication is clear and concise, though not all will agree that it is wise for a dentist to use many of the drugs except in collaboration with the patient's doctor Professor Dilling points out that unusual symptoms in procaine hydrochloride injection are generally due to the rapid absorption of adrenaline which procaine promotes, though to a less extent than cocaine For years many dentists have recognised this from clinical evidence but the hypodermic preparations still contain adrenaline The first-rate therapeutic notes in this book make it a real clinical guide

Cardiac Classics

F A Willius, M D, chief of the section of cardiology, Mayo Clinic, and T E Keys, M A, reference librarian at the Clinic, London Henry Kimpton Pp 858 50*s*

In the attempt to keep pace with present developments the original writings of the historical giants of medicine are seldom read except by librarians and bookworms But many classical papers teach lessons in observation and lucid expression from which any member of the profession may profit We warmly welcome, therefore, this collection of 52 papers by 51 authors whose work in the past three centuries has done most to further knowledge of the circulation In the first paper—Harvey's " De Motu Cordis," which is reproduced in full—the superbly simple experiment to demonstrate the direction of blood flow in the veins of the arm, which reversed previous conceptions, is a perfect example of observation and description The last paper, by J B Herrick who is still with us, contains the first clinical picture of coronary thrombosis Other contemporaries " must remain patient until some future compilers honor them " A short biography of each author is appended, 27 of the 51 are British it seems to have helped to combat shock and it certainly stopped local pain and got rid of smell from the stumps. It is noteworthy that pieces of skin which had not been included in the ice were gangrenous whereas equally detached pieces which had been cooled were well preserved. These results deserve to be considered in relation to severely damaged limbs in both war and civil injuries. Cooling might play a useful part when the number of the casualties outstrips the capacity of the operating teams, and lives are lost because patients cannot be brought to the table within the optimum period. Of theoretical interest is its possible application to crush injuries, mentioned in the discussion at the R.S.M. reported on another page. The chance of a crushed limb surviving appears to be greater if it is cooled, and the onset of signs of nerve injury in cooled limbs is said to be greatly delayed. ALLEN has shown experimentally that it is possible to retain a tourniquet for a long time on a cooled limb when the presence of injected poisons, such as strychnine, make its removal unsafe except for very short periods; thus if so-called crush syndrome is due to circulation of poisons elaborated in the crushed tissues the use of cooling and of a tourniquet with graded periods of release might prove effective treatment. Amputation for crush syndrome can only be justified to save life, for in many cases the survival of the crushed tissues is not in doubt. Much of ALLEN's writing is speculative, and not all his opinions carry conviction; but he has attempted to test his ideas by experiment and his findings certainly merit further study.

VACCINATION AGAINST INFLUENZA

VACCINES made from living or inactivated influenza A virus are effective in immunising laboratory animals, and we know a good deal about the conditions governing success. Attempts to apply this knowledge to the protection of human beings have yielded no conclusive results, mainly because an influenza outbreak has not hitherto been obliging enough to attack a vaccinated community at an appropriate interval after vaccination. Now at last comes news from the United States which provides us with real information on this question. HORSFALL, LENNETTE and RICKARD[1] have lately described an influenza A virus vaccine made by growing the virus in developing eggs and then inactivating it with formaldehyde. This vaccine was given[2] to nearly 8000 people in 15 institutions in the Southern States, about 40% of each institution being inoculated and the rest serving as controls. HORSFALL and his co-workers were lucky in that an outbreak of influenza, mainly due to A virus, occurred in 10 of these institutions about four months later. In 4 of these they used a batch of vaccine which proved in laboratory tests to be of much poorer quality than the others; the people who received vaccine from this batch showed little if any evidence of protection. Among 3455 people receiving other batches 193 cases of "clinical" influenza occurred. Serological studies on 137 of these persons indicated that 81 of them had presumably suffered from influenza A, the incidence being 3.3%; this contrasts with a corresponding figure of 6.6% for the control group. Thus the vaccine of which a single subcutaneous dose of 1 c.cm. had been given appeared to halve the incidence of influenza A. Mixed with the influenza A cases were smaller numbers of cases of "clinical influenza" not due to virus A; the incidence of such cases was virtually unaffected by the vaccination. If all the cases of "clinical influenza" of whatever cause are lumped together, the reduction of incidence by vaccination seems to have been from 8.3% to 5.6%.

These results are particularly interesting if read in conjunction with a paper by the same authors[3] on the correlation between neutralising antibodies and susceptibility to influenza. Almost all adults have some antibodies against influenza A virus in their sera and it has been known for some years that vaccination with formolised virus will increase the titre of such antibodies. Whether or not this is a worthy aim obviously depends on whether possession of potent antibodies affords significant protection against the disease. The American workers examined 1321 normal people serologically and classified them into groups having different antibody levels; they then observed the influenza attack-rate in the different groups in the following months. It appeared that a high antibody titre against A virus renders you less liable to attack by that virus, but not enormously so. If you are in the most favourable group, which contains only 2.7% of the community, your chances of escaping flu are only five times better than the average, while however poor your antibodies you are only about twice as susceptible to flu as the average. It thus seems that antibody level is only one factor determining resistance to influenza A; doubtless the size of the dose of virus reaching your respiratory tract is another. From the known effects of vaccination on antibody level, and the relationship between antibody level and immunity, it is possible to predict what reduction in incidence should be achieved by vaccination. Such calculation does not encourage hope that use of the existing vaccine will produce more than a 30% reduction in persons exposed four months after vaccination. After a shorter interval protection should be rather better and after longer periods rather worse. Actually the American trials showed a 50% reduction, somewhat better than that expected. It may be hoped that improved vaccines will give bigger antibody rises and better protection; but since first-class antibodies only promise the individual moderate protection, we cannot hope that progress along these lines will ever guarantee him immunity. An epidemiological outlook is perhaps more hopeful. Future investigators may look aside from the individual and consider the relation between the average antibody level of the community and the likelihood of an epidemic. If epidemics do not occur when this level is high, vaccination of all or nearly all of a closed community might produce excellent results, though the benefit would be difficult to prove conclusively.

One aspect of Horsfall and Lennette's vaccine cannot yet be pronounced on. Following up some remarkable and at present inexplicable findings in ferrets, they made their vaccine by infecting eggs simultaneously with the viruses of influenza A and workers who, at present, are excluded from work if they become contacts of scarlet fever , and then offer to throw in all the man-years which can be saved among contacts of other infectious diseases Experience in the Post Office shows that it can be done Medical advisers to all government departments, local authorities and industrial concerns should forthwith review their instructions or advice on the management of contacts, and thereby make a handsome contribution to the war effort “ Inquiry may be made at the Post Office ”

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[1] Horsfall, F. L. jun., Lennette, E. H. and Rickard, E. R. *J. exp. Med.* 1941, 73, 335.

[2] Horsfall, Lennette, Rickard and Hirst, G. K. *Publ. Hlth Rep., Wash.* 1941, 56, 1863.

[3] *Ibid*, p. 1819.

THE LIMB ON ICE

The principle of refrigeration is no new one in medicine As long ago as 1852 James Arnott[1] was advising the use of a “ benumbing and congealing temperature,” to produce local anæsthesia for surgery and to relieve the pain of trigeminal neuralgia and lumbago , for all of which purposes he seems to have found it uncommonly good For the past ten years F M Allen of New York has been studying the effect of cooling on limbs rendered ischæmic by ligation of vessels, by tourniquets or by vascular accidents Few will quarrel with his conclusion that, when the circulation in a limb is impaired, survival is aided by cold rather than heat , for cold, by reducing the metabolism of the tissues, cuts down the oxygen requirements and thus offsets the diminished blood-supply Moreover, cold arrests the growth of pathogenic organisms and in the ischæmic limb this may make the difference between life and death In animal experiments Allen finds that the survival of limbs cut off from the circulation by a tourniquet is greatly prolonged by cooling, which also lessens the risk of death on sudden release of the tourniquet He suggests that in cases of embolism prompt cooling could extend the period in which embolectomy could be performed well beyond four hours In his latest paper,[2] which is chiefly concerned with diabetic gangrene, he claims that the tourniquet and cooling can produce anæsthesia adequate for a major amputation, and that the method allows the operation to be delayed while the patient's general condition is being improved His aim is not to freeze the limb but to keep it at a temperature round about 5° C , which he achieves by immersing it in ice water, resting it on a solid block of ice, or packing it round with thin flexible bags containing a freezing mixture The tourniquet is applied 5–15 minutes after cooling has been begun, by which time the skin is so much chilled that the application causes scarcely any discomfort Two turns of a rubber tube are used and the tension should be the least that will stop all blood-flow The limb is afterwards buried in ice-bags to a level several inches above the tourniquet Pain and discomfort, it seems, quickly subside in the chilled limb and Allen regards anæsthesia so produced as being fundamentally different from the nerve anæsthesia achieved by anæsthetic drugs Chilling produces what he calls “ anæsthesia of protoplasm ” , the term is vague since anæsthesia merely means absence of feeling, and feeling is the prerogative of the sensorium It is easier to think of refrigeration as inhibiting all protoplasmic activity including that of the nerve-endings Allen considers that it inhibits the shock response as well and that the surgeon thus has the advantage of working in a bloodless shockless field

The time needed to achieve sufficient anæsthesia for operation varies with the depth of the tissue to be cooled , he puts it at 1 hour for an emaciated shin and as much as 5 hours for a thick thigh and states that if it is not possible to cut the sciatic nerve at mid thigh without attracting the notice of the conscious patient and without any change in pulse or blood-pressure there is something wrong in the method of preparation Operation is performed below the tourniquet, which is not removed until the wound is ready for closure Bleeding points are then ligated and anæsthesia persists long enough for suturing to be completed During aftercare the temperature of the limb can be raised by stages to normal level There is no objection, he says, to letting the stump return to normal temperature at once, but by maintaining the chilling several new controls come into play Thus, where poor blood-supply leads to a threat of sloughing in flaps or injured tissues, cooling makes it possible to reduce the oxygen demand to meet the supply Or when the operation, shockless itself, has left damaged tissues which might produce postoperative shock, the danger period can be bridged by cooling In a similar way cooling combined with the application of a tourniquet, he finds, makes it possible to postpone operation in a feeble or toxic patient In such cases chilling is begun on admission and a tourniquet is applied at once and left in position for several days, while the patient is brought to a fit state to withstand *operation* If the tourniquet has been in place for more than a day it must on no account be removed or allowed to slip A few hours before operation another tourniquet is applied an inch or two above the original one, and amputation is performed between the two Allen suggests that the method might have an important application in war wounds, and McElvenny[3] reports a case which seems to support this contention

A man of 50 had had both legs amputated by a train, and when seen an hour afterwards had had tourniquets applied to both thighs and was exsanguinated and profoundly shocked, with a blood-pressure of 30/0 mm Hg He was transfused, the tourniquets were released, bleeding points were picked up, and the stumps were wrapped in gauze soaked in sulphanilamide Eight hours after injury his blood-pressure had risen to 50/10 mm Hg Mud and sand had been ground into the stumps, which were macerated and ragged Within 20 hours of the accident he had developed pneumonia and a foul odour was coming from his wounds His temperature rose to 101° F and his blood-pressure did not improve He was given sulphapyridine and azo sulphamide (Neoprontosil) At this stage the lower limbs were packed in ice to 2 in above the level of tissue injury Pain ceased within an hour, and soon afterwards the foul odour vanished, and the patient who had been delirious became rational He was given three doses of prophylactic *combined sera* and another transfusion He continued to improve and 58 hours after injury his blood-pressure was 110/60 mm Hg with temperature 101° F , bilateral amputation was now carried out under ethylene anæsthesia, and he was transfused on the table The muscles in the amputated limb were found to be in good condition, and the stumps healed with no induration, sloughing of skin or other tissue, or signs of infection The day after operation the patient had his pneumonia crisis, and subsequently made an uneventful recovery

The multiple treatments given make it impossible to assess the part played by cooling in this case, but

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[1] Arnott, J On benumbing cold, as a preventive of pain and inflammation from surgical operations with minute directions for its use London J Churchill 1854

[2] Allen, F M *Amer J Surg* 1941, 52, 225

[3] McElvenny, R T *Surg Gynec Obstet* 1941, 73, 263

Crawford[3] has shown already that the plasma uric acid rises about 0 06 mg for every hour the patient is in labour, and falls to its previous level within 2 or 3 days after delivery In a long labour this factor can lead to a considerable rise of uric acid These three factors are independent of each other and their combined effect is obtained by simple addition The initial level in the eclamptic patient is governed by the severity of the preliminary toxæmia After this there are two curves, one due to the convulsions and the other to the labour These are superimposed on each other the relative position of the two curves depending on whether the eclampsia is ante-, intra- or post-partum Given full clinical details, it is thus possible to calculate the course of the plasma uric acid in an eclamptic patient with reasonable accuracy This work clears away most of the problems about the rise of the uric acid in true eclampsia It leave two points unexplained , the raised level which is usually found in severe hypertensive toxæmias before labour, and the relatively low level in eclamptic patients before the fits begin

FEEDING THE NEWBORN BABY

It is generally agreed that the great fall in infant mortality this century has largely depended on improved feeding methods and Dr Helen Mackay[4] thinks that the neonatal death rate which has remained obstinately high could also be materially lowered by better feeding To this end she has set out her views on the day-to day caloric requirements of newborn babies and suggested a formula whereby their food intake can be regulated From the available figures Mackay puts the caloric value of early human milk and of colostrum at 20 per fluid ounce She also takes this as the caloric value for breast milk after lactation is established and all the artificial feeds she uses are adjusted to give the same figure of 20 calories per fl oz Her next assumption is the customary figure of 50 calories per pound body-weight per day for the average baby's needs, and according to her formula this should be reached in seven days Thus on the first day of life a baby should receive calories equivalent to a seventh of 50 times the body-weight in pounds on the second day two sevenths and so on until the full 50 calorie ration is reached She points out that the formula overestimates the intake of normal breast-fed babies during the first two days of life when breast-secretion is scanty, and rightly emphasises the importance of using these figures simply as guides and not as a rigid system. Turning from the formula to the babies concerned Mackay is able to show that with twenty healthy breast-fed babies the average intake on any one day after the first two days of life is within 3–12% of her schedule, taking those who regained their birth weight by the tenth day A series of 107 consecutive premature babies who had their food intake checked and guided by the formula also made good progress and averaged 1 oz over their birth weight at ten days old For a group of 43 premature babies for whom complete figures are available it was found that their intake for the first ten days of life was within 6% of that allowed by the formula and during the second week of their life intake averaged 53 calories per pound birth weight per day—again within 6% of the formula requirement It seems simple to apply the formula to babies who are completely artificially fed if Mackay's milk mixtures (not explained in detail in her present article) are followed, since they give 20 calories per fl oz The only obvious difficulty is that dividing by seven seldom gives a tidy answer As regards supplementary feeds Mackay points out that purely mathematical considerations do not constitute the whole problem While using the formula as a guide the maternity nurse or supervising medical practitioner must also bear in mind the sucking ability of the baby, the psychological outlook of the mother and the effect on her of a discontented or lethargic baby, the baby's behaviour during feeds the mother's management and the amount of milk remaining in the breast after the baby has finished a feed It is clear, however, that by a formula such as Mackay suggests a check can be kept on the possibility of underfeeding an all too common fault in the early days of breast-feeding and probably the commonest reason for the abandonment of breast-feeding after the mother's discharge from a maternity unit

WASHING WITHOUT SOAP

"Avoid washing" is the usual advice given to a patient with eczema To the patient and his doctor this means avoid soap which irritates sensitive skins, and even normal ones if the exposure is adequate Moreover as Sir Almroth Wright pointed out in a popular lecture many years ago when the epithelium of the skin is thinned by rubbing off or dissolving the superficial layers microbes have a good seed-bed to grow on The abrasive and strongly alkaline soaps used by workers in dyeing chemical manufacturing and other dirty jobs predispose to dermatitis from irritants encountered at work and may produce dermatitis of their own accord Industry and also cosmetic merchants have long realised that there are other cleansing agents besides soaps, for example various sulphonated oils These act by emulsifying the dirt without taking the fat out of the skin , and their pH can be controlled Other detergents are the synthetic wetting agents such as the fatty alcohol sulphates these are good cleansers with a wide variation in pH but they do tend to defat the skin and occasionally act as sensitisers By mixing sulphonated castor oil with 2% of a wetting agent Schwartz[1] has produced a skin cleanser which is safe to use in industry and can even be given to eczematous patients Its disadvantages are its smell and the fact that it does not foam like soap , for these reasons some workmen object to it, especially those not actually suffering from dermatitis This is clearly a field which deserves to be thoroughly explored particularly at present when dermatitis may be a serious trouble among munition workers In the home, however, one feels that it will be a long time before such preparations make much headway against the popular prejudice in favour of ordinary soap and a good lather

HOSPITAL DESIGN

Hospital construction is in a state of transition—it always is of course After a comparatively static period following the Nightingale era, real advances seemed to be occurring during the ten years preceding the present war , but the outbreak of war brought a lull in construction and there is now uncertainty about post-war hospital policy We have in fact arrived at the cross-roads in the principles of hospital building and there is need for intimate discussion between doctors and architects—not to speak of nurses and patients—during the lull so that our ideas may be clarified when the time comes to build again The position was outlined in the history of medicine section of the Royal Society of Medicine on Dec 3 when Mr C E. Elcock, F R I B A opened a discussion on "Hospital building—past present and future The problems fall into two groups questions of policy such as function, size and location , and questions of architectural lay out and detail. As to location Dr R C. Harkness said that L C C experience made it clear that a hospital must be in the area it is to serve if it is to be used to the full Mr Elcock on the other hand felt that space, freedom from noise, fresh air, sunlight and low costs weighted the scales heavily in favour of country sites His main point. in which naturally he had the support of medical officers of health such as Dr J Ferguson of Surrey and Dr W A a particular strain of dog distemper It is hard to see why this should have worked **MARTIN** and **EATON**[4] in California compared the effect of this "complex vaccine" with that of one they made with influenza A virus alone The two seemed equally good, in one institution each reduced the incidence of the disease by more than half in the vaccinated group, while in another institution the results obtained were not impressive with either vaccine The rôle of the distemper virus in the complex vaccine is thus doubtful It must be added that the antibody response produced in man by Horsfall and Lennette's vaccine is of the same order as that caused by the formolised mouse-lung vaccine which has been described from this country[5] The worth of this, for reasons already mentioned, has been neither proved nor disproved It will be obvious, however, that a vaccine can be made more readily and on a larger scale from chick embryos than from mouse-lungs—even, we imagine, in "beleagured island fortresses" such as ours

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[4] *Arch Dis. Childh* 1941 87 166

[1] Schwartz L *Publ Hlth Rep Wash* 1941 56, 1788

Annotations

THE GLYPH'S FUNERAL

PERHAPS from indolence, but more probably on account of an obsession inherent in every one of us, familiarity with a subject leads to the increasing use of abbreviations No trade or profession is entirely free from them The Forces are among the worst offenders, but even the Cloth is not blameless, as a glance at Cruden will testify Again no sooner have we learnt to write legibly than we slip imperceptibly into the reprehensible habit of trailing our words into nothingness The pathogenesis of the decay in calligraphy is still in dispute, but it is significant that when the subject is discussed in public the plight of the physicians rarely goes unnoticed Our hieroglyphics have become a standing joke in the music-halls while pharmaceutical students submit with good grace to a course of instruction on the reading of "illegible" prescriptions Even within our own ranks we can hardly deny that the combination of dog Latin, freakish handwriting and bizarre symbols has brought us to a pretty pass This cult of medical obscurantism almost certainly originated in a desire to create an atmosphere of erudition otherwise difficult to achieve, and at the same time to bamboozle patients who are intelligent enough to show an interest in the names of drugs which they have been instructed to swallow That the practice of illegible prescribing is a vicious one and fraught with potential danger to the patient has been recognised in Scandinavian countries where offenders are liable to imprisonment without the option of a fine "Depend upon it, sir," said Dr Johnson, "when a man knows he is to be hanged in a fortnight, it concentrates the mind wonderfully" It may be that nothing short of a smart penalty will remedy the present state of affairs, but there are one or two reforms which could be effected without delay In the first place, prescriptions should be written in English With rare exceptions the Latin which is now used would bring a blush to the cheek of a fourth-form boy And the banishment of our grotesque symbols ℈, ʒ and ℥ is long overdue, however fond we may be of them When these curious markings have degenerated into mere zig-zags—a process which seems inevitable when a doctor takes a pencil in his hand—the drachm sign may be mistaken for the ounce and an eightfold dose given in error Thus a patient who should have had six drachms of paraldehyde was actually given six fluid ounces by a nurse, and a man s life was t away[1] The B P and now the N W F recommend quantities of solids should be expressed in grains (gr) ounces (oz) Here the ounce is avoirdupois and is to 437 5 grains Volumes of fluids should be stated in minims (min) and fluid ounces (fl oz) It may be objected that "min" might be confused with minutes (5 min castor oil every 20 min), but the context should obviate this difficulty The National War Formulary recommends a capital G as the symbol for gramme. This will differentiate even more clearly between grain (gr) and gramme (g), and will eliminate the uncertainty which arises from unconventional abbreviations such as grn and grm To make doubly certain it might be well to retain the traditional practice of writing min (for minim) and gr (for grain) before the numeral and min (for minute) and g or G (for gramme) after it Roman figures too have long been a curse to the dispenser, they are an anachronism which should no longer be tolerated Mistakes are far less likely to happen when Arabic numerals are employed A recognised code of abbreviations is highly desirable, and the B P and N W F have shown how easily it might be acquired by every practising doctor Only custom and apathy stand in the way Now that the season is at hand for turning over new leaves, we might resolve to lighten the dispenser's task by prescribing accurately, legibly and simply

PLASMA URIC ACID IN ECLAMPSIA

IT has long been known that the plasma uric acid is raised in eclampsia, sometimes to 15 mg per 100 c cm or even higher The reason for this rise has hitherto not been clear, but there has been a general opinion that it is part of the metabolic disturbance due to the "toxæmia" M D Crawford[2] has now made a careful study of the subject, following individual patients through the stages before the onset of eclampsia and then through the convulsive phase and for some days after Analysis of the findings reveals three basic factors *The factor* which comes first in time is the severity of the preceding hypertensive toxæmia This requires a preliminary consideration of the findings in patients who are not destined to have any convulsions During the last few days of pregnancy the mean plasma uric acid in normal women is 3 9 mg, in women with mild toxæmia it is 4 4 mg, and in women with severe toxæmia it is 6 4 mg per 100 c cm It might reasonably be expected that a patient who is on the verge of developing eclamptic convulsions would have an even higher uric acid, but this is not so If she has few or no symptoms before the onset of fits her uric acid is normal, if she has severe previous symptoms her uric acid is moderately raised but is usually below 6 mg From the present figures it appears probable that a severely toxæmic patient is not in danger of eclampsia if her uric acid is in the range of 6 5–9 7 mg The second factor is the effect of the convulsions themselves If the patient has a single fit, her uric acid rises about 1 mg in the next hour and then more slowly for the next few hours The greater the number of fits the greater the rise, so that a patient who has a dozen fits has a uric acid about 6 mg above the initial level within 6 hours after the onset of the fits The high level is maintained for 6–24 hours and the uric acid then falls at about 0 5 to 1 mg per day, the rate of fall depending on the type of eclampsia and the degree of oliguria The same type of rise was found by Crawford to follow convulsions produced artificially in non pregnant patients for the treatment of various psychoses, and also similar convulsions produced experimentally in rabbits The second factor thus appears to be the muscular effort of the convulsions *It* accounts for most of the elevation of uric acid found in patients brought into hospital after the eclampsia has begun The third factor is the duration of labour

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[4] Martin W P and Eaton, M D *Proc Soc exp Biol N Y* 1941, 47, 405

[5] Andrewes, C H and Smith, W *Brit J exp Path* 1937, 18 43

[1] See *Lancet*, 1936, 1, 623

[2] *J Obstet Gynæc* 1941, 48, 60

Special Articles

THE ADULT SCARLET-FEVER CONTACT

W L SCOTT M C, M D GLASG
SECOND MEDICAL OFFICER TO THE POST OFFICE

In a previous article dealing with the whole question of infectious-disease contacts (*Lancet*, 1937, 2, 397) Post Office procedure was explained, and it was shown that, from 1898 until 1937, there had been no recorded case of an employee contracting any of the Post Office scheduled infectious diseases from a contact who had been allowed to remain at work The department is the largest single employer of labour in this country and in 1936 the staff amounted to approximately 260,000

The rules require a contact of smallpox, plague, typhus or cholera to remain at home until all the necessary disinfection of the premises has been carried out and the Chief Medical Officer is satisfied, after medical examination of the contact, that resumption of duty may take place with safety, if necessary under medical supervision A contact of diphtheria is not allowed to resume duty without a medical certificate of good health He reports for duty in the ordinary way, but before being allowed to begin work he is sent to the medical officer for examination If a throat-swab is considered necessary, absence is allowed pending the result Enforced absence is not required for contacts of such diseases as measles, german measles, chicken-pox, mumps, erysipelas, whooping-cough, encephalitis lethargica, enteric fever and epidemic cerebrospinal fever, unless the medical officer of health, for some local reason advises quarantine Each contact, however, is warned that he or she must not nurse or otherwise attend upon the invalid, but, if it is essential that any of these functions should be performed by the contact, leave is allowed without pay Boys and girls are usually kept under the special observation of their supervising officers during the incubation period and the medical officer is consulted if they show any signs of ill health during the quarantine periods

Up to 1937 scarlet-fever contacts were required to remain at home until the patient had been removed to hospital and disinfection carried out or had been satisfactorily isolated at home, or the contact had removed to other lodgings For some forty years Post Office procedure as regards scarlet-fever contacts was thus in advance of its time, the full quarantine period having been reduced without ill effects to other members of the staff During 10 years' observation (1927–36), the number of contacts of scarlet fever in the Postal Service amounted to 17,844 and of these only 1 in 251 (0 39%) developed the disease within a month of the termination of the illness of the invalid Enforced absence from work—even with this considerably reduced quarantine period—had cost the department the equivalent of 52 working years during these 10 years, the average loss in time being 1 04 days per contact By ordinary standards this loss was small compared to what would have been incurred had the normal quarantine period, still required by many other employers, departments, and services been insisted on

In 1937, with the approval of the Ministry of Health, this procedure for scarlet-fever contacts was finally discontinued, and the contact is now required to report for duty in the ordinary way but, before being allowed to begin work, he or she is sent to the medical officer for a report on his or her health This brought the treatment of contacts of scarlet fever under exactly the same procedure as had already been in force for diphtheria contacts, and the alteration in the rules was considered to be fully justified since, for all practical purposes, the staff consisted of non-susceptible adults A small proportion of Post Office employees are recruited between the ages of 14 and 16, but the majority are between 16 and 60 years of age Scarlet fever is a disease which mainly affects people between the ages of 9 and 15

In view of the small numbers of contacts who subsequently developed the disease and the fact that no spread of infection had followed this long-established policy it was concluded that the risk in abolishing quarantine would be negligible During the three years 1938–41 [illegible] er the abolition of quarantine—of the 2181 reported instances of contact with scarlet fever only 1 in 131 (0 22%) subsequently fell ill of the disease within a month of the termination of the invalid's illness, and again no infection of other employees was traced to any of the contacts

Research workers, notably Allison,[1] have within recent years demonstrated that the causative streptococcus can be isolated in a living state from dust bedding, belongings and clothing, and it would be idle to deny that such organisms could be carried by any contact This discovery has perhaps lent a certain amount of support to the older policy of segregating contacts But in Post Office experience a healthy contact does not in fact convey infection in ordinary circumstances

Naturally, local opposition to Post Office practice has occasionally been encountered from those whose views on the necessity for the full period of quarantine have undergone no change during the last half century , and inquiry has shown that in various industrial concerns, public services and departments exclusion from work of contacts of scarlet fever—often for the whole incubation period—is still the rule, but without, it should be noted, any control over what the contact may do, or with whom he may mix, while on enforced absence from his normal work Most of such concerns are in the same position as the Post Office, that is to say, they employ or control a non-susceptible adult population , and the loss of working hours as a result of this insistence on a routine quarantine period for all contacts of scarlet fever—and often, of course, with all the other common zymotic fevers—must in total be enormous This loss is, in the light of Post Office experience, wholly unnecessary

CONCLUSIONS

Post Office policy has clearly demonstrated that, provided the contact is in good health, remains under medical observation if considered necessary, and is not nursing or attending the invalid, he or she may safely go about his or her business without danger to others and without interruption This is the basis of all infectious-disease procedure approved by the Ministry of Health, and it seems desirable especially now when man-power is so important, that the bogy of the adult scarlet-fever contact should finally be laid

I am indebted to all those who have assisted in the preparation of these figures, and particularly to Miss D A Neale of the Medical Branch

LIGHT ON CORTICAL FUNCTION

THAT a man may lose a considerable amount of brain tissue without gross deterioration of intelligence is an old observation Even removal of an entire hemisphere on account of neoplasm need not lead to incapacitating mental changes Four cases of the kind have been reported by Karnosh and Gardner[2] this year, two of the patients being women and two men , one woman died 29 days after the operation from meningitis, one died of a fall 18 months later, and the two men are surviving The right hemisphere was removed in each case, and speech was affected in none, although one of the patients was left-handed The more outstanding physical results of the operation were left hemiplegia and left hemianopsia, but other more trifling residues—such as defective sense of smell—were easily detected The mental changes were more elusive , the patients on recovery were alert and more vivacious than before quick in facetious repartee, but all showed wide mood swings and found it difficult to concentrate and to carry out deliberate and protracted mental processes The woman who died of a fall was regarded by her family as almost normal, yet they spared her all responsibility and she was not called upon to initiate any new programmes for herself or others One of the surviving men was a restaurant keeper who after the operation lost his keen interest in his business, disposed of serious matters with a shrug and was not greatly concerned by the financial affairs of his family , yet he seemed much as usual otherwise, except for an increase in his natural high spirits The other man was definitely changed for the worse , he became coarse in his conversation and untidy in his dress, made no attempt to return to his

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[1] Allison V D *Lancet*, 1938 1, 1067
[2] Karnosh, L J and Gardner, W J *Cleveland Clin Quart* 1941, 8 94

Bullough of Essex was that the building for the sick must in future be a part of a local centre for preventive as well as curative medicine Such a scheme, in which the hospital itself would be merely a necessary detail of the whole, had been worked out at Grantham but postponed owing to the war A new idea was embodied in the Harvard Hospital (somewhere in Wessex) which was a base for a field unit with its laboratories, combined with a hospital for infectious diseases Mr Elcock favoured the policy of using hospitals for education in healthful living the building was as important as what happened inside it As regards size it seems clear that the day of small scattered special hospitals is over For historical reasons, as Dr Harkness pointed out, the isolation hospital, sanatorium, maternity hospital and so on had risen independently, there was no reason why they should not now be grouped and the isolation of their medical and nursing staffs ended This would accentuate the importance of circulation, as many as 20 traffics might have to be considered in a modern general hospital Mr Elcock claimed that his continuous veranda type of ward, with beds parallel to walls, ensured a far larger amount of sunlight per patient, this had been shown experimentally at the Building Research Station and in practice at the Hertford County Hospital On one point both architects and doctors were agreed—the need for specialisation in hospital construction by both professions The day of the benevolent amateur is over The local architect's plans, adapted by clinicians with the matron called in as an afterthought, produce a building which is often more cottage than hospital The Emergency Hospital Service has revealed the need for specialist hospital officers The effective coroner is a blend of lawyer and doctor, should not the central authority, at least have on its staff a doctor who is qualified in architecture ?

RISKS OF PARACHUTE-JUMPING

NEW methods of warfare tend to produce new types of injury as missiles and machines change, and to some extent treatment changes accordingly, although basic surgical principles remain unaltered The pathology of parachute jumping is the latest offspring of aviation medicine, itself so recently a lusty infant, and in what must be one of the first reviews of these injuries in English, Tobin Cohen and Vandover[1] have surveyed the accidents occurring during the first year of parachute training in the United States They note that the four phases of a jump are each associated with a special group of injuries The first arise at the time of leaving the plane and are due to entangling of equipment or failure of the parachute to open, and these are usually fatal, although in one case where the jumper got hooked to the tail of the plane he escaped with a dislocated hip In the second phase, when the parachute opens the shock may produce serious abdominal or thoracic injuries, a danger that may be lessened by distributing the shock over as wide an area of the body as possible During the third stage of actual descent, diverse lesions may occur, and in this connexion Boothby, Benson and Lovelace[2] have pointed out the risk of fatal anoxia when the pilot has bailed out from over 30,000 ft during his descent to sufficiently oxygenated air at 18,000–20,000 ft The injuries on impact compose the fourth and by far the largest group, consisting mainly of more or less complicated injuries to the lower extremities, and fortunately these can be minimised by intensive ground-training in alighting before actual jumping is begun In all 2 4% of the jumps made were associated with some injury but only a quarter required hospitalisation, 80% of these major injuries were fractures, none of them compound, half of which were malleolar, though fractures of every bone of the lower limb were recorded Rather unexpectedly the os calcis was fractured only once Falls on the outstretched hand resulted in an occasional fracture of the clavicle, humerus, or radial head The frequency of malleolar fractures must be ascribed to uneven landing associated with cross currents, unskilled guidance of the parachute, and irregular terrain, these factors combining to produce a violent temporary shearing force across the ankle joint The incidence of these injuries, which are of the type that tend to unfit a man for further jumping, is small, and Tobin and his colleagues attribute this to careful preliminary training in the art of jumping This paper leads to the reflection that parachute troops are one of the few groups of fighting men separated from their medical services during active warfare, but perhaps this problem, too, will be solved in time

DRIED AND CONDENSED MILKS

THE deficit of liquid milk for the main body of the public owing to its welcome increased intake by children and pregnant and nursing mothers, and the large import of dried and condensed milks from the U S A and Canada naturally raise the question of the relative nutritive values of these commodities How far does condensation and drying lower the food values of milk? People who have heard that cooking destroys vitamin C rush to the conclusion that heat treatment of milk destroys *all* its nutritive value They may take comfort from an article by S K Kon[1] of the National Institute for Research in Dairying in which he gives a comprehensive table of the constituents of various forms of milk and the loss of them, if any, in manufacture The loss is remarkably small, except in vitamins B_1 and C, and since milk is of small value in supplying these vitamins it matters hardly at all from a dietetic point of view whether milk is taken pasteurised, sterilised, condensed or dried Milk is valuable mainly for its first class protein, its calcium and its vitamin A It makes a substantial contribution of riboflavin but its values for vitamins C and D are low Fortunately vitamin A and riboflavin are not reduced at all even by drying, nor is the calcium rendered less available There is possibly some small reduction of the biological value of the proteins, but it is negligible Even the drastic treatment of milk in spray drying destroys only 10% of its B_1 and 20% of its C Dried and condensed milks are therefore not to be despised by anyone, and there are hygienists who look forward to the day when milk will be purchasable only at the grocers

A SUPER DUST MAN

John Switzer Owens whose death is announced qualified at Trinity College, Dublin, in 1892 and took his M D four years later He played truant from the Medical Directory to reappear in 1912 with high engineering qualifications as hon secretary of the Committee for the Investigation of Atmospheric Pollution under the chairmanship of Sir Napier Shaw, director of the Meteorological Office Of this committee our Mr Vasey was also a member, much of the work was done in THE LANCET laboratories, and the reports appeared as supplements in our columns Owens had the bonhomie and the drive to make any collective investigation a success, he had a vision of what England might be without smoke, and his agile mind was constantly devising new and better methods for trapping and measuring the particles of dust in the air He was also the instigator of the Coal Smoke Abatement Society and wherever linen can now be hung out to dry without getting grimy, or the reader in a city garden can turn over the page of his novel without first blowing the smuts off it, the name of Owens should be held in honoured memory

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[1] Tobin, W J Cohen L J and Vandover, J T *J Amer med Ass* 1941, 117 1318

[2] Boothby, W M, Benson, O O and Lovelace, W R *J Aviat Med* 1940, 11, 59

[1] *Nature Lond* 1941, 148, 607

GENERAL MEDICAL COUNCIL

(Continued from p 709)

Alleged Falsification of Temperature Charts

The case of *William Blackwood* registered as of Tregenna, Camborne M B Edin (1902) who had been summoned on the following charge —

That being a registered medical practitioner and a medical officer of a maternity ward provided under a scheme of the Cornwall county council at the Camborne Redruth Miners and General Hospital Redruth, (1) You in or about the month of September 1939 wrongfully agreed with Harry Lee Shimmin another registered medical practitioner, to commit a breach of the rules made by the county medical officer of health for Cornwall for the management of the said maternity ward and then in force in respect of such ward (2) You falsified or caused to be falsified the records of the temperatures of patients in the ward for whom you were responsible, and in particular you falsified or caused to be falsified the records of the temperature of the following patients namely, (a) Mrs Edna Carr of The Croft, Porth Newquay on certain dates between May 7 and 25, 1941 (b) Mrs Ethel Alice White of 4 Maer Down Bude, on certain dates between April 7 and 27 1941 and (3) In the cases of Mrs. Edna Carr and Mrs Ethel Alice White you failed to notify the County Medical Officer of Health as required by the said rules

Respondent was represented by Mr A A Pereira instructed by Messrs Le Brasseur and Oakley solicitors on behalf of the London and Counties Medical Protection Society Mr G Howard instructed by Messrs Waterhouse and Co for the General Medical Council applied that the cases of Drs Shimmin and Blackwood should be heard together Mr Pereira objected that the charges had not been adequately particularised in the matter of the temperature charts He did not in fact, know what document his client was alleged to have falsified, and joint hearing might prejudice his case The Legal Assessor advised the council that the two cases should be heard together, and the members so voted by a show of hands

The similar charge against *Harry Lee Shimmin* registered as of Belmont Redruth M R C S (1926), read in similar terms (*mutatis mutandis*) as regards preamble and clause I and continued —

(2) You falsified or caused to be falsified the records of the temperatures of patients in the ward for whom you were responsible (3) In the case of Mrs. Cornish who was a patient in the said ward on May 26th 1941 and subsequent days (a) You failed to notify the medical officer of health for the district as required by the Puerperal Pyrexia Regulations, 1939 (b) you failed to notify the county medical officer of health as required by the said rules (4) You failed to notify the Medical Officer of Health for the district as required by the Puerperal Pyrexia Regulations 1939, in the case of (a) Mrs Violet Ward who was a patient in the said ward between Sep 7 and Oct 15 1940, and (b) in the case of Mrs Phyllis Waters, who was a patient in the said ward between Jan 23 and March 10, 1941

Mr Howard cited the relevant regulations and the rules drawn up by the county medical officer of health, and said the respondents had within the relevant period expressed their entire agreement with those rules Letters between county M O H and respondents showed that their attention had been called to the rules and that they concurred with them in September, 1939 He put in the temperature charts and pointed out that Mrs Carr's and Mrs White's charts showed no temperature notifiable under the rules or regulations but Mrs. Cornish's, Mrs Ward's and Mrs Waters's clearly showed circumstances requiring notification It was claimed that the first two charts had been falsified

COUNTY M.O H. S EVIDENCE

Dr R N Curnow testified that soon after his appointment in March 1939 he had drawn up rules governing the Redruth Maternity Hospital and had later consulted Dr Blackwood and also the other medical staff; the rules had been gone through with both respondents who had accepted them without criticism or objection In the ward it was the custom for the nurse to take temperatures and enter them in a book The sister subsequently charted them, and the doctors saw them on their rounds He produced the original charts and confirmed what Mr Howard had said about the records then shown He had received no notification in respect of any of them Dr C H Rivers the district medical officer, would have received the certificates and forwarded copies to him In June, 1941 he had received information from the matron and had held an inquiry concerning Mrs Cornish who had died Respondents had been present, Sisters Davies and Love had made statements in their presence Sister Davies said she had for some time been falsifying charts with the knowledge of the doctors Dr Blackwood had pressed her to say that this had only been done with temperatures under 100° F she had replied that she could not be sure

Cross-examined, Dr Curnow said that on his visit to the hospital he had not noticed the absence of a copy of the rules, and agreed that in his letter to Dr Blackwood he had used the word "routine," not "rules" The rules had been sent to Dr Blackwood, who had telephoned that he accepted them and would hang them in the ward He could not accept the suggestion that Dr Blackwood had refused to exhibit them He had never seen the ward routine carried out until the inquiry he had not known of the existence of a temperature book in this particular ward, though he knew of it as a very general custom He had never examined the book Mrs Cornish had died on Whit-Sunday and his assistant had at once gone down to conduct an inquiry He did not remember a telephone conversation with Dr Blackwood when the latter had expressed astonishment at Sister Love's statement that temperatures were customarily falsified It was correct that when respondents had arrived at the subsequent inquiry on the Thursday, June 5, conducted by him they had not known that any accusations were to be made against them Sister Davies had then said that she had been initiated into the custom of false entry by her predecessor and that it was a common custom She had said it was no use checking the charts by the temperature book because that also had been falsified, she had, in fact brought the book but he had never checked the charts by the book and there was nothing else to check them by He had complained at the inquiry that the blood-pressure readings were not recorded on the chart, Dr Shimmin had at once said that he had taken the readings and called them out to the sister who had forgotten to enter them Sister Love had made and signed a statement that charts had been falsified he had asked her what the falsification was, and she had said that the first rise of temperature was recorded, but a second was not entered until discussion with the doctors had determined whether or not the case should be notified He had asked for particulars, but she had been unable to give any She had not said that the doctors had ever instructed her in any specific case but she had said that the doctors knew all about the system She had said that she had repeatedly drawn Dr Shimmin's attention to Mrs Cornish's high temperature and asked him to notify and he had taken no notice—but she had added that he was taking every care of the patient The work of three doctors was at this time being done by two, all doctors in the area were very heavily overworked at this time He had made an offer after the inquiry, to appoint a county obstetrician under whom respondents would perhaps work if the committee agreed He had informed the committee that respondents had offered their resignations in writing He had accused them at the end of the inquiry of trickery, but his letter to Dr Blackwood dated June 25, 1941 announcing the committee's agreement to the appointment of an obstetrician, and Dr Blackwood's reply contained no suggestion of a charge of serious misconduct He agreed that it would be to the advantage of the doctors to remove difficult cases to the puerperal-fever home He did not agree that the regulations were unpopular, though they certainly involved extra work and inconvenience There had been no case of puerperal fever in the ward during the period of Dr Shimmin's attendance

In reply to the President, he said he had drawn up the rules because the state of affairs was unsatisfactory, he had drawn up similar ones in Derby and had submitted those (but not the Cornish ones) to an official of the Ministry of Health. The maternity ward was governed by a voluntary body but administered jointly by them and the county council He had no statutory powers to enforce his rules No action in a civil court for infringement of the Puerperal Pyrexia Regulations had been discussed The clinic to which the patients were to be removed was 10 miles from Redruth there was one isolation bedroom in connexion with the ward The appointments of staff were recommended by the hospital committee subject to the approval of the county council Dr Blackwood had been appointed a representative of the county medical officer in administrative charge of previous occupation of book-keeping and though full of grandiose schemes failed in several small projects financed by his parents because after a burst of enthusiasm at the outset, he lost interest in a few weeks and failed to carry on.

These findings seem to fall into line with observations now being made on patients treated for chronic mental disease by prefrontal leucotomy. This, though much less destructive, of course, than removal of an entire hemisphere, is a bilateral operation and there can be no question of one hemisphere taking over immediately functions lost by the other. An account of eight cases of this operation (which consists in division of the subcortical fibres of both frontal lobes) was reported recently in our columns[3] by Hutton, Fleming and Fox. At a meeting of the Royal Medico-Psychological Association on Nov. 26, Dr. Lilian Hutton described the personality changes in several of the 15 patients so far treated by prefrontal leucotomy in connexion with the Burden Neurological Institute. When they recover from the operation these patients may show no intellectual defect as judged by ordinary tests; they may still give an intelligence quotient of 100 or more. But specially devised tests seem to show that they have lost the power of initiating stimuli within themselves, though they respond as readily as ever to external stimuli. She described the case of a man with obsessional ideas of unworthiness; Dr. R. S. Hodge who had been first consulted by this patient told how at the interview the man had refused a confortable chair, had fetched himself a hard one and, sitting on the edge of it and wringing his hands, had talked of his unkindness and wickedness. On leaving, he had returned to the waiting-room and swept up the cigarette ash he had dropped on the carpet. Months later, after the operation, he had come again, cheerful and active and in full control of his affairs. The patient talked enthusiastically of his recovery; but on his way out caught sight of the waiting-room door and darted in. After a moment he came out grinning; he said "I still do that kind of thing, but"—tapping his chest—"it no longer hurts me here." The sight of the waiting-room door, Dr. Hutton thought, was the stimulus setting in train the old obsessional act; but she believes that, lacking their former emotional accompaniment, such acts will gradually fade out, especially since they are no longer initiated spontaneously but require an external stimulus to provoke them. Dr. Hutton described how this man had responded to a series of well-known phrases both before and after treatment. Before his operation the words "Send us victorious" had caused him to finish the verse and then go on immediately "I'm possessed by myself." Similar phrases produced a momentary response followed by an immediate return to the obsessions and images which were engrossing his attention. After the operation, when the initial symptoms had subsided, the phrase recalled to him a visit of the King to France during the last war. When the stimulus was provided, then, he could respond with the appropriate memories and recount them amusingly; thus his relatives saw little change in his personality except for the better. Nevertheless he had lost some capacity for abstract thinking, as was clear when he was asked to say what he meant by a dog. His first reply was "A dog is a dog. What more can I say"? But after a little help and encouragement he said "Well a dog has four legs. It might be black or brown. It might be a hunting dog or a house dog." Thus he described a series of dogs in concrete terms but made no attempt to give an abstract conception of a dog. This suggested to Colonel P. K. McCowan that the condition produced was a mild dementia, and to Prof. J. H. Macdonald that the effect of the operation was merely to make the patient more amenable and tractable, but to rob him of the power of discrimination and selection from past experience which distinguishes man from the ape. Dr. Hutton felt that it was impossible to describe as dementia a state in which the subject could achieve his normal I.Q.

In speaking of the mechanism of the change she trod among quicksands and was justly tentative. She suggested that we can only bring an object into the perceptual field of the appropriate sense or senses by making the necessary movements of adjustment—we turn the eye to an object and focus it, for example; and as we do this we attend to the object. We are able to maintain or recall images, she thinks, by reproducing or recalling the movements necessary for the original perception of such images, and in this way we are increasingly able to recall the past and anticipate the future. In the chronic types of mental disorder treated by prefrontal leucotomy—melancholia, anxiety states, obsessional and compulsive neuroses and schizophrenia—the patient's attention is devoted almost exclusively to maintaining the ideas and images out of which he creates his illusory world; he does not attend fully to the real world. If the maintenance of his ideas and images depends on recall of the muscular adjustments which were necessary at their original inception, division of pathways concerned with organised movement in the prefrontal lobe has a rational basis. With those pathways divided the patient is at liberty to respond to ideas and images prompted directly by the environment—to attend to reality—and his behaviour will therefore be more appropriate. Dr. F. L. Golla suggested that a late study of these cases may show that the disability due to loss of spontaneity and initiative becomes modified. The central nervous system is labile, and if some tracts are cut others tend to take over their functions; the neurons are not reconstituted, but the patient learns new ways of performing old tasks.

REVISED B.P.C. FORMULÆ

A SUPPLEMENT to the B.P.C. 1934 brings the formulæ in part 3 into line with the four addenda to the B.P. 1932 and with the recommendations of the Therapeutic Requirements Committee and the N.W.F. Most of the changes made aim at economy in flavouring agents, glycerin, sugar, alcohol (tinctures), olive oil, lard, liquid paraffin, and so on, but many new formulæ have been added to bring in drugs and preparations which have become fashionable since 1934. The emulsions have been drastically overhauled. Emulsio olei morrhuæ and emulsio olei morrhuæ et creosoti are *not seriously* changed, but in the emulsions of cod-liver oil with glycerophosphates and hypophosphites the cod-liver oil is replaced by vitaminised oil and we must write emuls. ol. vitamin. c̄ glycerophosph. or c̄ hypophosph. The emulsio paraffini liquidi of the N.W.F. containing 25% liquid paraffin may be dispensed when emuls. paraff. liq. c̄ agar is prescribed. The paraffin content of all the compound emulsions has now been fixed at 25% and agar has disappeared throughout. Potable water is sanctioned in place of distilled except in injections, and for these processes of sterilisation similar to those given in the fourth addendum to the B.P. 1932 have been adopted. There is a new injectio quininæ dihydrochloridi containing gr. 52½ in 4 fl. oz. of normal saline (dose 2½–5 fl. drachms intravenously). Linimentum album can no longer be called "egg liniment," for its egg has gone. The new linimentum methylis salicylatis (N.W.F.) has lost its menthol, eucalyptus and camphor and consists simply of methyl salicylate in rape, arachis or cottonseed oil. There are several new liquors, including opii camphoratus concentratus, and Ringer lactatis as well as those in the N.W.F., and a new lotio benzylis benzoatis. Mistura alba now contains gr. 90 of sodium sulphate to the fl. oz. in place of its gr. 120 of magnesium sulphate. Mistura ammonii acetatis composita has sodium in place of potassium citrate, and dispensers are authorised to substitute sodium for potassium salts elsewhere whenever suitable. The bismuth mixtures remain, but an alternative is provided in mistura magnesii trisilicatis composita. Zipp (zinc oxide, iodoform and liquid paraffin) is now included as well as bipp, and so are the pigmentum iodi and the pigmentum violæ crystallinæ compositum (pig. triplex) of the N.W.F.

THE fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

THE Minister of Labour proposes to apply sec. 66 of the Factories Act, 1937, to toxic anæmia. Draft regulations may be had from H.M. Stat. Office.

MESSRS. JOHNSON & SONS (Hendon) ask us to say that supplies of Estersil are again available.

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[3] Hutton, E. L., Fleming, G. W. T. H., Fox, F. E. *Lancet* 1941, 2, 3.

to Truro and had asked Dr Shimmin about it several nes, he had replied that she was not suffering from erperal sepsis, her wound was perfectly alright, her chia were normal and therefore there was no need for r to go to Truro

Cross-examined she said Mrs Cornish was in a room y herself, but not in special isolation She had had esarean section, was a thyroid case, and developed neumonia Her mental condition had not been normal he herself had made a wrong entry in the case of Mrs arr, and possibly also in the case of Mrs White

* * *

Mr Pereira submitted that he had no case to answer r Howard replied, and after deliberation in camera the resident announced that the *facts alleged* against Dr lackwood *had not been found proved* to the council's atisfaction and the case against this respondent was herefore ended The same applied to charges 1 and 2 gainst Dr Shimmin but the council would like to hear he defence to charges 3 and 4 -the cases of Mrs Cornish, rs Ward and Mrs Waters

RESPONDENT'S EVIDENCE

Dr Shimmin testified that Mrs Cornish came in with bstructed labour and thyrotoxicosis and was very ill nd exhausted on admission, with a raised temperature 100 4° F) She had an enlarged thyroid, with pulsating eins in the neck, and was ashen and clammy Her eart was dilated She had had two previous forceps eliveries After a period of expectant treatment, he nd Dr Blackwood had performed cæsarean section Next morning she seemed fairly well, but the next day here was failure of compensation and mental disorder The following day (the third day) crepitations appeared t the bases of both lungs On the fourth day she vas a trifle better On the fifth day there were signs f consolidation in the right base and her heart was ilated He had seen her three times that day, nd at 3 o'clock the following morning she had collapsed nd died The doctors made no case-notes in the ospital, the notes on the chart were made by the ursing staff He had no private case-record There had never been any indication of puerperal septicæmia Sister Love had seemed to him more worried about the patient's temperature than about her condition She ad not asked him to notify it He thought now that he case should have been notified but at the time he had not regarded it as puerperal septicæmia He knew also now that the cases of Ward and Waters should have been notified He had never at any time notified the county M O H on paper his custom was to telephone He had failed to telephone about these cases because he forgot, it was an oversight He had not notified the district medical officer of Mrs Ward because the patient had pyelitis and not septicæmia Mrs Waters was a ase of Bartholin's cyst obstructing a vagina full of aricose veins, and adherent placenta with severe æmorrhage He had been with her from 1 A M to A M He had telephoned Dr Curnow who had advised ruro, and respondent had said she would die in the mbulance He had thought that his telephone notification to Dr Curnow would cover the statutory requirement, he now knew that it did not

Cross examined, he said he had never seen a copy of Dr Curnow's rules, but had agreed to follow them He was aware that the rules and the regulations referred to puerperal pyrexia, not to puerperal septicæmia Mrs Cornish had been given M & B 693 for the pneumonia Mrs Waters had had Prontosil because of the amount of instrumental and manual interference required in her case Mrs Ward had had prontosil because it was a ward routine to give it with a rise of temperature He admitted that his attention had been drawn to the definition of puerperal pyrexia in 1939 He thought he had done his whole duty by elephoning Dr Curnow and acting on his advice In eply to members of the council, he said he still did not hink Mrs Cornish's temperature had anything to do ith a puerperal condition He had a fair experience f puerperal septicæmia.

* * *

Mr Pereira put in two statutory declarations as o character, from Dr Rivers, district M O H, and Dr T M Reed He addressed the council, which deliberated in camera after which the President announced that *charges 3 and 4 had been proved* to the satisfaction of the council which took a grave view of these derelictions of duty and trusted that the proceedings would cause respondent to be more scrupulous in future He had not directed the registrar to erase his name

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M P

THE National Service (No 2) Bill was introduced last week by a three-day discussion of a motion moved by the Prime Minister

"That in the opinion of this House, for the purpose of securing the maximum national effort in the conduct of the war and in production, the obligation of National Service should be extended to include the resources of woman power and man power still available, and that the necessary legislation should be brought in forthwith"

The procedure is unusual The usual way in which bills are presented is to have a purely formal "first reading" which is just a reading out of the title of the bill without discussion, followed by a "second reading" on which a general discussion takes place After this comes the "committee" stage, in which detail amendments are made and eventually a "third reading" which again allows opportunity for a general discussion and sometimes amendment This three-day debate of the motion was, as the Speaker said in the course of discussions on the form of a proposed amendment, a reversion to an old practice "in the form of a motion" which was a de facto first reading To the original motion by the Prime Minister an amendment was moved by Mr George Daggar, and seconded by Mr William Dobbie, and eventually supported in the lobby by 40 votes of which 33 were Labour, three Liberal, one Independent, and three I L P To these must be added the two Labour "tellers" Mr Dobbie and Captain John Dugdale, now an education officer with a division and formerly private secretary to Mr Clement Attlee, Lord Privy Seal

The amendment proposed that

"this House, while assenting to the extension of the principle of compulsion to the man power and woman power still available, is of opinion that, in order to secure the full utilisation of national resources in the war effort, it is essential that industries vital to the successful prosecution of the war, and especially transport, coal mining and the manufacture of munitions, should be brought under public ownership and control, and that the necessary legislation should be brought in as soon as possible"

The debate was of a high order but represented a clear-cut cleavage of opinion between those who believe the man-power and woman-power situation can be effectively dealt with without a drastic extension of national control of munitions production, transport, coal and power and those who do not The vote of 40 for the amendment is not a large proportion of the House, but in view of the strong appeals for "unity" made by Mr Attlee to the Labour Party members meeting and the strong pressure put on M P s to refuse to support the amendment the registering of so many as 40 votes in the lobby in its support indicates a considerable divergence of opinion

* * *

The debate was not conducted on party lines Those proposing national ownership and control of certain services did so from the standpoint of war efficiency Those supporting the amendment were hoping that Mr Ernest Bevin, who wound up for the Government on the third day, would indicate that property considerations were to be treated as ruthlessly as personal considerations in the carrying out of the new and vast national mobilisation, but they were not satisfied Mr Bevin said, in answer to arguments for the amendment, that if it "is seriously advanced that there should be further requisitioning of either property, services or industry the Government will examine any specific claim, and will deal with it on its merits" This statement was felt to be so tepid as to be unacceptable Mr E Shinwell who had wound up for the Labour Party, quoted a declaration of the Bournemouth Labour Conference of 1940 which authorised that ward He had looked through the temperature books but had found no evidence of alteration, they were written in pencil Mrs Cornish's death after cæsarean section had been certified to him as due to toxic thyroid and lobar pneumonia, there had been no autopsy

* * *

Mr Pereira said that the death-certificate gave "acute dilatation of the heart, thyrotoxicosis, pneumonia, cæsarean section"

Mr Howard put in two statutory declarations from Dr Rivers, district medical officer for Camborne and Redruth, stating that he had never received notifications under the Puerperal Pyrexia Regulations in respect of Mrs Cornish, Mrs Ward and Mrs Waters

NURSES' EVIDENCE

Miss M Commerford declared that she was a state-registered nurse and certified midwife and had been employed at the Redruth Hospital from February, 1939, to March, 1940, becoming sister in charge of the maternity ward in September, 1939 She had had no conversation with Dr Blackwood and Dr Shimmin except one about temperatures, after a visit from Dr Curnow Dr Blackwood and Dr Shimmin had told her to notify temperatures to them, and if the patient was fit to be moved they would see about it Temperatures were not to be charted unless they had seen the patient *first* Previously, any rise had been charted as it occurred in the normal way the record being transferred from the book to the chart by the junior sister the following morning After that conversation, if there was a rise the doctor was notified and would visit the patient next morning, and the nurses were told that if the patient had a temperature in the evening the doctors would notify the case The actual temperature was recorded in the temperature book by the staff nurse, sometimes in pencil and sometimes in ink After the conversation, the entry in the book was not transferred to the chart until the doctor had seen the patient If then the temperature was down, the previous rise was not charted She had instructed her nurses accordingly If the temperature rose the next day above 100 4° F, then the doctors usually transferred the case and the temperatures were put down correctly on the chart She could only remember one case that would have become certifiable under the Puerperal Pyrexia Regulations had the temperature been correctly recorded Three or four cases would have become notifiable under Dr Curnow's rules In one of Dr Shimmin's cases she had told the doctor that she would not take the responsibility of not notifying to Dr Curnow, in this case the chart had been correctly entered A second false chart had been prepared when the patient left on the 14th day, under Dr Shimmin's instructions, to send to County Hall The old, correct, one she had destroyed, on Dr Shimmin's instructions That was the only case she could remember

Cross-examined, she agreed that matron, assistant matron and sister tutor had been superior to her and that matron had visited every patient daily Matron had not inspected the temperature charts and books, but they had been available for her inspection The temperatures were only correctly reported to matron after the doctor had seen the patient, and all patients with temperatures were isolated If a temperature had been up the previous evening but was normal at the time of matron's round next morning matron would not be told of the evening rise, matron could have observed a blank on the chart, but in witness's experience she had never looked at charts If the temperature was up for the first time in the morning, matron would not be told of it until the doctor had been consulted The true temperatures would, however, be in the book where matron could see them if she asked It was true that in the only case she could remember the true temperature was recorded on the chart, and the falsification only arose when the patient had left hospital and a new, false chart was prepared for County Hall Dr Shimmin had taken some charts for County Hall instructing her to copy them as they were dirty, and told her to make out fresh charts which would indicate that this patient was non-notifiable, whereas the original charts showed notifiable temperatures She destroyed the originals although she had refused, as a certified midwife, to take the responsibility of not notifying them and had asked Dr Shimmin to take them to County Hall If a high temperature was repeated the patient was sent to Truro, so that in fact the regulations had been completely fulfilled The patient was always isolated as soon as a temperature rose, if the rise continued overnight (i.e. to 6 A M), so that any visitor could see the empty bed and deduce isolation and temperature, though the chart would not actually show a temperature reading Matron had left it to sister to notify the doctor of such cases The conversation with the doctors was soon after war broke out and she was not very clear about it, but she was positive both doctors were there The subject had been a patient of Dr Shimmin's who was running a temperature On the previous day Dr Curnow had been there and had found a chart and asked why the patient had not been sent to Truro Dr Blackwood had not regarded the case as one of puerperal fever Both doctors had said that no patient should be sent away until they had made investigations She had been told to contravene Dr Curnow's rules but not the statutory regulations —Dr Curnow's rule was that a single temperature of 99 4° F must involve immediate isolation and removal to Truro

Re-examined, she said she could not remember any case in which a temperature had been wrongly entered and the only effect of the doctor's instructions was to postpone the entry on the chart until the doctor had seen the case and made investigations She had told Sister Davies of the conversation with the doctors Her instructions had been to falsify the chart if the patient was notifiable under Dr Curnow's rules but not if notifiable under the regulations

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Miss Esther Davies, state-registered nurse and certified midwife, said she had been employed at the Redruth Hospital from September, 1939, to June, 1941, succeeding Miss Commerford as sister in charge of the maternity ward She said that a single rise to 99 4° F in the evening was not charted unless it had fallen to normal next morning, if it did not fall, the doctor was told and if he did not think it necessary to notify "we just put another temperature down" She could not remember a single case in which she herself had ever falsified an entry She knew of one case where Sister Commerford had entered a false reading but did not remember the patient's name and thought she had had nothing to do with it She also had told Sister Love to make false entries in the cases of Mrs White and Mrs Carr She had never had any conversation with the doctors about it, except with Dr Blackwood about these two cases She had pointed out the temperatures to him, but could not remember what he said If the correct temperatures had been charted these cases would have been notifiable to Dr Curnow under his rules

Cross-examined, she agreed that her only reason for thinking Dr Blackwood had decided not to notify these cases was that in fact the patients had not been sent away She had not seen Sister Love enter an incorrect temperature, or alter the temperature book The real temperatures had been put in the books at first but she had on her own responsibility ordered that the books be altered to coincide with the charts There was no evidence at all of what the temperatures had really been Her recollection was that the temperatures had never been notifiable under the Puerperal Pyrexia Regulations

* * *

Miss Ena Love, state-registered nurse and certified midwife, said she had been on the staff of the Redruth Hospital as junior ward sister in the maternity ward from September, 1939, to August, 1941 She had taken temperatures and entered them in the book, the charts were never marked until next morning A wrong entry was made on the chart if a patient twice recorded 99 4° F and there seemed to be nothing wrong with her, the second reading was not then charted but a lower figure was substituted She had been so instructed by Sister Davies She had never had any conversation with the doctors about this matter She knew that a wrong temperature had been entered in the case of Mrs Carr She thought probably about three wrong entries in all had been made Mrs Cornish had been Dr Shimmin's patient and witness had reported to him daily on the condition She wanted Mrs Cornish to

Further cases are at present under investigation —Captain Taylor Have particulars of these cases been reported to the General Medical Council ?—Mr Bevin No, I think they have been investigated by the police —Sir Henry Morris Jones In the interests of the medical profession itself will the Minister adopt ruthless measures in the case of anyone found guilty of this type of allegation ?—Mr Bevin I certainly will, but I have to get evidence before I can bring a prosecution Doctors are very fortunate, they can bury their mistakes (laughter) —Captain Taylor Surely, if there have been eight or nine cases in respect of a particular doctor, that is sufficient evidence for a prosecution —Mr R de la Bere The thing is a scandal and needs cleaning up —Captain Taylor gave notice that in view of the unsatisfactory nature of the reply he would raise the matter again at an early date

Birth Registration and Ration Books

Mr A C Bossom asked the Minister of Health if he would see that the registration of newborn babies might be effected, in cases where the father was away on service and the mother could not attend, due to serious illness, by a responsible person equipped with the necessary medical certificates, making the application so that the essential ration book might be obtained —Mr Brown replied While birth registration is governed by statutory conditions which cannot and ought not to be disregarded, we recognise that unavoidable delay in birth registration must not be allowed to prejudice the mother and child in regard to essential food rationing facilities The Minister of Food and I are in touch about the matter

Maternal Mortality in Scotland

Mrs. A Hardie asked the Secretary of State for Scotland if any steps were being taken to provide more hospital accommodation for maternity cases, in view of the increase in maternal mortality in Scotland —Mr T Johnston replied In the past two years nearly 500 new maternity hospital beds have been made available Nearly 100 further beds will shortly be provided in buildings at present in course of erection I am advised, however, that shortage of beds is not a significant factor in the increase in maternal mortality

Infant Death-rate in Scotland

Mr T Kennedy asked the Minister if his attention had been drawn to the dangerously high stillbirth and neonatal death rate in Scotland , and if, in view of the fact that this high mortality and falling birth rate indicated need of an all-round improvement in medical, nursing and the general economic conditions of expectant mothers and growing children, including a widespread extension of communal dinners he could indicate the prospect of legislation to deal with the problem —Mr Johnston replied Stillbirths are not increasing, but a slight rise in neonatal deaths has occurred in 1941 It is too early to say whether the rise is temporary or not, but everything possible is being done by the Ministry of Food and the health authorities, central and local, to ensure that the nutritional needs of expectant mothers are met

School Meals in Scotland

Thirty one education authorities in Scotland supply solid meals in school, and the remaining four light meals, to children who are not necessitous (Mr Johnston in reply to Mrs Hardie)

Physical Standard for Ex-miners

In answer to a question Mr Bevin said The physical standard laid down for ex miners returning to the pits for underground work is that examiners should be satisfied that a man's general physique is such as to enable him to undertake work at or near the coal face , examiners are asked to give special attention to cases where valvular disease of the heart may be suspected Men are to be rejected if found to be suffering from tuberculous disease or uncontrollable hernia I have no information as to the number of men who are on an average passed as physically fit per hour Doctors are paid a fee of 5s for each man examined

Industrial Rehabilitation

The provisions of the interim industrial rehabilitation scheme extend to persons who are prevented by industrial disease, or tuberculosis, from following their normal occupation and who are suitable for training and employment in the occupations covered by the scheme (Mr Bevin replying to Mr F Messer)

Workers from Ireland

Mr W W Wakefield asked the Minister of Health if a medical examination was made of workers coming across from Ireland to ensure that they were not suffering from any disease —Mr Brown replied I understand from the Minister of Labour that there is no regular system of medical examination for workers coming to Great Britain from Eire or Northern Ireland, but that some are medically examined in their home areas at the instance of the employers engaging them I would refer to my reply on Nov 20 —Mr Wakefield Is the Minister aware that some workmen coming from Ireland may have tuberculosis, venereal disease and other diseases, and will he take steps to see that a proper examination is made at the port of entry in order to prevent these diseases from spreading in this country ?—Mr Brown Perhaps you will look at my answer (*Lancet*, Nov 29, p 681) —Sir Percy Hurd Is anything further being done following on that answer ?—Mr Brown The authorities have power to take certain action in regard to those diseases —Sir Joseph Nall Does the Minister realise that the matter is one of urgency and ought to be dealt with firmly ?—Mr Brown It is not merely a matter of these particular persons Preventive measures have to be applied in other directions too

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SOCIAL SECURITY IN NEW ZEALAND

The N Z Government's second attempt to bring in a universal G P service which began on Nov 1 is a fee-for-service plan, the capitation system of February, 1941, having failed to take on My last note (see *Lancet*, Nov 15, p 615), writes a correspondent, described the medical and public outcry which resulted in the fee for a G P service being raised from 5*s* to 7*s* 6*d* with 12*s* 6*d* for an urgent or Sunday call Patients are allowed to make their own private arrangements if they wish and a doctor may charge 10*s* 6*d* or more Legally, however, he can sue for no more than 7*s* 6*d* , and this provision led the B M A to refrain from sending representatives to the committee of control, until this " ancient British right of access to court " be restored The B M A disapproves of the scheme but has agreed to work it, at the same time calling for a non-political commission of inquiry into the whole field The Government allow two methods of collecting the 7*s* 6*d*

(1) The patient signs a form to the effect that the service has been rendered The doctor sends in a heap of forms once or twice a month and is paid by the department

(2) The doctor bills his patient 10*s* 6*d* or whatever he chooses, and the patient's receipt is a valid claim at a post office for 7*s* 6*d* for each service

The B M A , fearing that in the future the 7*s* 6*d* might be cut down to 5*s* or 2*s* 6*d* , decided that its members should use method (2) , the patient and not the doctor would then be the loser Accordingly from Nov 1 practice will be carried on as usual, patients being assisted by the department in granting a 7*s* 6*d* rebate for each service A number of doctors, however, prefer method (1) on account of its simplicity and economy (of stamps paper, postage, time, &c especially in war time), and because many patients will regard the 7*s* 6*d* as a fair fee and will refuse to pay more No-one knows whether a specialist can charge 7*s* 6*d* for a poor patient, a follow-up examination after operation, or a cancer case These and many other points remain to be cleared up The scheme is expected to cost the Government £2,000,000 a year, which is a lot of money—especially if no great benefit to the people accrues

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Joint Tuberculosis Council —Twenty members were present at a meeting of the council held at the London School of Hygiene on Nov 22 when Dr D A Powell (Wales) welcomed Dr J Ferguson (Surrey) representing the Society of M O H's and Dr G B Dixon (Birmingham) the National Association for the Prevention of Tuberculosis Dr Powell was nominated chairman for 1942, Dr James Watt (Godalming) and Dr Edward Ward (Devon) vice chairmen, Dr G Jessel (Lancs) treasurer, and Dr J B McDougall (Preston Hall) secretary For the care and rehabilitation committee Dr McDougall and Dr F R G Heaf stated that part 1 of the report dealing with rehabilitation would be published forthwith and part 2 on care committees early in the New Year Dr McDougall pointed out that the Ministry of Labour " interim scheme " could not apply to persons suffering from tuberculosis unless there was the closest coöperation between tuberculosis physicians and the ministry's visitor to the hospitals concerned Admission to the training centres of patients with open disease might have grave consequences its members to enter into and support the Government that while planning for war, also planned "for peace and a new society and thus, railways, the coal industry and substantial parts of arms production should be made national services during the war, and the public regulation of finance should be strengthened and consolidated" Mr Attlee's words in Parliament in May 1940 when almost absolute powers were taken over "persons and property" were also quoted Mr Attlee had said "The essential thing is that over a wide field—how wide one cannot say at the moment—industry will be carried on for the community in fact, and not for private profit" The case for a speedy unification of transport on national lines with state ownership and control was unanswerable This applied also to the coal industry The organisation proposed for the munitions industries was a special regional organisation with boards representing Government, technical and administrative staffs, and representatives of the workers with full power to organise and supervise in their respective districts Mr Shinwell ended "The Prime Minister promised the nation a harder time That we shall accept with fortitude, but we make this demand Those hardships must be borne by all alike Unless this is achieved it will stimulate further criticism and indeed opposition which may prove fatal to the Government's retention of office and, what is of infinitely greater importance, to our prospects of victory"

* * *

There is in this debate no immediate prospect of a complete change of Government, although some changes of individuals may take place But this active criticism is healthy and useful National unity does not imply absence of criticism and indeed in every other Parliament in the Dominions overseas there is more criticism because ordinary party government continues And we shall probably have a good deal more criticism in the second reading of the National Service (No 2) Bill And there will be more criticism of the allowances for service dependants—which are to be discussed again—and on health questions, for which a day may be found before Christmas The medical man-power problem has not yet been solved although investigations by the Shakespeare committee go on But this committee is a purely ad hoc fact-finding committee, excellent for the purpose, but when that is concluded it should dissolve To attempt to keep the Shakespeare committee in existence as an executive body to allocate medical man-power or to act as a court of appeal would be unfortunate There is no reason to superimpose an extra organisation on the present medical one, which, if used, is adequate

FROM THE PRESS GALLERY

Our Best Foot Foremost

When the Prime Minister moved a resolution in the House of Commons on Dec 2 that to secure the maximum national war effort the obligation of men and women for national service must be extended he assured members that though the Government proposals would further curtail the amenities of our lives they would not "affect physical health, or the contentment of spirit that comes from serving great causes"

In outlining briefly the bill he said there were three main changes affecting men block reservation would give way to individual deferment, the age for compulsory military service would be raised to 51 and lowered to 18½ Boys and girls between the ages of 16–18 will register and be interviewed by the youth committees of education authorities who will encourage them to join one of the various youth organisations Broaching the conscription of women Mr Churchill hastily said that compulsion to join the services would not be extended to any married women, even those without children The power to direct them into industry would continue but would be used with discretion General powers to conscript unmarried women would be sought but would probably only be applied to those in the age-group 20–30 who could choose between the A T S, civil defence work or industry Those who join the A T S will not be compelled to serve in the lethal or combatant branches

Mr James Griffiths pleaded that the Ministry should accept full obligation for those older men veterans of the last war, who might break down in health after being admitted to the Services

Mrs A Hardie, a Glasgow Labour member the principle that women should be drafted into of national importance but claimed that war was woman's job and she was not suited to barra Mrs M Tate on the other hand, felt that the was up against such appalling odds that women not keep out of war, but she regretted the lack wisdom shown in handling the woman-power Absenteeism in the factories, for instance was mainly to the disgraceful inadequacy of the number nursery schools and day-nurseries in the industrial Mr Ernest Bevin, as the last speaker in the debate took up the cudgels for the Government doughty fashion He admitted they were not with the amenities for the women's auxiliar but he was meeting the Service Ministers with a to improving them, and he mentioned specially pri and medical attention The present arr by which women doctors served on medical boards when women were examined would be extended so that women doctors might be in attendance to take care of the women called up

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Just for a handful of silver he left us
Just for a ribbon to stick in his coat

In the debate in the Lords on Dec 3 on the organisation of man- and woman-power Lord Greville said that for some time hospitals had been fast losing their clerical and domestic staffs, who were attracted by the higher wages offered elsewhere or by a feeling that they wished to get into uniform He thought the hospitals would be able to retain many of them if they had some sort of uniform to wear True they had been offered a button, but he did not think a button was a very good substitute He wondered whether it could be arranged for girls who leave the hospital to join the A T S to return to the hospitals after enlisting if they are willing to continue with that kind of work

QUESTION TIME

Panel Doctors' Fees

Sir Ernest Graham Little asked the Minister of Health whether he was aware that panel practitioners had not received any increase in remuneration during the first two and a quarter years of war, that the proposed increase at the rate of 9*d* per annum, the first instalment of which, 2¼*d*, was payable on April 2, 1942, was inadequate to meet the increased expenses of practice, the higher cost of living, and the loss of private patients in receipt of incomes of £225 to £420 per annum, and whether he would make the increase more nearly approximate to the 2*s* asked for by the medical profession —Mr E Brown replied The increase in the capitation fee, which has been agreed with the representatives of the profession, will operate from the beginning of next year This increase is not intended to compensate doctors for the increase in the cost of living since other classes of persons earning similar incomes do not receive any bonus on this account I am satisfied, however, that it provides adequately for the other two matters mentioned in the question and I am not prepared to grant any further increase under present conditions

Reinstatement of Doctors

Mr T E Groves asked the Minister whether, in view of the recommendation to local authorities and hospitals that British doctors on their staffs might be released and foreign practitioners employed in their stead, he would give an undertaking that after the war the British doctors would be reinstated —Mr Brown replied The position of the British doctors referred to is safeguarded by the fact that the Defence Regulation under which practitioners with foreign qualifications are registered in the Medical Register will cease to operate when the Emergency Powers (Defence) Act, 1939, expires after the war

Alleged Incorrect Certificates

Captain Charles Taylor asked the Minister of Labour to what extent he had evidence that members of the medical profession had provided incorrect medical certificates to men of military age, stating that they were unfit for military service, and whether there had been any cases of the men concerned admitting that these certificates were untrue and obtained for large sums of money —Mr Ernest Bevin replied The police authorities investigated a number of cases last year but the evidence was not sufficient for a prosecution legs and forearms, but a few on each flank. The Wassermann and Widal tests were negative and a blood count was normal There was no history of tuberculosis in any near relative The temperature remained normal from Oct 23

The resemblance of the skin lesions to those described by Stott and Copeman[1] led me to start treatment with sulphapyridine Four 0 5 g tablets of M & B 693 were given at once, followed by three after three hours and thereafter two every four hours until 23 tablets were taken, representing 11 5 g of sulphapyridine The result was dramatic After 24 hours the spots were fading and no fresh crops appeared The spots disappeared uniformly and the most recent were arrested in their development, though after 48 hours their nodular character could still be felt The area over the lower third of the right tibia was now considerably less tender and swollen Six days after the beginning of treatment the skin lesions had all almost disappeared The patient vomited only once during the whole course of treatment After the sulphapyridine was stopped her appetite improved rapidly with her general condition At this stage she slept for unusually long periods each day and this tendency lasted for about a week Her progress since then has been continuous and uneventful

This seems to be a case of chronic meningococcal septicæmia without any evidence of involvement of the meninges

Finchley J GRIMSON

CONVALESCENT HOMES FOR CIVIL DEFENCE WORKERS

SIR,—May I draw the attention of your readers to facilities that are open to civil-defence workers through the Civil Defence Workers' Rest Department of the Joint War Organisation? Accommodation is available, in three Joint War Organisation convalescent homes near London which have been temporarily allocated for this purpose to civil-defence workers of both sexes in the Metropolitan area and Outer Ring who are in need of change after illness or injury or of rest and recuperation as a result of a long spell of duty, &c There is no charge to applicants, who may apply on their own account or through their A R P authority, in which case the applicant is asked to attend the weekly Red Cross medical inspection bringing a certificate from their own doctor and a leave permit from their A R P authority Civil-defence workers who have been hospital patients (either in- or out-patients) may proceed direct on application by the lady almoner to the Civil Defence Workers' Rest Department In addition to full-time civil-defence workers the facilities are at present also open to part-time A R P personnel, registered fire-watchers injured on duty, and those who have been discharged from the service but who contracted their illness or injury while in the service Free transport from central London is provided Accommodation is also available in the Bristol area for local personnel and it is hoped shortly to extend to other parts of the country Applications and requests for further information should be made to the secretary, Convalescent Section 6 Cadogan Square, S W 1 (Slo 9951)

HORDER
Chairman Civil-Defence Workers' Rest Dept J W O

TREATMENT OF THE MENOPAUSE

SIR,—Here comes that bogy-man again! This time in the guise of your own distinguished and authoritative self One tends to accept opinions uttered in your annotations as coming from eminent authorities on their subject and to take special note of any warnings thus expressed Coming from such a source a commentary on the treatment of the menopause cannot be lightly disregarded What do we find, then are the views expressed in your annotation of Dec 6 (p 705)? A warning against the use of stilbœstrol—" other œstrogens " are mentioned only in the last sentence—in the alleviation of menopausal symptoms the only crime that stilbœstrol—as compared with the other œstrogens apparently—has committed is to be " cheap and simple to take " and to yield in many cases dramatic results In sounding this warning you quote only one reference (*Amer J. Obstet Gynec* 1940, 40 980), a paper by a psychiatrist whose evidence is based on the use of stilbœstrol which he describes as " a new synthetic ovarian follicular hormone not yet available for general use " in 26 cases of psychosis, including involutional melancholia, schizophrenia and Korsakoff's syndrome, occurring in the menopausal era or subsequent to it This is the first time I have heard of œstrogens as a cure for secret drinking in elderly women None of the patients complained of hot flushes In spite of the fact that " the amounts of the synthetic hormone prescribed were considerably in excess of any as yet reported in the literature " the psychiatric clinical course during treatment showed no improvement in 67% and ' 4% became much worse " You will note that 4% of 26 patients is roughly 1 patient However, as is not altogether surprising in view of the somewhat alarming size of the dose which must have been given—the original author does not bother to mention the exact doses—certain symptoms and effects did appear Here you assume too faithfully the rôle of reporter at the expense of your critical functions and mention " other toxic side effects such as enlargement and fullness of the breasts, areolar pigmentation, increased sexual feelings nausea, diarrhœa and even dysmenorrhœa ' These effects are said by the author to be due to stimulation of ovarian and genital activity by stilbœstrol It is certainly interesting to hear a psychiatrist describe increased sexual feelings as a toxic side effect! Œstrogens of course, far from stimulating ovarian activity actually depress it

But not content with these warnings your annotation resurrects two favourite old bogies and introduces a new one which I find fascinating and intriguing Here they are " No actual evidence is clinically available that this substance is in man a carcinogen, yet no-one would sponsor its exhibition in a case of established breast or uterine cancer " This matter has been fully discussed in many places, including your own columns (e g , *Lancet*, 1936, 2, 1365) Cramer and Gye showed that prolonged administration of œstrogen in high doses was capable of causing mammary cancer in susceptible strains of mice, but pointed out that the period of administration necessary to produce such carcinoma in mice would correspond in terms of the human life cycle to 7–10 years There is even less evidence of the induction of malignant tumours of the uterus in experimental animals Secondly, your annotation mentions the occurrence of pituitary tumours in small animals after the administration of œstrogens Nothing of the kind has so far been reported in human beings, though œstrogens have now been used extensively for 10 years Finally, it makes the fascinating suggestion that " some patients seem to acquire almost a drug addiction to stilbœstrol " and are difficult to wean from its subtle attraction I know of no evidence to suggest that stilbœstrol or any other œstrogen induces a drug addiction, though I have seen patients whose menopausal symptoms are relieved by œstrogens loath to discontinue what they conceive to be an efficacious form of therapy !

Your annotation is entitled Treatment of the Menopause Treatment of the menopause with œstrogens consists in the administration of small doses in interrupted courses controlled when possible by vaginal smears and hot-flush counts, and not in giving maximal doses to psychotic patients of menopausal or post-menopausal age showing none of the recognised signs attributable to ovarian deficiency By the prudent use of œstrogens I can assure you that you will avoid what you describe as " toxic side effects " and may with an easy conscience abandon your rôle of bogy-man

Endocrine Clinic Guy's Hospital P M F BISHOP

STETHOSCOPES OLD AND NEW

SIR,—I should like to add a few remarks to the annotation in your issue of Nov 15 While the usual types of stethoscope rely on an air-space to act as sound-box, there are some in which the sound is transmitted without intermediate amplification directly by means of a solid conductor of wood ebonite or other plastic This type of stethoscope consists of a solid rod, one end of which is funnel-shaped and has a roughened surface to prevent it slipping on the skin while the other end fits tightly into an ear-piece similar to that of other stethoscopes The loss of amplification in this type is usually well compensated by the truth of transmission and the complete absence of extraneous sounds Moreover, the ordinary chest-piece must be applied firmly and the

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[1] *Lancet*, 1940 1 1116

Letters to the Editor

STILLBIRTH AND NEONATAL MORTALITY

SIR,—As Professor Baird and Dr. Wyper recognise, the numbers of cases analysed in their paper (*Lancet*, Nov. 29, p. 657) are small and must be accepted with reserve, but their findings are substantiated by a statistical study shortly to be published, which I have recently completed, and this covers an analysis of the trend in social mortality since 1911 by age, occupation of father, cause of death, regional incidence, and other factors. I find that although the difference between the highest and lowest economic groups has narrowed somewhat since 1911 for neonatal mortality (the excess having fallen to 66%), the difference at ages 1–3, 3–6 and 6–12 months has increased. Despite, therefore, the fall in the absolute death-rates, the excess shown by the lowest class over the top class at ages 6–12 months, for instance, rose from 299% in 1911 to 498% in 1930–32.

Baird and Wyper find that the neonatal mortality-rate for booked cases is 27·4 per 1000 (1938–40). This may be compared with the rates for Croydon (17 in 1938), large Dutch communes (17·7 in 1930–32), Oslo and Amsterdam (16 in 1936), doctors in England and Wales (20·5 in 1930–32), and class I England and Wales (21·7 in 1930–32), while even infants of bricklayers' labourers in England and Wales had achieved a rate (26·3) lower than that reported eight years later by Baird and Wyper for booked hospital experience. Moreover the neonatal death-rates for children born to civil servants, doctors, dentists, teachers and other analogous economic groups were lower thirty years ago than the corresponding rate for Aberdeen Hospital found by Baird and Wyper. These and many other facts go far, I suggest, to confirm their general conclusions on the need for immediate measures to be taken by the appropriate authorities.

Chiswick, W. 4. RICHARD M. TITMUSS.

PERFUMED HYPOCHLORITE SOLUTIONS FOR SPRAYING

SIR,—Some people object to the odour of the mist of sodium hypochlorite used in the disinfection of the air of air-raid shelters and other crowded or poorly ventilated spaces. This objection can be overcome, however, by treating the hypochlorite before spraying with a small quantity of a pleasant smelling substance. The choice of such a substance, together with any solvents that may be necessary to disperse it in the hypochlorite solution, is limited by the following conditions: (1) It must be resistant to the chemical action of sodium hypochlorite; (2) it must not impair the bactericidal action of the mist; and (3) it must not be toxic in the concentration necessary to provide an effective masking odour. It has been found that the two mixtures mentioned below fulfil these conditions:

	A	B
β naphthyl methyl ether (Neroli)	1 g	
Trinitro tertiary butyl xylene (synthetic musk)		1 g
Cetyl alcohol	1·5 g	1·5 g
Carbon tetrachloride	10 c.cm.	10 c.cm.
Sulphonated castor oil	15 c.cm.	15 c.cm.
Water to	100 c.cm.	100 c.cm.

If 1 c.cm. of either A or B is added to 100 c.cm. of 1% sodium hypochlorite a mist is produced on spraying in which the odour of hypochlorite is not discernible. The dispersion of the scent in hypochlorite is relatively stable in the physical sense but may if the solution is left still for several hours, tend to flocculate. Complete redispersion can be achieved by slight agitation. The chemical stability of the dispersion has been tested by leaving an excess of mixtures A and B in contact with 1% sodium hypochlorite solution for a week. No appreciable reduction of the available chlorine in the solution occurred. Similarly the bactericidal action of the perfumed hypochlorite was tested by spraying it in a sealed room into which a mist of *Streptococcus salivarius* in broth had previously been introduced; it was found that there had been no sensible diminution in the killing power of the hypochlorite.

Finally, in regard to the toxicity of the components of the two mixtures chosen. It should be noted that at the concentration of hypochlorite often recommended for use as an aerial disinfectant—i.e., to give 1 volume of hypochlorous acid in 2×10^6 volumes of air—the corresponding concentration of either scent is in the order of 1 volume in 5×10^8 volumes of air, at which concentration very few of even the most poisonous substances have any action when breathed over long periods. Similarly with the solvents and dispersing agents used, cetyl alcohol and sulphonated castor oil are almost non-poisonous in themselves, and carbon tetrachloride quite harmless in the very small concentration used. In point of fact, Davis in the *J. Amer. med. Ass.* 1934, **103**, 961, suggests that it is safe to work for long periods in a concentration of 1 part of carbon tetrachloride in 10^4 parts of air; the quantity which will be sprayed from the scented hypochlorite is 1 part in 3×10^7 which is less than a threethousandth of this safe maximum.

J. E. LOVELOCK,
National Institute for Medical Research. O. M. LIDWELL.

PERINÆAL SUTURE UNDER LOCAL ANÆSTHESIA

SIR,—I am indebted to Prof. F. J. Browne for pointing out that he has been using for many years the technique I described (*J. Obstet. Gynæc.* 1941, 48, 610) for suturing the perinæum under local anæsthesia. I was not, of course, claiming any originality for the method, and I must apologise to Professor Browne for omitting reference to his article on the subject. War conditions made an exhaustive search of the literature difficult. I was aware that the method was in use in one or two hospitals but I did not know of any specific instances. My aim in writing the article was to make the method more generally popular, for the serious disadvantages and dangers of giving a general anæsthetic to a woman exhausted by the strain of labour are not sufficiently realised. Professor Browne's testimony to the value of the method will, I hope, help to popularise it. The cases I described were the first on which the method was used as a routine at Charing Cross Hospital. Since then, I believe, it has been regularly adopted.

Hendon. DENYS J. NEAL SMITH.

CHRONIC MENINGOCOCCAL SEPTICÆMIA

SIR,—The following case seen in general practice seems similar to those described by Major Dickson and others in the *Lancet* of Nov. 22.

A lady in middle life had been in good health up to about six months before the present illness. During this period she had become more easily tired and disinclined to do her normal duties. In the evening of Oct. 17, 1941, she had a definite rigor. She sweated profusely during that night and spent the next day in bed. On the 19th red spots appeared on the lower parts of her legs, round the ankles and on her wrists and forearms. The spots were neither painful nor itchy, and she said that if she had not seen them she would not have been aware of their presence. On the 20th she dressed and went downstairs, feeling "very seedy." I was called to see her on the 22nd. She was then in bed. Her chief complaint was a feeling of extreme weakness and a tendency to faint when she got out of bed. She then drew my attention to the spots on her legs and arms. She looked pale, her temperature was 99° F. and pulse-rate 72. The tongue was clean and moist, and the throat slightly reddened. There were no enlarged glands and I found no abnormality in the heart, lungs, C.N.S. or abdomen. There was a crop of round pink spots on the dorsum of both feet, on the lower third of the front of both legs, on the backs of the hands, and on the forearms. There were a few isolated spots on the flanks and one in the right scapular area. The spots resembled those of erythema nodosum but with three major differences—they were all of uniform size and shape, and each spot was about the size of a split pea; some of the older lesions had a minute hæmorrhagic centre; and they were neither itchy nor painful. The patient told me that a few fresh spots appeared each day. They were appreciably raised above the skin surface; on pressure they were slightly tender but did not disappear. Over the lower third of the right tibia there was an area of subcutaneous swelling. This pitted on pressure and was tender, but there was no discoloration of the overlying skin, except in the areas where the spots were situated. There were no joint pains, the patient did not complain of headache, and Kernig's sign was absent. During the following days fresh crops of spots appeared, all on the lower parts of the legs and forearms, but a few on each flank The Wassermann and Widal tests were negative and a blood count was normal There was no history of tuberculosis in any near relative The temperature remained normal from Oct 23

The resemblance of the skin lesions to those described by Stott and Copeman[1] led me to start treatment with sulphapyridine Four 0 5 g tablets of M & B 693 were given at once, followed by three after three hours and thereafter two every four hours until 23 tablets were taken, representing 11 5 g of sulphapyridine The result was dramatic After 24 hours the spots were fading and no fresh crops appeared The spots disappeared uniformly and the most recent were arrested in their development, though after 48 hours their nodular character could still be felt The area over the lower third of the right tibia was now considerably less tender and swollen Six days after the beginning of treatment the skin lesions had all almost disappeared The patient vomited only once during the whole course of treatment After the sulphapyridine was stopped her appetite improved rapidly with her general condition At this stage she slept for unusually long periods each day and this tendency lasted for about a week Her progress since then has been continuous and uneventful

This seems to be a case of chronic meningococcal septicæmia without any evidence of involvement of the meninges

Finchley J **GRIMSON**

CONVALESCENT HOMES FOR CIVIL DEFENCE WORKERS

SIR,—May I draw the attention of your readers to facilities that are open to civil-defence workers through the Civil Defence Workers' Rest Department of the Joint War Organisation? Accommodation is available, in three Joint War Organisation convalescent homes near London which have been temporarily allocated for this purpose to civil-defence workers of both sexes in the Metropolitan area and Outer Ring who are in need of change after illness or injury, or of rest and recuperation as a result of a long spell of duty, &c There is no charge to applicants, who may apply on their own account or through their A R P authority, in which case the applicant is asked to attend the weekly Red Cross medical inspection bringing a certificate from their own doctor and a leave permit from their A R P authority Civil-defence workers who have been hospital patients (either in- or out-patients) may proceed direct on application by the lady almoner to the Civil Defence Workers' Rest Department In addition to full-time civil-defence workers, the facilities are at present also open to part-time A R P personnel, registered fire-watchers injured on duty, and those who have been discharged from the service but who contracted their illness or injury while in the service Free transport from central London is provided Accommodation is also available in the Bristol area for local personnel, and it is hoped shortly to extend to other parts of the country Applications and requests for further information should be made to the secretary, Convalescent Section, 6 Cadogan Square, S W 1 (Slo 9951)

HORDER,
Chairman, Civil-Defence Workers
Rest Dept , J W O

TREATMENT OF THE MENOPAUSE

SIR,—Here comes that bogy-man again! This time in the guise of your own distinguished and authoritative self One tends to accept opinions uttered in your annotations as coming from eminent authorities on their subject and to take special note of any warnings thus expressed Coming from such a source a commentary on the treatment of the menopause cannot be lightly disregarded What do we find, then are the views expressed in your annotation of Dec 6 (p 705)? A warning against the use of stilbœstrol—" other œstrogens " are mentioned only in the last sentence—in the alleviation of menopausal symptoms the only crime that stilbœstrol—as compared with the other œstrogens apparently—has committed is to be " cheap and simple to take " and to yield in many cases dramatic results In sounding this warning you quote only one reference (*Amer J Obstet Gynec* 1940, 40, 980), a paper by a psychiatrist whose evidence is based on the use of stilbœstrol which he describes as " a new synthetic ovarian follicular hormone not yet available for gener use," in 26 cases of psychosis, including involution melancholia, schizophrenia and Korsakoff's syndrom occurring in the menopausal era or subsequent to This is the first time I have heard of œstrogens as cure for secret drinking in elderly women None of t patients complained of hot flushes In spite of the fa that " the amounts of the synthetic hormone prescrib were considerably in excess of any as yet reported in t literature " the psychiatric clinical course during trea ment showed no improvement in 67% and " 4% becar much worse " You will note that 4% of 26 patients roughly 1 patient However as is not altogeth surprising in view of the somewhat alarming size of t dose which must have been given—the original auth does not bother to mention the exact doses—certa symptoms and effects did appear Here you assume t faithfully the rôle of reporter at the expense of yo critical functions, and mention " other toxic side effec such as enlargement and fullness of the breasts, areol pigmentation, increased sexual feelings nausea, diarrho and even dysmenorrhœa " These effects are said b the author to be due to stimulation of ovarian a genital activity by stilbœstrol It is certainly interesti to hear a psychiatrist describe increased sexual feelin as a toxic side effect ! Œstrogens, of course, far fro stimulating ovarian activity actually depress it

But not content with these warnings your annotati resurrects two favourite old bogies and introduces a ne one which I find fascinating and intriguing Here th are " No actual evidence is clinically available th this substance is in man a carcinogen, yet no-one wou sponsor its exhibition in a case of established breast uterine cancer " This matter has been fully discuss in many places, including your own columns (e g *Lancet*, 1936, 2, 1365) Cramer and Gye showed th prolonged administration of œstrogen in high doses w capable of causing mammary cancer in susceptib strains of mice, but pointed out that the period administration necessary to produce such carcinoma mice would correspond in terms of the human life cyc to 7–10 years There is even less evidence of t induction of malignant tumours of the uterus in expe mental animals Secondly, your annotation mentio the occurrence of pituitary tumours in small anima after the administration of œstrogens Nothing of t kind has so far been reported in human beings, thoug œstrogens have now been used extensively for 10 yea Finally, it makes the fascinating suggestion that " son patients seem to acquire almost a drug addiction stilbœstrol " and are difficult to wean from its subt attraction I know of no evidence to suggest th stilbœstrol or any other œstrogen induces a drug addi tion, though I have seen patients whose menopaus symptoms are relieved by œstrogens loath to discontin what they conceive to be an efficacious form of therap

Your annotation is entitled Treatment of the Men pause Treatment of the menopause with œstroge consists in the administration of small doses in inte rupted courses controlled when possible by vagin smears and hot-flush counts, and not in giving maxim doses to psychotic patients of menopausal or pos menopausal age showing none of the recognised sig attributable to ovarian deficiency By the prudent u of œstrogens I can assure you that you will avoid wh you describe as " toxic side effects " and may with a easy conscience abandon your rôle of bogy-man

Endocrine Clinic Guy's Hospital P M F **BISHOP**

STETHOSCOPES OLD AND NEW

SIR,—I should like to add a few remarks to t annotation in your issue of Nov 15 While the usu types of stethoscope rely on an air-space to act as soun box, there are some in which the sound is transmitte without intermediate amplification directly by means of solid conductor of wood, ebonite or other plastic Th type of stethoscope consists of a solid rod, one end which is funnel-shaped and has a roughened surface prevent it slipping on the skin while the other end fi tightly into an ear-piece similar to that of other steth scopes The loss of amplification in this type is usual well compensated by the truth of transmission and t complete absence of extraneous sounds Moreover, t ordinary chest-piece must be applied firmly and t pressure exerted influences the quality of the transmission, whereas the solid conductor type relies on point contact only and can be applied in almost any way Thus it has great advantages for teaching because the distortions and extraneous sounds arising from inexperienced use of the other types are completely absent and the beginner can easily distinguish the true heart-sounds The close approach to the patient which the use of this instrument necessitates may, however, be inconvenient for the examiner

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[1] *Lancet*, 1940 1 1116

London W 1 J PLESCH

A CONTRAST

SIR,—The *Times* on Dec 5 reported that the Duke of Kent visiting the Nursing Recruitment Centre spoke of the " fine career " now offered by nursing and added that he could speak " with personal knowledge of the excellent conditions in the hospitals today "

The *Royal Cornwall Gazette* on Nov 1 reported an inquest held on a baby who had died in a public-assistance hospital The autopsy had shown death to be due to suffocation through the child inhaling its own vomit The coroner's comments included these words " I have called you together because you may feel it your duty to comment on the member of the staff at the hospital There are about 80 patients at present and we shall hear that neither of the two young nurses on night duty is qualified nor trained " In her evidence the nurse involved stated that she had to start washing patients at 3 30 A M make the beds of 33 patients, give the inmates their first morning feed and assist with the breakfast She added that she had to visit ten separate wards, five on the bottom floor and five on the top floor It was stated that of the nursing staff of eight only the sister-in-charge was trained

Can one blame parents who hold back their daughters from the " fine career " of nursing if they are liable to be confronted with conditions such as the above during their so-called " training " ?

Northwood ESTHER CARLING

LUPUS ERYTHEMATOSUS AND TUBERCULIN TESTS

SIR,—Some points in Dr Kelvin's article of Nov 15 require further elucidation He found that 71% of 118 cases of lupus erythematosus gave a positive tuberculin reaction as compared with 18% of 240 adult controls This latter figure is extraordinarily low when compared with other mass tuberculin surveys In 1929 D'Arcy Hart, on testing 751 clinically non-tuberculous controls of all ages, found that in the adult age-group 88% were positive to 1 in 1000 tuberculin Admittedly these figures relate to the highly industrialised district of London and probably a slightly lower figure would be obtained if this survey were repeated now It would be of interest to know from what section of the populace Dr Kelvin's controls were derived, whether urban or rural, and how this very low figure of 18% can be accounted for when compared with the findings of other observers It is also stated in the article that a tuberculous history was commoner among the cases of lupus erythematosus than among the controls This statement would be more convincing if the actual figures relating to this were given I am not qualified to express any opinion as to the ætiology of lupus erythematosus but I feel that some explanation of the points I have raised is necessary before the author's conclusions can be accepted

Colindale Hospital, N W W E SNELL

SIR,—I am prepared to believe that in Dr Kelvin's area the tuberculous cases of lupus erythematosus are commoner than in the south of England This was a point I emphasised in a recent paper But how does he account for the numerous published cases of the acute generalised form of the disease which ended fatally and in which either no trace of tuberculosis or no active focus was found post mortem (e g , Roxburgh, A C *Brit J Derm* 1933, 45, 95)? In such cases there must be a flooding of the blood-stream with toxin Most of them, of course, die of streptococcal septicæmia (all of Roxburgh's five cases) Forman and I in 1933 published a paper (*Ibid*, p 4) on intradermal tests in lupus erythematosus and allied conditions and our results were very different

H W BARBER

London, W 1

Obituary

THOMAS HENRY WILSON

M A DUBL , F R C P I

Dr T Henry Wilson, a former president of the Royal College of Physicians of Ireland and King's professor of midwifery in the school of physic, Trinity College, died on Nov 20 at the age of seventy-six Wilson was the elder son of the late Captain John Wilson of XIV Regiment, and was educated at Foyle College, Londonderry, and at Shrewsbury He qualified in 1887, and spent some time as a ship surgeon When he came home he turned to midwifery and was assistant master at the Rotunda Hospital for three years during Sir William Smyly's mastership Later he was appointed gynæcologist to the Richmond Hospital and to Sir Patrick Dun's Hospital, and in 1898 he became F R C P I and in 1926 was elected president He had been appointed to his chair in 1911 and he held this post till 1936 when ill health forced him to retire His widow, elder daughter of the late Colonel W Lyster Smythe, survives him

Wilson was a retiring man, who took little part in professional affairs As a teacher he was painstaking and courteous, and his skill as a surgeon won for him a good gynæcological practice He was a charming companion, and his friends found him kindly, humorous and tolerant

ALGERNON E L WEAR

C M G , M D DURH , D P H

Colonel Wear, who died last week at Harrogate in his 76th year, was born in Newcastle-on-Tyne and educated at the local grammar school After qualifying at Durham University in 1891 he held many residential posts in Leeds before settling there in general practice He became a part-time school medical officer and in 1910 his full-time appointment gave scope to remarkable organising abilities He had a great influence on his staff, whom he inspired with his own conception of school medicine, and the open-air school owes much to his wisdom and foresight His greatest fight was over cleanliness in which he achieved striking results Like many busy people he had many outside interests He joined the old volunteer corps before it became the R A M C for some time acting as adjutant When the Territorial Army was organised in 1908 Wear became the first commanding officer of the 1st West Riding field ambulance, which he raised to a high state of efficiency until he was put in command of the divisional casualty clearing station which he later took out to France as the 7th C C S remaining with it until he came home to take up an important command at Alnwick For his services he was made C M G and later became president of the Leeds branch of the " Old Contemptibles " He was largely responsible for the foundation of the Poor Children's Holiday Camp (with a record of summer holidays for 24,000 children) and was one of the pioneers of the orthopædic hospital at Kirby Moorside Two well-known Leeds institutions, the " Boots for Bairns " fund and " Children's Day," owed much to his efforts An engineer before he started medicine, Wear was a great model locomotive builder and had a magnificent model railway at one time He was a loyal freemason, and a past master of his lodge who never sought higher honours He married Emily, eldest daughter of the Rev F Peel, vicar of Heslington, York, and leaves her with two sons and two daughters

WILLIAM FORDYCE

M D EDIN F R C P E , F R C O G

Dr William Fordyce, who died at Tillicoultry, Clackmannan on Nov 6, at the age of 78, was the last of that group of brilliant obstetricians—Simpson, Croom Barbour Hart, Murray, Haultain Ferguson, and Lackie—who added to the renown of the Edinburgh school of medicine

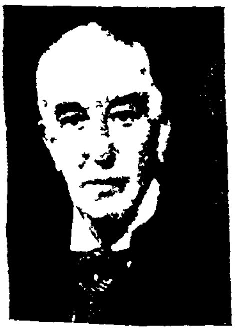
Though he was born at Liverpool, Fordyce counted himself a Fifer, for his parents came from the Kingdom and he himself was educated at Anstruther and later at St Andrews, where he read for an arts degree He studied medicine at Edinburgh, graduating with first-class honours in 1888, and five years later, after postgraduate study at Leipzig and Berlin, he took his M D

Once he had decided to specialise in obstetrics he was invited by Sir Alexander Simpson who was a close personal friend to become his assistant at the university and later he was appointed a lecturer in the extramural school He also held staff appointments at the Royal Maternity and Simpson Memorial Hospital, the Royal Infirmary Leith Hospital and the Hospital for Women in Archibald Place and soon he was recognised as one of the leading obstetricians and gynæcologists of Edinburgh He retired from the heavy demands of his private practice some ten years ago

Dr Fordyce served as president of the Edinburgh Obstetrical Society in 1919 Already in 1898 he had been elected to the fellowship of the Royal College of Physicians of Edinburgh, and in 1929 he became a foundation fellow of the new college of obstetricians Apart from these professional contacts he was a member of the Pen and Pencil Club, the Scottish Arts Club, and, as Father Profundus, of the Monks of St Giles C K writes Fordyce was a vivid and colourful teacher, a brilliant diagnostician and a skilful operator He was a man of many gifts and tastes—an average golfer a good curler, and an excellent angler He was also a witty versifier and a popular after-dinner speaker, and his songs and recitations told in his own inimitable way will live in the memory

GODFREY DE BEC TURTLE

M D DURH M R C P


Lafayette

Dr de Bec Turtle died on Dec 1 after a brief illness at the Luton and Dunstable Hospital which he had gone to superintend He will be much missed in and around Cambridge Square where he had been for some forty years the trusted family physician, retaining to the last the signs-manual of silk hat and stock He rose early and was a constant figure in the Row before breakfast with his friend Sir William Willcox, he could often be found at the Olympia horse show where he had been known to compete on one of his own excellent horses Always interested in everything around him sympathetic and helpful to a degree, he had a sound business head with which he served many professional occasions The Harveian Society came first, then the Royal Society of Medicine whose financial position brightened during his years of office, and when his experience had ripened he was invited to preside at the council of the Medical Defence Union, and four days before his death was elected chairman of the Medical Sickness Assurance Society And he was never happier than when he was giving a dinner party with his wife and family to medical men from home or abroad

Born at Woodford, Essex, in 1877, the son of Dr Frederick Turtle Godfrey de Bec Turtle was educated at Haileybury King's College, London, and Durham University, where he graduated with honours in 1902 Two years later he took his M D and in 1908 became M R C P While obtaining these higher qualifications he was strenuously preparing himself for his future work —later many colleagues were glad to come to him for counsel, especially in midwifery cases—and after holding resident appointments at King's he spent three years as R M O at the Public Dispensary, Drury Lane He never severed his connexion with this hospital and when he died was its senior physician He also found time to undertake clinical assistantships at the Evelina Hospital the Royal Eye Hospital and the Children's Hospital at Paddington Green, but he gave up this work when in 1911 he was appointed physician to the Margaret Street Hospital for Consumption Dr Turtle married Florence Cawood, daughter of Mr H H Baker, they had two daughters, and one son, Dr Peter Turtle, now serving as a surgeon commander

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Major ARTHUR BRODIE HAMILTON BRIDGES, O B E, who died at Cheltenham on Oct 22 at the age of 55 after an operation, took his conjoint qualification from St Thomas's Hospital in 1912 and received his commission in the R A M C from the special reserve a year later During the last war he served in Gallipoli Macedonia and Egypt, and later in India he was appointed surgeon to the Commander in Chief After the war he served as surgeon captain to the Life Guards but returned to the R A M C in 1923 and was promoted major two years later He retired in 1933, but took up a retired pay appointment at the central recruiting depot in 1938

Medical News

University of Cambridge

On Dec 6 the following degrees were conferred by proxy —

M D—T D Day

M B, B Chir—R E M Pilcher and R E W B. Comerford

University of Manchester

At recent examinations the following were successful —

FINAL EXAMINATION FOR M B, CH B

J G Atherton, J K Brown, J H Hilditch, S H Jackson, Heskel Khazam, N A Lewtas, N S Marsden, Ann L Pinson, G J Shanklin and H G B Slack

University of Wales

At recent examinations for the degrees of M B, Ch B the following were successful —

Pathology and Bacteriology—E R Edmunds, Phœbe J M Griffiths, Tegwyn Jones, H D Walters and Al A Yauniskis

Surgery—Beryl Bevan, W M Jones and Monica Parry Morton

National University of Ireland

The degree of M D, has been conferred on Patrick FitzGerald and Dermot Roden

University of Dublin

At recent examinations at the school of physic, Trinity College, the following were successful —

M D

W M E Anderson, R S W Baker and M C Wood

FINAL EXAMINATION FOR M B B CH AND B A O

Medicine—L H Shrago J R Hassard and Dorothy H Webster (*second class honours*) Ethna M MacCarthy, L H Citron C E Williams Florella Starritt, J A Pearce J B Dunlop, Kathleen M J Morphy J N Greene, Muriel Eakins Basil Marcus, A R B Jackson, E S Odbert M. B Flanagan, R O D Reid T L Kelly, A C McReynolds, Margaret F Y Dixon and Catherine E Craig

Surgery—Emmeline P Crowe N J Anderson, L H Shrago Dorothy W M Last, J P Walsh, A J B MacFarland, Al C McReynolds, L H Citron, Jack Morris, and J A Pearce

Midwifery—J F Dignan and Brenda R Boydell (*first-class honours*), I M Ali K J Swanepoel A M Jacobson, Cecilia J Dippenaar, S B Stein and Rena Becker (*second class honours*) Franziska G Brill J W Dignan D M Brooks, Y O Stewart Lavinia F Nightingale, Bernard Novis R C Rylance, P J Mentz J W van der M Roos and I E P Cope

D P H *Part II*—Leila Finegan

Faculty of Radiologists

The following were successful at the examination for the fellowship of the faculty —

Radiodiagnosis—Eric Samuel, M D Lond F R C S, D M R E

Radiotherapy—Alice M Ross, M B Edin, F R C S E, D M R E

Royal Society of Medicine

The section of comparative medicine of this society will continue their discussion on the control of diseases of cattle inimical to man on Wednesday, Dec 17, at 2 15 P M, when Prof Thomas Dalling, M R C V S, and Dr S Roodhouse Gloyne will speak on tuberculosis On Dec 18 at 2 30 P M at the section of neurology Prof Geoffrey Jefferson, Prof Hugh Cairns, Dr W Russell Brain and Dr Ludwig Guttman will open a discussion on rehabilitation after injuries to the central nervous system

Strickland Goodall Lecture

The third Strickland Goodall lecture will be delivered at the Apothecaries Hall in June, 1942, by Dr William Evans, assistant physician to the cardiac department of the London Hospital His subject will be triple rhythm

Prevention of Accidents

The second training course for industrial accident prevention organisers to be held in this country has now been arranged by the Royal Society for the Prevention of Accidents on behalf of the factory department of the Ministry of Labour It will be held at Balliol College, Oxford, from Jan 2 to 13, and about 50 trainees, nominated by their employers, can be accommodated The programme may be obtained from the secretary of the society, 52, Grosvenor Gardens, London, S W 1

Notes, Comments and Abstracts

BADGE OF OFFICE

Sweeping and garnishing never had their due while our world still clung to the Victorian belief that you came down to breakfast at eight o clock and found the rooms clean and tidy, the fire burning and the coffee made, and that it was all done by magic Most of us have given up that any notion in private life but in hospitals the domestic work still has to be done, and done early, and there is not much magic about it We have already noted (*Lancet*, Nov 22, p 655) that the Ministry of Health, with genuine appreciation of the contribution which hospital domestic workers are making towards winning this war, have decided to provide badges for them More insight has been shown in making the gesture than in choosing the design of the badge (shown in the illustration) The words " Ministry of Health " appear in silver letters on a red enamelled border, and " Hospital Service " is in blue on a silvered cross-bar The effect though honest is dispiriting Might not one of our penniless artists have been given the opportunity to do a national service and design a badge worthy of the ministerial inspiration ?

Badges will be issued to all those workers on the domestic side in hospitals, including manual and supervisory staff, who are giving not less than 96 hours service a month, and it is estimated that 60,000 people will be eligible, most of them women Many hospitals are short of domestic workers, and the Ministry of Labour has agreed that women giving full-time service in this capacity will not be asked to transfer to other war work, moreover women who are not in essential employment can, if they wish ask to take up this work when they register No doubt the recognition of the value of the work which the badge implies will carry some weight with registrants

FELIX INFELIX

" limited quantities of damaged dried milk no longer suitable for human food can be issued to owners of warehouses and other food stores in which cats are kept to destroy vermin " (Hansard)

Milkless, my cat ? Observe the regulations
 You cannot hope to share the infant's meed
In time of war the milk becomes the nation's,
 And who are you to swig the nation's need ?
Yes, who indeed are you ? Cry out upon us !
 A personage of note, not all unsung
The harmless necessary cat, your honours—
 The milkless mouser with a parching tongue
Harmless and necessary ? What, no greater ?
 Doyen of symmetry, address, aplomb !
The saucer, yawning like an empty crater,
 Shows where the Minister has dropped his bomb
Someone, I think, remarked you had your uses,
 Major Lloyd George unblushingly replied
" The modicum of milk reserved for pussies
 Is damaged, dated, damned, disdained and dried "

FLASHBACK

A Diary of World Affairs by Marcel Hoden (Penguin Books 6*d*) which covers the period from June, 1940, to April, 1941, is a useful reminder of the sequence of events during a tumultuous year which to most people was too confusing to be seen in perspective. As a collection of facts as to who said and did what—and when—it is concise and readable Whether the author's optimistic interpretation of these events is as reliable only time will tell For a Frenchman disappointed in his own country's behaviour he seems a little too enthusiastic in his eulogy of ours Perhaps he ought to give up expecting too much of human nature, or disappointment may become his lasting portion

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Infectious Disease in England and Wales

WEEK ENDED NOV 29

Notifications —The following cases of infectious disease were notified during the week smallpox, 0, scarlet fever 1415, whooping-cough, 1959, diphtheria, 1047 paratyphoid, 16, typhoid, 7, measles (excluding rubella), 850, pneumonia (primary or influenzal), 1101 puerperal pyrexia, 124, cerebrospinal fever, 140, poliomyelitis, 15, polio-encephalitis, 1, encephalitis lethargica, 3, dysentery, 197, ophthalmia neonatorum 83 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Nov 26 was 1319, including scarlet fever, 168 diphtheria, 287 measles, 36, whooping-cough 481, enteritis, 32, chicken pox, 36 erysipelas, 32, mumps, 9 poliomyelitis, 4, dysentery, 13, cerebrospinal fever, 11, puerperal sepsis 18 enteric fevers 17, malaria, 1, other diseases (non infectious), 71, not yet diagnosed, 103

Deaths —In 126 great towns there were no deaths from measles, 1 (0) from enteric fevers, 1 (0) from scarlet fever, 12 (2) from whooping-cough, 31 (3) from diphtheria 41 (1) from diarrhœa and enteritis under 2 years, and 37 (1) from influenza The figures in parentheses are those for London itself

Bristol reported 1 death from an enteric fever Middlesbrough and Swansea each had 4 fatal cases of diphtheria

The number of stillbirths notified during the week was 167 (corresponding to a rate of 32 per thousand total births), including 16 in London

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DEATHS

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Pierre J H, M B Lond, F R C S M O (grade B) at Trinidad

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Badger, F G, F R C S E deputy clinical director,
Howat T W L R C S E, first assistant, and
Wolfson, L J, M B Lond, D A, resident anæsthetist

A Birthday Present —Under the terms of Mr Bernhard Baron's will a grant is made every year on his birthday to hospitals and charities This year over £43,000 was distributed, of which £16,000 went to London hospitals and £10,000 to hospitals outside London

Medical Honour —The D S C has been awarded to Temp Surgeon Lieutenant Benjamin Crawshaw, L R C P E, for bravery and devotion to duty when H M S *Grimsby* was lost

ORIGINAL ARTICLES

PFEIFFER'S BACILLUS (INFLUENZAL) MENINGITIS

N MUTCH, M D CAMB F R C P
SENIOR PHYSICIAN TO GUY'S HOSPITAL SECTOR ADVISER IN MEDICINE E M S

THE discovery of the virus of epidemic influenza diverted medical attention from an earlier preoccupation with *Hæmophilus influenzæ* of Pfeiffer Disappointment had long been felt that the strain of this bacillus isolated from the respiratory passages rarely displayed much invasive power when inoculated into animals It is remarkable therefore that meningeal infections caused by Pfeiffer's bacillus should prove so uniformly fatal and completely resistant to all therapeutic measures which have been tried A number of examples of the condition have been noted in this *country during the past year and* the time is opportune for a review of our knowledge of the subject

Most of the observations on the disease have been made in America where it seems to be more common than in Britain Slawyk[19] described the earliest case in which the diagnosis was established bacteriologically Neal,[18] analysing 3139 cases, found that it was the fifth commonest American variety and accounted for 4 5% of all cases of meningitis Fothergill,[6] recording 51 cases at the Children's Hospital, Boston, over a 4-year period during which there had not been any outbreak of epidemic cerebrospinal meningitis, found that it was the commonest type of all and represented 23 1% of the meningitis group In this country it is comparatively uncommon but since August, 1941 3 undoubted cases and 2 other possible ones have been admitted to a Kentish Hospital of about 1000 beds We may owe our comparative immunity to a higher individual resistance to Pfeiffer's bacillus acquired in this land of the common cold—an idea which receives support from the bacteriological findings in the cerebrospinal fluid In American reports[2] the bacilli are described as occurring in strikingly great numbers In the cases reported here the bacilli have been so few that they might easily have escaped notice *Possibly the disease is sometimes overlooked* when laboratory facilities are inadequate The bacteriologist often fails to see or grow any organism from cerebrospinal fluid submitted to him from patients with suppurative meningitis There is a tendency to ascribe such failures to death of the bacteria during transport of the specimen or to the administration of sulphonamides before collection of the fluid, but it is conceivable that this unsatisfactory group may include a proportion of influenzal cases

CASE-HISTORIES

CASE 1—A soldier, aged 30, complained for 2 weeks of headache, giddiness and periodic weakness and sensation of swelling in his legs Ambulatory, and given sick leave Admitted on return with definite head retraction and occasional vomiting, normal cerebration Temperature 101 6° F, pulse rate 104, respirations 24 per min C S F pressure 250 mm, slightly opalescent, protein 0 09%, cells 46 per c mm (chiefly mononuclear), gram negative *bacilli* seen resembling *H influenzæ*, cultures sterile Blood serum agglutinated *H influenzæ* from case 5 at dilution 1 40 Two normal controls agglutinated same organism at 1 20 White-cell count 13,300 with 70% of polymorphs Treated with Sulphonamide E O S (80 g in 7 days) Temperature became normal in 24 hours Head retraction disappeared in 36 hours Recovery rapid, uninterrupted and complete

Note—Bacteriological *diagnosis* in this case not fully established Prognosis far better at 30 than during infancy

CASE 2—A youth of 16 Acutely ill for 48 hours with headache, fever and vomiting On admission semicomatose, with head retraction and positive Kernig's sign Temperature 102 6° F, pulse-rate 108, respirations 26 per min C S F pressure 280 mm, turbid, protein 0 28%, cells 7,840 per c mm (polymorphs 98%), extracellular gram negative bacilli seen resembling *H influenzæ but cultures sterile* Blood count white cells 14,900 with polymorphs 79% Treated with sulphonamide E O S (80 g in 7 days) Temperature normal in 48 hours Recovery rapid, *uninterrupted and complete*

Note—Bacteriological diagnosis not fully established Prognosis far better at 16 than during infancy

CASE 3—Infant, aged 17 months Acute onset with fever and irritability On admission, 36 hours later, quiet, considerable head retraction and positive Kernig's sign Temperature 102 2° F, pulse rate 116, respirations 44 per min C S F pressure 90 mm (rose later to 330 mm), opalescent (thick pus later), protein 0 16% (rose later to 0 45%), cells 84 per c mm (990 per c mm later and visible clots of pus), polymorphs 92%, gram negative bacilli seen in small numbers in six specimens and pure growth of *H influenza* obtained from each Treated by lumbar puncture and cisternal puncture and with sulphapyridine (34 5 g in 14 days, and after an interval of a week a second course of 32 g in 15 days) Partial defervescence during each course of sulphapyridine but general condition unaffected Stertorous and unconscious by 36th day, death Report on autopsy by Dr S J Hopkins Brain congested with flattening of the convolutions Thick yellow pus over base, extending forwards and surrounding optic nerves Lateral ventricles distended with thick yellow pus which extended throughout the ventricular system

CASE 4—Girl, aged 6 years Acute onset with headache and vomiting 24 hours before admission Semicomatose when first seen with moderate neck rigidity, Kernig's sign and opisthotonus Restless with well marked photophobia and meningitic cry Temperature 102 4° F, pulse rate 110, respirations 26 per min C S F pressure 200 mm, turbid, *protein* 0 24%, *cells* 4560 per c mm (polymorphs 97%), occasional extracellular gram negative bacilli seen, pure growth of *H influenzæ* on culture Treated with *sulphonamide* E O S (*12 5* g in 2 days) Day after admission *respiration became deep and rapid* Blood stained frothy *sputum*, *Cheyne Stokes respiration Death after 62 hours* of illness

CASE 5—Infant, aged 7 months Onset with coryza 12 days before admission Odd behaviour on 8th day of illness and *right sided twitching* on 10th day Not comatose until a few hours before death, but had tense fontanelle, muscular twitchings and head retraction Temperature 100° F, pulse rate 140, respirations 36 per min C S F pressure 210 mm, turbid, protein 0 1%, cells 1480 per c mm (polymorphs 92%), very occasional extracellular gram-negative bacilli seen on four occasions and pure growth of *H influenzæ* obtained from each of six specimens Treated with sulphapyridine (18 g in 8 days) lumbar puncture, cisternal puncture, intrathecal and intravenous serum from case 1 and from *normals* The fluid obtained by lumbar puncture on the 25th day of illness was almost pure pus but that obtained by cisternal puncture was only slightly opalescent A day later at autopsy thick pus was found on the surface of the brain Loculation, typical of this disease, was pronounced

Report on autopsy by Dr S J de Navasquez Dura mater adherent to arachnoid by very thick greenish purulent exudate so abundant over cortex that in many areas over vertex superficial pattern could not be seen On being stripped, dura retained some of exudate on its under surface Cerebral convolutions flattened and *sulci obliterated*, large subarachnoid collections of pus in island of Reil, basal cisterns and around medulla and throughout the spinal theca Ventricles filled with *similar exudate* Brain substance very soft but devoid of intracerebral suppuration Left lung showed some consolidation of lower lobe, remainder of lungs normal Myocardium pale and soft from fatty change Histology brain showed a severe purulent meningitis, which in places had penetrated beyond the arachnoid, which could not be seen, pia intact in the sections examined No intracerebral lesions Gram negative bacilli present in exudate, which on culture gave a pure growth of *H influenzæ* Lower lobe of left lung showed atelectasis and some hæmorrhage, but no inflammatory changes Liver and myocardium showed fatty change only.

BACTERIOLOGY

As seen in the cerebrospinal fluid, the *organisms are* gram-negative and usually extremely pleomorphic Although small bacilli are the predominant form, larger

Notes, Comments and Abstracts

BADGE OF OFFICE

Sweeping and garnishing never had their due while our world still clung to the Victorian belief that you came down to breakfast at eight o'clock and found the rooms clean and tidy, the fire burning and the coffee made, and that it was all done by magic Most of us have given up that any notion in private life, but *in hospitals the domestic* work still has to be done, and done early, and there is not much magic about it We have already noted (*Lancet*, Nov 22, p 655) that the Ministry of Health, with genuine appreciation of the contribution which hospital domestic workers are making towards winning this war, have decided to provide badges for them More insight has been shown in making the gesture than in choosing the design of the badge (shown in the illustration) The words "Ministry of Health" appear in silver letters on a red enamelled border, and "Hospital Service" is in blue on a silvered cross-bar The effect though honest is dispiriting Might not one of our penniless artists have been given the opportunity to do a national service and design a badge worthy of the ministerial inspiration?

Badges will be issued to all those workers on the domestic side in hospitals, including manual and supervisory staff, who are giving not less than 96 hours service a month, and it is estimated that 60,000 people will be eligible most of them women Many hospitals are short of domestic workers, and the Ministry of Labour has agreed that women giving full-time service in this capacity will not be asked to transfer to other war work, moreover women who are not in essential employment can, if they wish, ask to take up this work when they register No doubt the recognition of the value of the work which the badge implies will carry some weight with registrants

FELIX INFELIX

" limited quantities of damaged dried milk no longer suitable for human food can be issued to owners of warehouses and other food stores in which cats are kept to destroy vermin " (Hansard)

Milkless, my cat? Observe the regulations
  You cannot hope to share the infant's meed
In time of war the milk becomes the nation's,
  And who are you to swig the nation's need?
Yes, who indeed are you? Cry out upon us!
  A personage of note, not all unsung
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The presence of toxic substances in the filtrates of *H fluenzæ* cultures was first noted by Parker[21] who epared a corresponding immune serum Utilising this oduct Wollstein[31] was able to protect the rhesus onkey from the effects of Pfeiffer cultures injected 24 ours earlier Kolmer[17] noted that cerebrospinal fluid om patients with influenzal meningitis is devoid of omplement a fact which has been verified by Fothergill nd Ward[10] Normal cerebrospinal fluid also is free om complement, but complement has frequently been etected in specimens from meningococcal and pneumoccal cases Pittman[23] therefore gave intrathecal jections of human complement as a therapeutic measure ut without success Fothergill and Ward[10] prepared orse antiserum with strong bactericidal powers and high gglutinin titre They showed that the bactericidal ffect of complement + antiserum is far greater than that of white blood corpuscles + antiserum and concluded hat the natural curative mechanism is one of complemental bacteriolysis They treated 5 cases with a mixture of complement (normal human serum) and bactericidal horse serum injected by lumbar puncture, cisternal puncture, through the anterior fontanelle and into the lateral ventricles through trephine openings, but every patient died Post-mortem examination revealed the usual loculation of pus in abscess-like cavities walled off from the general subarachnoid system Rittenberg[24] was able to record a successful case two years later and in 1937 Fothergill[6] published a substantial series of 201 cases with a modified mortality of 84 6% He had relinquished his heroic modes of injection and relied on simple lumbar puncture with occasional use of the cisternal route This method has now been employed by many workers[7, 27, 28] and the opinion is widely expressed[1] that Fothergill's serum and complement have no appreciable effect on the general course of the disease Moreover the issue is not affected materially when guineapig complement[27] is used instead of human serum The latest development of this type of therapy also comes from America Goodner and his colleagues[12, 13] showed that antipneumococcal serum from the rabbit is more effective than that from the horse and believed the difference to be due to the greater penetrating power of the smaller molecule of the rabbit immune bodies Alexander[2] therefore prepared an anti influenzal rabbit serum which is now in use clinically Good results are reported to have followed its use[6] but a final assessment of its utility still remains to be made

Sulphanilamide, sulphonamido-chrysoidin and sulphapyridine have each been used without definite success[1, 5, 27] Aleman[1] has given an analysis of 82 cases treated with sulphanilamide and 18 treated with sulphapyridine He also quotes substantial groups of patients treated with various combinations of these drugs and Fothergill's serum On the whole the fatality-rates are a little lower than those recorded before the introduction of these drugs But when the uncertainty of statistical deductions made from small numbers of cases is taken into account, and the inclusion of older children and adults in the series is noted, it is clear that proof of any benefit accruing from these drugs is still lacking It can be stated dogmatically that in this disease the sulphonamides have not shown that unequivocal power of control which they exert over the corresponding meningococcal infections

The problem of reducing the appalling mortality of influenzal meningitis has not yet been solved in spite of much endeavour I would suggest that less effort be made to inject remedial agents directly into the subarachnoid space The disease is essentially a septicæmia and a meningitis, not an encephalitis or a primary infection of the cerebrospinal fluid The fluid itself is a poor culture medium, but the organism survives vigorously for 24 hours or longer after the patient's death in contact with the tissues The meninges are well supplied with blood-vessels and curative bodies can most appropriately be introduced by that route

SUMMARY

Pfeiffer's bacillus meningitis is well known in this country though it is less common than in America

The responsible strains are capsulated gram-negative bacilli forming a single homogeneous serological group Strains isolated from the upper respiratory passages are relatively avirulent members of the Pfeiffer group and are serologically heterogenous

The disease is essentially one of infancy and does not often affect adults

Specific bactericidal substances are present in the blood of members of the immune age-groups but their titre in children between the ages of 6 months and 2 years is low

The clinical features are those of acute suppurative meningitis Loculated collections of pus often form Bacteræmia is common and persistent The diagnosis cannot be established without bacteriological examination Cultures (for example, on chocolate agar) must be made to differentiate the condition from those due to other gram-negative bacilli, such as *Strep meningitidis*

The prognosis is extremely grave and infants rarely recover Serological treatment has not yet met with any definite success and the sulphonamides have not perceptibly affected the fatality among infants The adult fatality rate is far lower than that of infants, recovery-rates must therefore be correlated closely with age-grouping if the curative effects of sera and chemotherapeutic substances are to be assessed Therapeutic assay could readily be made by studying the disease in infants of 2 years or under, and excluding adults and older children from the series

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PFEIFFER'S BACILLUS MENINGITIS

RECOVERY WITH CHEMOTHERAPY

N M Jacoby, M D Lond, M R C P
REGISTRAR TO THE CHILDREN'S DEPARTMENT, GUY'S HOSPITAL
PHYSICIAN, E M S

A male infant, aged 1 year, was admitted to the County Hospital, Pembury, with a history of 24 hours' profuse vomiting, rigidity of the body, a fixed stare and drowsiness He had been well till the onset of this illness, and there was nothing relevant in the history He was extremely ill Temperature 104° F, pulse rate 150, respirations 60 He was pale, irritable and slightly dehydrated, there was some neck rigidity, but Kernig's sign was negative Except for a few purpuric spots on the loins there was nothing else abnormal Lumbar puncture showed turbid cerebrospinal fluid under slight pressure (not measured), protein 0 2%, 1600 polymorphs and 100 lymphocytes per c cm ; chlorides 725 mg per 100 c cm, no sugar Direct smears showed small numbers of gram negative bacilli of hæmophilus type Culture gave a pure growth of *Hæmophilus influenzæ*

Sulphapyridine (M & B 693) was given by mouth in the following doses 1st day, 3½ g, 2nd day, 3 g, 3rd day, 3 g, 4th day, 2½ g, 5th day, 2 g, 6th day, 2 g, 7th day, 1 g Total 17 g The temperature fell to normal at the end of 24 hours and did not rise again Although the child was much improved, he remained irritable for 3 days, and at the end of bacilli, coccoid, diplococcoid, and long filamentous forms are commonly seen. They cannot be cultured on ascitic or trypagar media but grow well on chocolate agar. Meningococci, pneumococci and hæmolytic streptococci also multiply freely on this medium, a circumstance which greatly simplifies the routine investigation of material. Several types of *H. influenzæ* have been differentiated, the two principal categories according to Pittman,[22] being (*a*) rough forms, a heterogeneous group of feeble pathogenicity (strains isolated from the respiratory passages are usually of this kind), (*b*) smooth forms developing capsules, a homogeneous group strongly pathogenic and characteristic of strains isolated from the cerebrospinal fluid. Fothergill and Chandler[8] by repeated subculture of meningeal strains were able in time to dissociate from them a number of avirulent variants which grew in rough colonies, were serologically heterogeneous, and closely resembled the innocuous type which frequents only the respiratory passages. Rivers and Kohn[26] demonstrated the homogeneity of the meningeal types by agglutination reactions. Pittman[22] confirmed the fact by precipitin tests. Wright and Ward[32] showed further that the rough forms were easily killed by bactericidal substances present in the blood, but that the meningeal smooth forms were far more resistant and therefore more fitted to invade the tissues. It can thus be taken as a firmly established fact that the meningeal strains of *H. influenzæ* isolated in America are with few exceptions smooth strains and mostly belong to one serological type—Pittman's group b. It is desirable that strains isolated in this country should be collected by one central laboratory and examined culturally and serologically.

AGE AND RESISTANCE

Infants and young children are particularly prone to meningeal infections. The age-incidence graph of every common variety shows a peak at some point between the ages of 6 months and 2 years. Influenzal meningitis conforms to this general rule. Of Neal's 3139 cases, 65% were in patients under 2 years. Rivers,[25] reviewing 193 cases, found that 79% of the patients were under that age. For Bloom's[4] 49 cases the figure was 62% and for Fothergill and Wright's[11] 76 cases it was 75%. It is almost unknown during the first 2 months of life and is commonest between the ages of 6 and 9 months. The incidence gradually falls off to reach a very low figure by 3½ years. Occasional cases are found among older children and adults. Fothergill and Wright found that the blood of normal adults possesses strong bactericidal powers against *H. influenzæ*. Blood from the umbilical cord at birth exhibited similar characteristics but during the latter half of the first year of infancy the bactericidal power of the blood is lost. They were able to demonstrate a close reciprocal relationship in each age-group between the incidence of influenzal meningitis and the bactericidal potency of the blood of the population in general. The freedom of the adult from this infection was thus closely correlated with the development of an acquired immunity, and the lower fatality-rate among older children and adults was explained.

CLINICAL FEATURES

The meningeal infection is of a frankly suppurative type and gives rise to symptoms closely simulating those of other forms of suppurative meningitis. A common cold or other infection of the upper respiratory passages often precedes the meningeal symptoms.[27, 11] The respiratory infection is not usually severe nor does it resemble infections with the influenzal virus; furthermore, meningitis due to Pfeiffer's bacillus is no more common during influenzal epidemics than at other times.[14] Dowds[5] has reported 2 cases in which the antecedent lesions were subcutaneous abscesses due to the Pfeiffer organism, but such cases must be very rare, and the usual portal of entry for the organism appears to be the mucosa of the respiratory tract. Fever, drowsiness, irritability, vomiting and neck rigidity develop rapidly as in cerebrospinal fever, but at times the onset may be as insidious as that of tubercular meningitis. Bacteræmia is a conspicuous feature[6] and blood-cultures may yield *H. influenzæ* persistently throughout the course of the disease. The prognosis is extremely grave and infants rarely recover. The patient may die during the first few days of illness (case 4) or death may be postponed for several weeks (case 3). In the latter event loculation of pus in the meninges usually occurs and it becomes impossible to relieve the symptoms of excessive intracranial pressure either by lumbar or cisternal puncture. Fluid withdrawn from below may then present characteristics widely divergent from those of fluid obtained from above. In spite of every effort to drain the subarachnoid space the pressure of the pent-up pus in various closed pockets may so compress the brain that all signs of the original convolutions are lost (case 5). Even in these circumstances, and with a thick stiff cream of almost inspissated pus lying over the surface of the brain, the patient may not lose consciousness entirely until the last. The outstanding feature of the disease is the inflammation of the meninges without any particular involvement of the brain.

Cerebrospinal fluid.—As withdrawn from the lumbar region, the cerebrospinal fluid may be opaque and turbid or merely opalescent. Leucocytes are abundant, the count varying from a few hundreds to several thousands per c.mm.; mononuclear cells are also found and may be as numerous as 200 per c.mm. Stained smears of the deposit show gram-negative bacilli and evidence of phagocytosis. Chlorides are low and protein and globulin are increased, the protein commonly ranging between 0.1% and 0.4%. The pressure may rise to values above 300 mm. of saline, but with the onset of loculation it tends to fall again to normal figures in spite of the high tension of pus imprisoned deeply in the skull.

DIAGNOSIS AND TREATMENT

Clinically the disease cannot be distinguished from other forms of suppurative meningitis. Diagnosis can only be established by bacteriological examination of the cerebrospinal fluid. In a certain proportion of cases the supernatant cerebrospinal fluid exhibits a precipitin reaction when mixed with the corresponding immune serum[6] but the usual diagnostic procedure is inspection of the gram-stained smear and incubation of the deposit inoculated on chocolate agar. Confirmatory culture is essential because other varieties of gram-negative bacilli sometimes cause meningitis—for example the salmonellas. The salmonella organism may occur in such pleomorphic forms in the cerebrospinal fluid as to mimic *H. influenzæ*[16] in stained smears of deposit. Bahrenburg and Ecker[3] collected 35 cases from the literature and many other cases have been reported in more recent years. Amongst the strains identified are *Salmonella schottmulleri* (*Bacterium paratyphosum B*), *S. enteritidis*, *S. paratyphi* (*Bact. paratyphosum A*), *S. panama*. The clinical features of salmonella meningitis resemble those of influenzal meningitis but a history of diarrhœa may replace that of respiratory catarrh. In each case the meningitis is of purulent type and polymorphonuclear leucocytes are numerous in the cerebrospinal fluid. The fatality-rate is very high in each disease, being 80 to 100% for influenzal meningitis and 91% in Bahrenburg and Ecker's collected salmonella cases. It will presently be shown that influenzal meningitis is resistant to sulphonamide therapy, but there are indications that salmonella infections can be controlled with these drugs.[16]

In so lethal a disease as influenzal meningitis the fatality affords a convenient inverse measure of the therapeutic success. At ages under 2 years the fatality is much greater than among older children and adults. Full consideration must be given to this fact in all attempts at comparative analysis. Among 78 cases admitted to the Boston Children's Hospital over a period of 12 years, Fothergill and Sweet[9] found only one case of spontaneous recovery. The following data are available:

—	Total cases	Fatality %		
		Mixed cases	Children under 2 yr.	Adults and children over 2 yr.
Rivers[25]	220	92	97	
Bloom[4]	320		96.7	
Neal, Jackson and Appelbaum[20]	111	100	100	
Wilkes Weiss and Huntington[30]	500		97.6	79.5
Fothergill and Sweet[9]	78		99	

The presence of toxic substances in the filtrates of *H luenzæ* cultures was first noted by Parker[21] who pared a corresponding immune serum · Utilising this oduct *Wollstein*[31] was able to protect the rhesus nkey from the effects of Pfeiffer cultures injected 24 urs earlier Kolmer[17] noted that cerebrospinal fluid m patients with influenzal meningitis is devoid of mplement a fact which has been verified by Fothergill[7] d Ward[10] *Normal cerebrospinal fluid also is free* om complement, but complement has frequently been tected in specimens from meningococcal and pneumo-ccal cases Pittman[23] therefore gave intrathecal jections of human complement as a therapeutic measure ut without success Fothergill and Ward[10] prepared orse antiserum with strong bactericidal powers and high glutinin titre They showed that the bactericidal fect of complement + antiserum is far greater than that f white blood corpuscles + antiserum and concluded hat the natural curative mechanism is one of complemental bacteriolysis They treated 5 cases with a ixture of complement (normal human serum) and acteriсidal horse serum injected by lumbar puncture, isternal puncture through the anterior fontanelle and nto the lateral ventricles through trephine openings, ut every patient died Post-mortem examination evealed the usual loculation of pus in abscess-like avities walled off from the general subarachnoid system Rittenberg[24] was able to record a successful case two ears later and in 1937 Fothergill[6] published a ubstantial series of 201 cases with a modified mortality f 84 6% He had relinquished his heroic modes of njection and relied on simple lumbar puncture with ccasional use of the cisternal route This method has ow been employed by many workers,[7 27 28] and the pinion is widely expressed[1] that Fothergill's serum and omplement have no appreciable effect on the general ourse of the disease Moreover the issue is not affected naterially when guineapig complement[27] is used instead f human serum The latest development of this type f therapy also comes from America Goodner and his olleagues[12 13] showed that antipneumococcal serum rom the rabbit is more effective than that from the orse and believed the difference to be due to the greater enetrating power of the smaller molecule of the rabbit mmune bodies Alexander[2] therefore prepared an nti influenzal rabbit serum which is now in use linically Good results are reported to have followed ts use but a final assessment of its utility still remains o be made

Sulphanilamide, sulphonamido-chrysoidin and sulphapyridine have each been used without definite uccess[1 5 27] Aleman[1] has given an analysis of 82 ases treated with sulphanilamide and 18 treated with ulphapyridine He also quotes substantial groups of atients treated with various combinations of these rugs and Fothergill's serum On the whole the atality-rates are a little lower than those recorded before he introduction of these drugs But when the uncertainty of statistical deductions made from small numbers f cases is taken into account, and the inclusion of older hildren and adults in the series is noted, it is clear that roof of any benefit accruing from these drugs is still acking It can be stated dogmatically that in this isease the sulphonamides have not shown that unequivocal power of control which they exert over the orresponding meningococcal infections

The problem of reducing the appalling mortality of nfluenzal meningitis has not yet been solved in spite of much endeavour I would suggest that less effort be made to inject remedial agents directly into the subarachnoid space The disease is essentially a septicæmia and a meningitis, not an encephalitis or a primary nfection of the cerebrospinal fluid The fluid itself is a poor culture medium, but the organism survives vigorously for 24 hours or longer after the patient's death in contact with the tissues The meninges are well supplied with blood-vessels and curative bodies can most appropriately be introduced by that route

SUMMARY

Pfeiffer's bacillus meningitis is well known in this country though it is less common than in America

The responsible strains are capsulated gram-negative bacilli forming a single homogeneous serological group Strains isolated from the upper respiratory passages are relatively avirulent members of the Pfeiffer group and are serologically heterogenous

The disease is essentially one of infancy and does not often affect adults

Specific bactericidal substances are present in the blood of members of the immune age-groups but their titre in children between the ages of 6 months and 2 years is low

The clinical features are those of acute suppurative meningitis Loculated collections of pus often form Bacteræmia is common and persistent The diagnosis cannot be established without bacteriological examination Cultures (for example, on chocolate agar) must be made to differentiate the condition from those due to other gram-negative bacilli, such as *Strep meningitidis*

The prognosis is extremely grave and infants rarely recover Serological treatment has not yet met with any definite success and the sulphonamides have not perceptibly affected the fatality among infants The adult fatality-rate is far lower than that of infants, recovery-rates must therefore be correlated closely with age-grouping if the curative effects of sera and chemotherapeutic substances are to be assessed Therapeutic assay could readily be made by studying the disease in infants of 2 years or under, and excluding adults and older children from the series

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PFEIFFER'S BACILLUS MENINGITIS

RECOVERY WITH CHEMOTHERAPY

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PHYSICIAN E M S

A male infant, aged 1 year, was admitted to the County Hospital, Pembury, with a history of 24 hours' profuse vomiting, rigidity of the body, a fixed stare and drowsiness He had been well till the onset of this illness, and there was nothing relevant in the history He was extremely ill Temperature 104° F, pulse rate 150, respirations 60 He was pale, irritable and slightly dehydrated, there was some neck rigidity, but Kernig's sign was negative Except for a few purpuric spots on the loins there was nothing else abnormal Lumbar puncture showed turbid cerebrospinal fluid under slight pressure (not measured); protein 0 2%, 1600 polymorphs and 100 lymphocytes per c cm, chlorides 725 mg per 100 c cm; no sugar Direct smears showed small numbers of gram negative bacilli of hæmophilus type Culture gave a pure growth of *Hæmophilus influenzæ*

Sulphapyridine (M & B 693) was given by mouth in the following doses 1st day, 3½ g, 2nd day, 3 g, 3rd day, 3 g, 4th day, 2½ g, 5th day, 2 g, 6th day, 2 g, 7th day, 1 g Total 17 g The temperature fell to normal at the end of 24 hours and did not rise again Although the child was much improved, he remained irritable for 3 days, and at the end of

4 days all symptoms and signs had disappeared He was discharged fit on the 9th day after admission

Although this case recovered with the administration of sulphapyridine, no claim is made that the recovery was due to chemotherapy—it may or may not have been fortuitous But it is worth noting that the child had only one lumbar puncture This is a procedure I have followed in all cases of meningitis since chemotherapy has proved so effective In children, any therapeutic value the lumbar puncture may have had has now almost disappeared Its usefulness is solely diagnostic By watching the temperature and pulse charts, the clinical condition and the diminution of vomiting restlessness and signs of meningeal irritation, the progress of any case can be easily assessed Lumbar puncture need only be repeated in the rare cases where progress is unsatisfactory

I am grateful to Dr A W Taylor who did the pathological investigation

PHOTOELECTRIC METHOD OF ESTIMATING HÆMOGLOBIN

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THE hæmoglobin content of blood can be accurately estimated by a photoelectric method In the method to be described the absorption of green light by the pigment is determined by means of a vacuum photocell in conjunction with a Lindemann Electrometer, obtained from the Cambridge Instrument Company The light source was a 12-volt 36-watt motor-car head lamp, supplied by six 2-volt 60-ampere-hour accumulators This gave a light free from the erratic variations seen when a light supplied from the mains was used The filament of the lamp was focused on the plate of the photocell by means of a lens (fig 1) The current through the photocell caused by the incident light is determined by measuring the potential drop across a fixed resistance of 200 megohms, connected in series with a potential of 120 volts The potential drop is measured by the Lindemann electrometer (fig 2)

The *photocell* is a General Electric Company's K M V 6 potassium-silver oxide type, which has a sensitivity to all parts of the visible spectrum, but not to the infra-red range The linear relationship between light and current, a special advantage of this type of cell, is maintained as long as the potential across the cell is above saturation value (fig 3) This cell is very stable and maintains its characteristics under varying conditions and over a long period of time

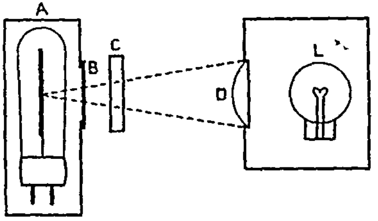

FIG 1—Light passes from the lamp (L) through the condensing lens (D) the fluid cell (C) and a colour filter (B) to the photocell (A) L and A are enclosed in light proof boxes

Lindemann electrometer —The needle of the electrometer is observed under a low-power objective, the eyepiece of the microscope having a graduated scale There is a linear relation between voltage and needle deflection provided the plate potential is kept at a certain value This plate potential is set by earthing one plate (by the switch S in fig 2) and adjusting the voltage on the other to give a reading of 28 scale divisions The other plate is then raised to the same potential, thus restoring the needle to its zero position (Each scale division on the ocular field = 0 1 mm , the microscope has a magnification of 60 ×)

The *colour filter* used was an Ilford No 807 , this gives a well-defined band in the green which is sufficiently narrow for Beer's law [1] to be approximately obeyed Beer's law states that the concentration of a pigment has a linear relationship to the optical density the light used is monochromatic

The *diluting fluid* used for the blood samples is saponin in 0 04% ammonia Previous workers Steinmann [2]) have advocated the use of stronger for the purpose of shifting the hæmoglobin d curve to the left in order to ensure complete of hæmoglobin to oxyhæmoglobin , but at the concentrations of ammonia (0 4%) conversion oxyhæmoglobin to methæmoglobin and then to is faster than was first imagined, as the following fi show

Ammonia concentrations	Oxyhæmoglobin percentage		
	8 min	60 min	120 min.
0 4%	98 6	96	94 2
0 04%	98 4	98	98

This observation has also been made by Szigeti [3]

To prepare a *calibration curve*, whole blood of a known oxygen capacity, previously determined by the method of Van Slyke, was diluted with varying proportions of diluting fluid The optical densities were measured in a cell with a fluid depth of 5 mm The curve relating optical density to O_2 capacity was nearly straight between 10 and 120% Newcomer (fig 4) The oxygen capacities of blood from different individuals may be the same, but their hæmoglobin concentrations determined by this method may vary by as much as 2% Blood from the same individual, however, gives constant concentrations by this method This discrepancy is probably due to the presence of pigments other than oxyhæmoglobin (e g , methæmoglobin) Minute traces of CO Hb often present in human blood create no significant error in hæmoglobin determination owing to the close correspondence of the extinction coefficients of oxy- and carboxy-hæmoglobin with the colour filter used

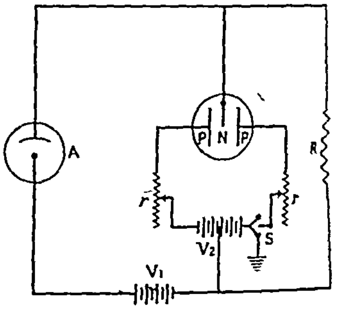

FIG 2—Voltage measuring circuit A, photocell , N, electrometer needle , P, plates , r plate potential resistances, S, switch for earthing one plate, R, 200 megohms resistance, V_1, 120 volt dry battery , V_2, 50 volt dry battery

TECHNIQUE

In estimating hæmoglobin 20 c cm of the blood to be examined is diluted with 3 c cm of diluting fluid Before the estimation is attempted the light must be switched on for at least 10 min , by which time the lamp has settled down to a constant illumination If the illumination is constant there is no drift on the electrometer needle The plate potential is adjusted as described above The needle deflection caused by incident light (i e , through filter B only) is then read (R_1) Then the needle deflection produced after transmission through the oxyhæmoglobin solution is read (R_2) A shutter is now placed in front of the cell, and the needle deflection when no light is transmitted is observed (R_3)

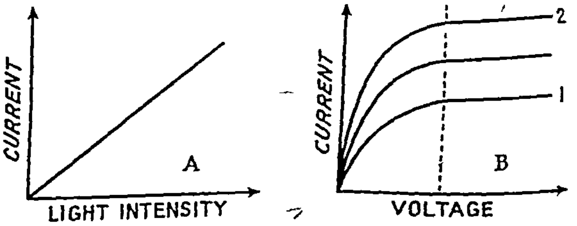

FIG 3—Relation between voltage current and light in a vacuum photocell A, With voltages above saturation value current is proportional to light intensity B Relation between voltage and current for constant light (1) low light intensity (2) high light intensity Note that unless a certain voltage ('saturation voltage ') is maintained, the current is not independent of voltage for a given light intensity

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* Working on an M R C grant

[1] Beer s law for monochromatic light Optical density = log i_0/i = e c d = d ($e_1c_1 + e_2c_2$) Where i_0 = incident light, i = transmitted light, e = specific absorption coefficient, c = concentration, d = thickness of solution

[2] Steinmann, B *Arch exp Path Pharmal* 1938, 191, 237

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As previously stated optical density of cell + pigment - diluting fluid (where zero on the scale equals no light)

$$= \log \frac{\text{Reading obtained with incident light}}{\text{Reading obtained with transmitted light}}$$

$$= \log \frac{R_1 - R_3}{R_2 - R_3}$$

he optical density of the cell plus diluting fluid alone is etermined in a similar manner This latter factor, which is constant, is subtracted from the total optical density, the difference being the optical density of the pigment alone The actual hæmoglobin percentage (Newcomer) may be read from the curve (fig 4), or, over a small range, by multiplying by a constant factor, since the curve is almost a straight line The reliability of the apparatus may be checked periodically by measuring the optical density of a standard neutral filter

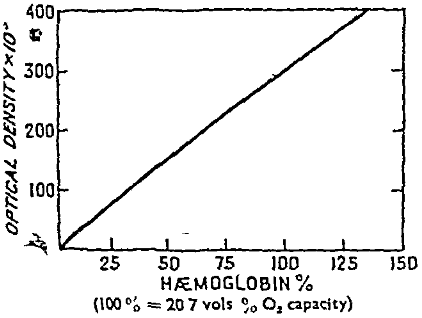

FIG 4—Relation between optical density and oxygen capacity of blood Hæmoglobin values (Newcomer) can be read off direct on horizontal scale

The accuracy of the method has been tested by repeated determinations on samples of oxalated blood The standard error is 0 4%

TREATMENT OF BEDCLOTHES WITH DUST-LAYING OILS

USE OF OIL-IN-WATER EMULSIONS

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IT has previously been shown that very large numbers of dust-borne organisms are liberated from bedclothes during bedmaking, and we have described a method of reducing these which is effective both in the laboratory (van den Ende, Edward and Lush 1941) and in hospital wards (Thomas and van den Ende 1941, van den Ende and Spooner 1941) The method consisted of the application of pure, medicinal liquid paraffin to the bedclothing from a 30% solution of the oil in a light petroleum solvent (white spirit) Supplies of medicinal paraffin are, however, limited and its application from such an organic solvent introduces an unnecessary fire hazard Moreover, the process is expensive unless the solution is recovered during the laundering process and used repeatedly, and recovery requires special installations and modifications to the usual hospital laundry plants But the method, although perhaps unsuitable for adoption on a large scale, is highly effective in reducing the number of organisms distributed into the air during bedmaking Its possible importance in preventing the spread of infection and the relative simplicity of the principles involved have stimulated further research The results of experiments designed to find substitutes for liquid paraffin and to simplify the method of application form the subject of this paper

USE OF TECHNICAL WHITE OIL

The shortage of paraffinum liquidum B P has recently led, in the fourth addendum to the B P 1932, to the introduction of paraffinum liquidum leve B P which is similar to the paraff liq leve B P C 1934 This is a highly refined, inert mineral oil with a lower density and viscosity than the original oil, and represents the most refined type of what are known technically as "white oils" These white oils are available in considerable quantities, and we have used one differing from the new *B P product only in having a higher acid value*—that is, in being slightly less highly refined *

We have confined our work to the more highly refined white oils, since the less refined yellow spindle oils, although equally effective, cheaper and more readily available, all possess carcinogenic properties to a greater or lesser degree Carcinogenicity must obviously be excluded when an intimate contact between the oil and the patient's skin cannot be avoided Mr J M Twort of the Cancer Research Dept , University of Manchester, has tested the oils which we have used, and reports them to be non-carcinogenic

Twort showed that the alteration of refractive index of many oils after intraperitoneal injection into mice is related to its carcinogenicity (Twort and Lyth 1935, Twort, Lyth and Twort 1937, Twort and Twort 1938) Non carcinogenic oils remain unchanged or exhibit a very slight alteration (0 0003), while the refractive index of the highly active oils falls considerably (0 0040 to 0 0250 according to viscosity) The physical properties of the refined white oils referred to above and their specific refractive increments as tested by Mr Twort are recorded in table I Dr W E Gye is testing these oils for us by direct painting experiments on mice

For laboratory tests technical white oil was first applied from solution in white spirit in the same way as liquid paraffin in our earlier experiments In addition, technical white oil with which had been incorporated 20% of ammonium oleate as an emulsifying agent ("soluble technical white oil") was applied in organic solution to determine whether the presence of a wetting agent in any way interfered with the dust-laying properties of the oil The amount of oil absorbed by various textiles from solutions of different concentrations in white spirit was determined by ether extraction in a Soxhlet apparatus It was found that woollen and cotton materials retained approximately 3% and 9% by weight respectively of the oil when soaked in a 20% solution in white spirit This amount retained is slightly higher than the amount of medicinal liquid paraffin retained by the textiles after treatment with a 30% solution of liquid *paraffin in white spirit* The appearance and feel of the textiles treated with technical white oil in this concentration are not appreciably altered

To test the dust-laying effect, strips of the various textiles were infected either with a serum-broth culture of a Lancefield's group C hæmolytic streptococcus and allowed to dry in the incubator overnight, or with a powder of dried streptococci mixed with autoclaved floor dust They were then mechanically *beaten in a specially* constructed machine, which was used also in earlier experiments with medicinal liquid paraffin (van den Ende, Edward and Lush 1941) The numbers of bacteria liberated from treated textiles were compared with those from similarly infected control strips counts being made up to 12 min after beating The amount of visible dust liberated by the beating was roughly measured with a photoelectric attachment The results of these experiments, which are summarised in table II, showed that both ordinary and soluble technical white oil were efficient dust-layers Applied in a 20% solution, the mean reduction was 96 6% for dry and 100% for wet organisms This reduction is as good as that previously obtained with a 30% solution of liquid paraffin in white spirit

OILS APPLIED FROM STABLE WATERY EMULSIONS

The textile industry employs a wide variety of oil-in-water emulsions during spinning to ensure pliability of the yarn, this oil is later removed by washing the woven fabric in water The use of similar emulsions for the application of dust-laying oils to bedclothes would greatly simplify the oiling process and reduce the expense of the process Organic solvents are unnecessary and the oil can be added to the rinsing tank, thus obviating the necessity for additional laundry equipment Furthermore the ease of washing bedclothes treated with "water-soluble" oil instead of ordinary liquid paraffin greatly simplifies the laundering of bedclothes after use

Preliminary experiments with "soluble" oils showed that the nature of the emulsion was of prime importance

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* This oil, refined by the Manchester Oil Refinery Ltd , was supplied to us by Stemco Ltd. and is referred to as "Technical White Oil" Other white oils which are available include "Marcol" and "*Wyrol B*" (both of American manufacture) and "Puremore" (English manufacture)

TABLE I—PHYSICAL PROPERTIES OF SOME "WHITE MINERAL OILS"

Oil	Density	Redwood viscosity (sec)		Kinematic viscosity (Centistokes)		Refractive index *	Refractive increment (mouse test) *	Biological activity
		70° F	100° F	37° C	25° C *			
Paraff liq B P 1932	0 880–0 895	810	260					
Paraff liq leve B P (4th add 1941	0 835–0 875	Not defined		37 1				
Technical white oil (English)	0 865	125	71	33 1	27 6	1 4645	0 0002	Inert
Technical white oil "Marcol" (American)	0 850	140	76	36 6	28 0	1 4648	0 0001	Inert
Technical white oil "Puremore" (English)	0 850				25 7	1 4704	Nil	Inert

* Mr J M Twort has kindly supplied these figures

Oils emulsified with oleates and stearates alone were unsuitable, since the final emulsion was not stable in the centrifuge These dense white emulsions broke down in the hydro-extractor, the result being an uneven oiling of the clothing We came, therefore, to regard any opaque creamy white emulsion as unsuitable The majority of commercial oils and those prepared with many of the commercial emulsifiers fell into this class and were discarded without further investigation A number indeed had to be discarded earlier on account of the low degree of refinement of the mineral oil used in their manufacture Some were crude kerosenes, others spindle oils with the addition of suitable emulsifiers These crude oils were not applied to bedclothes on account of their potential carcinogenic activity A number of commercially available oils prepared from high-grade white oils were supplied to us in translucent, centrifuge-stable emulsions in water (Two of them (Olinol nos 1 and 2) have been used in hospital trials as well as in laboratory tests These contain 35% and 65% respectively of white oil emulsified with sulphonated naphthenic hydrocarbons which in themselves may have some bactericidal action Mr J M Twort tested a sample of olinol no 1 for us, and found that there was a very slight fall in refractive index (0 0016) after recovery from injected mice

TABLE II—DUST LAYING EFFECT OF "TECHNICAL WHITE OIL"

Material	Test organism	Percentage oil used for treatment	Bacterial counts (untreated textile)		Bacterial counts (treated textile)		Amount of visible dust liberated		Per cent reduction in bacterial count	
			A	B	A	B	untreated	treated	A	B
Wool	Streptococcus C sprayed	10 TW	450	152	40	3	++	tr	91 1	98 0
,,		20 TW	,	,,	90	0	,,	—	80 0	100
,,		30 TW*			20	0		—	95 5	100
Wool	Dry streptococcus C	10 TW†	1550	336	177	5	+++	+	88 5	98 5
,,		20 TW†	,,	,,	?112	1	,,	—	? 92 7	99 8
,,		30 TW†			97	2	,	—	93 7	99 4
Cotton (sheet)	Streptococcus C sprayed	10 TW	2400	1050	160	7	++++	+	93 2	99 4
,,		20 TW	,	,	60	1	,,	tr	97 5	99 9
,,		30 TW	,		?	5	,,	—		99 5
Wool	Dry streptococcus C ‡	10 STW†	1600	308	418	40	++++	tr	73 8	86 9
,,		20 STW†		,	262	19	,,	—	83 5	93 8
,,		30 STW†			256	6		—	84 0	98 0
Cotton (sheet)		10 STW	912†	104†	288	3	++++	—	68 4	97 1
,,		20 STW	,,	,	100	3	,,	—	89 1	97 1
,,		30 STW	,,	,	44	0		—	95 2	100

TW = technical white oil STW = technical white oil with 20 % emulsifier (ammonium oleate) A = during the first 2 min after beating B = during the 5 min period 7–12 min after beating * = too greasy to the touch † = average of two experiments tr = trace ‡ = only results of experiments in which dry streptococci were used are given The results of experiments with sprayed organisms were better but since this effect can be attributed partly to the bactericidal action of the emulsifier against wet organisms the results cannot be included in tests for dust laying power

The general principles underlying the preparation of stable oil-in-water emulsions have been extensively investigated (Schulman and Cockbain 1940, Alexander and Schulman 1940, Rideal and Schulman 1939) Briefly, to obtain a stable emulsion, the emulsifying complex must contain an oil-soluble and water soluble fraction Under these conditions, molecules of both types are held at the oil water interface, and the emulsion remains stable Much of their work on mineral oil ("Nujol") emulsions was done with long chain alcohols and higher alkyl sulphates as the oil-soluble and water soluble agents respectively On this basis we have been able to prepare emulsions of "white oils" in water in which the oil dispersion is so fine that the final emulsion is almost transparent For these experiments we tested a number of emulsifying and wetting agents—cetyl alcohol, cetyl pyridinium bromide, sodium lauryl sulphonate, triethanolamine oleate, oleic acid, ammonium oleate, sodium and aluminium stearate, and a large number of commercial agents We finally found that the most suitable solutions or permanent fine emulsions could be prepared from technical white oil, cetyl

TABLE III—DUST LAYING EFFECT OF OILS (OLINOL 1 AND 2) APPLIED FROM FINE STABLE WATERY EMULSIONS

Material	Test organism	Percentage oil (in water) used for treatment	Bacterial counts (untreated textile)		Bacterial counts (treated textile)		Amount of visible dust liberated		Per cent reduction in bacterial counts	
			A	B	A	B	untreated	treated	A	B
Wool	Dry streptococcus C	12 5 oil 1	488	96	264	12	++	tr	45 8	87 5
,,		25 ,,			28	4	,,	—	94 3	95 8
,,		50* ,,		,,	9	0		—	98 1	100
Wool ††		20 ,,	1896	396	93	10	++	? tr	95 2	97 5
Cotton (sheet)		12 5 ,,	2400	672	1040	60	+++	+	56 6	91 1
,,	Streptococcus C sprayed	12 5 ,,	432	84	5	0	+++	tr	98 8	100
,,	Dry streptococcus	25 ,,	944	116	108	2	++++	—	88 6	98 4
,,	Streptococcus sprayed	25 ,	368	50	2	0	++	? tr	99 4	100
Wool	Dry streptococcus	12 5 oil 2	488	96	100	2	++	—	79 5	97 9
,,		25 ,,	,,	,,	41	1	,,	—	91 5	99 0

A = during the first 2 min after beating B = during the 5 min period 7–12 min after beating * = too greasy to the touch
†† = samples of actual blankets used in hospital trials

alcohol, Turkey red oil (sulphonated castor oil), ester salts (a homologous group of secondary higher alkyl sulphates with a carbon chain length of 10 to 18), and cresylic acid in various proportions. Details of two oils (nos. 8 and 12) prepared with these ingredients are:

Oil No. 8

	Parts by weight
Sulphonated castor oil (50% neutral finish)	210
Technical white oil	105
Ester salts solution (25% active material in water)	105
Cetyl alcohol	30
Cresylic acid	50

Oil No. 12

	Parts by weight
Sulphonated castor oil (50% neutral finish)	225
Technical white oil	175
Ester salts powder (60% active material)	70
Cetyl alcohol	70
Cresylic acid	70

Dissolve cetyl alcohol in technical white oil with aid of heat, stir in sulphonated castor oil, followed by ester salts and cresylic acid. Sodium sulphate deposits in oil no. 12 on standing and the clear oil is decanted next day. These oils are a clear dark brown colour and give instantaneous, transparent emulsions in water. Sulphonated castor oil, although soluble in water in all proportions, is not suitable for application alone to fabrics, as it renders them rather hard and sticky and is by itself not an efficient dust layer.

LABORATORY TESTS WITH OIL-IN-WATER EMULSIONS

Dust-laying effect.—Laboratory tests were made with the following soluble oils: oil no. 8, oil no. 12, olinol no. 1, olinol no. 2, Amoa A3 mixed with an equal volume of technical white oil, sulphonated castor oil (50% neutral finish) and sulphonated castor oil containing 10% cresylic acid. The results were compared with those obtained with technical white oil applied from solution in white spirit. Textiles treated with various concentrations of these oils were also assayed for their content of ether-soluble oil by extraction in a Soxhlet apparatus. Blankets treated with a 20% solution of oil no. 8, amoa and technical white oil, olinol and olinol no. 2 absorbed approximately the same amount of ether soluble oil as blankets treated with a 20% solution of technical white oil in white spirit. The dust-laying effect of these oils was tested in the same way as previously described for technical white oil.

TABLE IV—BACTERICIDAL ACTION OF OILS IN BROTH AGAINST VARIOUS ORGANISMS. CONTACT FOR 24 HOURS AT 37° C

The figures refer to the highest dilution of the oil in broth which is bactericidal

Oil or emulsifier	B. hæmolytic streptococcus Group C	*Staphylococcus aureus*	*Bact. coli*	*Proteus*	*Ps. pyocyanea*
No. 8	1280	640	1024	512	256
No. 12	1280	640	1024	256	128
Olinol 1	640	160	256	128	64
Technical white oil + Amoa A3	320	160	256	128	128
Amoa A3	640	160	1024	256	256
Ester salts	320	320		Not tested	
Crude naphthenic sulphonates	1280	1280		„ „	

The results of these tests (table III) show that the dust-laying effect of oil applied from fine emulsions in water is as striking as that of oil applied from organic solutions. The oil treatment had apparently a much greater effect in preventing dust-borne infection from the fabrics infected with sprayed organisms than from those in which the fabric was treated with dry organisms. This was subsequently shown to be due to the bactericidal action of the various emulsifiers, and presents an added advantage where the natural infection of blankets, &c. depends on the deposition of relatively large, moist droplets from the upper respiratory tract. This bactericidal action is borne out by direct tests, and is also apparent in hospital trials with blankets oiled by this method.

The *bactericidal action* of the oils, and of the crude emulsifying agents, was tested against *Streptococcus pyogenes* (group C), *Staphylococcus aureus*, *Proteus*, *Bacterium coli* and *Pseudomonas pyocyanea*, both in vitro and after application to blankets. For tests in vitro serial dilutions of the oil in broth were inoculated with a standard dose (about 2 million) of an overnight culture of the test organism, and stroke cultures were made on appropriate solid media after varying incubation times up to 24 hr. Subcultures were also made into broth of sufficient volume to avoid the bacteriostatic effect of the oils. All the oils tested were bactericidal in high dilutions, oils nos. 8 and 12 proving the most potent. This is probably due to the fact that they contain cresylic acid as well as the emulsifying agent. *Strep. pyogenes* and *Bact. coli* were most easily killed, *Staph. aureus* and *Proteus* being more and *Ps. pyocyanea* most resistant (table IV). Dilutions of 1/64, however, killed all the organisms in every case.

This antiseptic action in broth is paralleled by the activity on blankets against wet organisms (table V). To show this, strips of blanket were oiled in the usual manner, and small squares were equally inoculated either with a coarse spray of a serum broth culture of *Strep. pyogenes* (group C) or with a mixture of dried organisms and sterile, finely sieved dust. The strips were left overnight, then small squares (1/9 sq. in.) were cut from the centre of each and transferred to screw-capped bottles containing 100 ml. broth and a number of glass beads. These were shaken vigorously for 10–15 min., and appropriate amounts were plated out into blood-agar. Colonies were counted after 48 hr. aerobic incubation. Control tests were made with untreated blanket and with blanket treated with technical white oil in white spirit (which has no bactericidal activity). In all cases with the wet organisms, the final counts showed a minimum kill of 99·5%. With dry organisms there was less striking reduction. The greatest was with oil no. 8, which gave total counts of approximately 300,000 per blanket

TABLE V—BACTERICIDAL EFFECT OF DUST-LAYING OILS AND EMULSIFYING AGENTS ON A WOOLLEN BLANKET AGAINST WET AND DRY STREPTOCOCCI

Treatment of blanket	Plate counts A	Plate counts B	Total organisms in test fabric	Per cent. reduction
IMPREGNATION WITH COARSE SPRAY OF SERUM BROTH CULTURE				
Technical white oil in white spirit	7700	Uncountable	154,000	
Oil No. 8	0	0	0	100
Oil No. 12	0	0	0	100
Olinol 1	2	2	40	99·9
Technical white oil and Amoa A 3	48 34	30 43	780 770	99·5 99·5
Turkey red oil	43	27	700	99·5
Turkey red oil and 10% cresylic acid	4	7	110	99·9
IMPREGNATION WITH DRY STREPTOCOCCI AND STERILE DUST				
Technical white oil in white spirit 1 2	4000 560	3920 482	15·84 × 10⁶ 20·84 × 10⁶	
Oil No. 8 1 2	71 14	64 11	0·27 × 10⁶ 0·5 × 10⁶	97·9
Oil No. 12 1 2	220 23	254 16	0·95 × 10⁶ 0·78 × 10⁶	95·3
Olinol 1 1 2	432 51	424 37	1·71 × 10⁶ 1·76 × 10⁶	90·4
Technical white oil and Amoa A 3 1 2	1864 143	1928 129	7·58 × 10⁶ 5·44 × 10⁶	64·5
Turkey red oil 1 2	2000 270	2224 294	8·45 × 10⁶ 11·28 × 10⁶	46·2
Turkey red oil and 10% cresylic acid 1 2	1016 96	880 104	3·79 × 10⁶ 4·00 × 10⁶	78·8

A and B are duplicate samples. 1 = no. of organisms from 0·5 c.cm. of a 1/20 dilution of the broth washings of the test fabric. 2 = no. in 0·5 c.cm. of a 1/200 dilution.

square compared with control counts of 18 million These tests with dry organisms were, however, subject to a number of possible errors which make their interpretation difficult The size of the test squares and the infecting dose were judged as carefully as possible, but when infection of the fabric (far greater than is likely to occur naturally) is produced with a dry powder of streptococci, even small errors in measurement of infective dose would produce a large final difference Moreover, there is the possibility that in spite of vigorous shaking the organisms in the depths of the fabric are not liberated sufficiently quickly, so that on contact with the broth the oil would exert its bactericidal action as against wet organisms The reduction in bacterial count after application of dry organisms has, however, been shown repeatedly, and it seems reasonable to conclude that some bactericidal action was shown against dried organisms although it was not as great as against organisms applied in the presence of moisture

HOSPITAL WARD EXPERIMENTS

Two clean sets of blankets, sheets, pillow-cases, counterpanes and pyjamas, each sufficient for a single bed cubicle, were treated with olinol no 1 and no 2 respectively Each set of bedclothes was thoroughly soaked in a 20% water solution of the oil, spun in a hydro-extractor and finally dried in the hot-air drying chamber

Our experimental work in hospitals has so far been done with initially clean bedding, and we have used a separate soaking tank for applying the oil (as a 20% solution) This is unnecessary when one has to deal with dirty "linen" which is being washed in the ordinary laundry rotary washing machine These machines perform the complete washing and rinsing process without removal of the linen, and it is usual to finish with one warm and two cold water rinses The amount of water used is measured in inches by an indicator on the back of the machine, it is not difficult to calculate the amount of water introduced for the final cold rinse in gallons, and also the amount of oil which has to be added to this to give a 20% solution This amount of oil can then be added through a vent, with which all the machines are fitted, at the beginning of the last rinse for each charge of linen There is thus no need to open the machine at all A run of 8–10 min is sufficient to ensure impregnation of all the clothing, which can then be transferred to the hydro-extractors and spun The effluent from these can be collected in a tub by substituting a right angled outflow instead of the usual vertical one which normally runs direct to waste (the outflow is only fixed by two bolts through a gasket, so that such an alteration is simple and inexpensive) When sufficient has been collected in the tub, the first cold rinse in the washing machine can be let out, and instead of filling up with cold water and fresh oil, the machine opened and the contents of the tub tipped in for the second rinse This process can be repeated several times and results in very little waste

Two extra blankets were included with those for the trial with olinol no 1 One of these was cut in two, half being left untreated as control and the other half treated These halves were used in laboratory tests for assay of oil content and dust-laying properties The treated half was found to contain 3 35% and the control 1 6% of ether-extractable oil

The presence of 1 6% of ether soluble oil in untreated blankets is unusual unless the blankets are new Usually after repeated washing hospital blankets contain less than 1% of "oil" A sample of the natural oil which has been extracted with ether in a Soxhlet apparatus has been tested for us by Dr C Rimington He concluded that it was probably lanolin Reapplied to a repeatedly washed blanket strip it resulted in moderately effective dust laying Similarly a dust-laying effect is observed after the application of commercial lanolin The application of lanolin, however requires the use of organic solvents, and the texture of textiles treated with it is somewhat unpleasant in comparison with that after mineral oil treatment

The dust-laying effect of the treatment was also shown in laboratory tests on strips of these blanket samples (table VI) The second blanket was also divided in two and both halves were treated Half was placed at the periphery of the hydro-extractor and the other half at the centre, both being subsequently assayed for oil content The object of this was to determine whether this method of soaking and centrifugation resulted in a uniform impregnation of the blankets That this is so is shown by the fact that the peripheral and central halves contained 3 3% and 3 4% respectively of ether-soluble oil

TABLE VI—DUST LAYING EFFECT OF VARIOUS OILS AND EMULSIFYING AGENTS ON STRIPS OF HOSPITAL BLANKET

Test organism dry streptococci

Treatment	Bacterial counts		Visible dust liberated	Per cent reduction in bacterial counts	
	A	B		A	B
None	340	180	++		
20% Turkey red oil in water	224	60	+	34 1	66
20% technical white oil in white spirit	9	1	–	97 4	99 4
20% oil no 12 in water	28	0	–	91 7	100
20% oil no 8 in water	35	3	–	89 7	98 3
20% (Amoa A 3 + technical white oil equal parts) in water	4	0	–	98 8	100
20% (Turkey red oil + 10% cresylic acid) in water	290	42	+	14 7	76 7

A, during the first 2 min after beating, B, during the 5 min. *period 7–12 min after beating*

Oil assays were also made on the liquor from the soaking tank as well as from the hydro-extractor outflow at the beginning, during, and at the end of its run The amounts of ether-soluble material recovered from these samples did not differ significantly It was concluded, therefore, that the liquor recovered from the hydro-extractor can justifiably be returned to the soaking tanks for further use

On the day on which the bedding was treated, two patients were admitted to single-bed cubicles (similar to those used in our previous experiments) One was suffering from acute streptococcal tonsillitis (type 12/27) and the other from facial erysipelas (*streptococcus type 3*) The cubicles were carefully cleaned the floors treated with spindle oil, and the men placed in clean bedclothes from the linen store The patients were left for 48 hr, when air-counts were made on 5 c ft volumes of air before, during and after vigorous bedmaking All samples were taken on to gentian-violet blood agar plates with a slit sampler (Bourdillon, Lidwell and Thomas 1941) The colonies were counted after 24 hr aerobic incubation of the plates All the bedding was then removed, the oiled bedclothes substituted and similar counts made daily for 8 days In each cubicle the control counts were approximately 2000 per c ft and large numbers of type-specific streptococci were recovered from the air during and after bedmaking The mean reduction of organisms liberated from the oiled blankets during vigorous bedmaking was 99 4% and 98 5% in the two cubicles respectively It is significant that at no time during the period when treated bedclothes were used was a single streptococcus recovered from the air in spite of the fact that the organism could constantly be isolated from both patients In our previous experiments with liquid paraffin, although treatment of bedclothes with the oil resulted in reduction in numbers we usually recovered small numbers of streptococci from the air during the test period, and these numbers tended to increase with time It seems reasonable to conclude therefore that the oil had exerted a bactericidal action on the streptococci deposited on the blankets This finding could best be accounted for if the streptococci were deposited in a moist state, as would be the case if they were deposited in large droplets from the respiratory tract

The reduction of the numbers of air-borne bacteria was not wholly due to this bactericidal action, but was at least in part due to the reduction in the amount of dust liberated from the bedclothes This could be shown by collecting with a slit sampler the dust liberated by shaking the blankets, on stationary glass slides instead of rotating plates of nutrient medium

DISCUSSION

Our experiments have shown that mineral oils other an liquid paraffin may be used to lay the dust on dclothes A number of these oils are available The uder ones, such as the spindle oils, are carcinogenic d unsuitable for application to bedclothes where timate contact between the patient's skin and the oil e unavoidable The dermatitic factor has also to be nsidered, and while more highly purified and inert oils e available these should be used Such oils are the ghly refined white oils, and all the oils of this type hich we have tested have proved to be efficient dust-yers

The fact that these oils, with the aid of suitable wetting nd emulsifying agents, can be made to give centrifuge-able emulsions with water overcomes the original ifficulty of application from an organic solvent, and akes large-scale treatment of bedclothes a practical ossibility in hospital laundries We have shown that hese oil-in-water emulsions are almost as efficient dust-ayers as the oils applied from white spirit, and that the mulsifiers used are themselves bactericidal under atural conditions This action is most pronounced gainst wet organisms and is relatively slight against dry bacteria

The killing of dried organisms is probably not of such practical importance as the killing of those in the large, moist droplets exhaled from the upper respiratory tract Hare (1940) demonstrated a downward stream of such droplets from the mouth and nose of infected persons, and from the numbers of streptococci which we have previously shown to accumulate in blankets in relatively short times, each of these droplets must contain very large numbers of organisms Bourdillon and Lidwell (1941), by means of flash photography, have shown that the number of large droplets expelled during a sneeze is enormous, and since a person normally lowers his head when sneezing the number of organisms projected on to the bedclothes when a person in bed sneezes is very great Under normal circumstances these droplets would then dry and remain as potentially infective particles to be liberated when the bedding is shaken It is important that bedclothes treated with the soluble oils not only retain most of the organisms within the actual fabric but also kill the organisms in these droplets before they can dry Furthermore, the application of oils from stable watery emulsions renders the process much less expensive, frees it from the danger of fire, and makes it practicable even for modestly equipped hospital laundries

SUMMARY

Technical white oils are effective dust-layers for bedclothes and are not carcinogenic

These oils can, by the use of suitable emulsifying and wetting agents, be made to give centrifuge-stable emulsions in water Such oil-in-water emulsions provide an easy method of applying the oil to bedclothes, and a large-scale method is outlined

The emulsifying agents used in making these "soluble" oils impart to the bedclothes potent bactericidal activity which has been shown to be effective against moist droplets both in the laboratory and in hospital trials Their bactericidal action against dry organisms was slighter

The use of soluble oils in hospital trials resulted in a 99% reduction in the number of organisms liberated during bedmaking No hæmolytic streptococci were liberated from the treated bedclothes of two patients with hæmolytic streptococcus infections This can be explained at least in part by the bactericidal action of the oil against moist organisms, especially if the infection of the bedclothes is regarded as being derived from large droplets from the respiratory tract

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HYPERCHROMIC ANÆMIA IN AN INFANT

RESPONSE TO LIVER EXTRACT

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LIVER extract is not often used in the treatment of anæmia in infancy and reports of success are few This case is being reported because, when the chance of recovery seemed slight, a single dose of Anahæmin was followed by steady improvement and evidence of blood regeneration It is regrettable that the records are incomplete, for the first blood-count was done 48 hours after the liver extract had been given

Bachman[1] described a case of macrocytic hyperchromic anæmia in an infant aged nine months and reviewed 17 others from the literature, of which 7 including his own were treated and appeared to respond to liver extract All 7 improved or recovered, 3 were not followed up but there was no immediate recurrence when it was discontinued in 3 of the other 4 Langmead described a case of pernicious anæmia in an infant aged thirteen months with severe hyperchromic anæmia, megalocytosis, icterus index 17 6 units achlorhydria in response to histamine and a reticulocyte response of 19% to Campolon Smallwood[3] refers to a case of subacute hæmolytic anæmia which recovered only when liver treatment was begun but did not relapse when it was discontinued, he considered that this was due to temporary exhaustion of anti-anæmic principle after a long period of hæmolysis and erythrogenesis In no case described does the anæmia appear to have been more than a temporary effect, once the anæmic crisis has been tided over by liver or blood-transfusion maintenance treatment with liver has not been shown to be necessary This is in contrast to the pernicious anæmia of adults, where deficiency is nearly always permanent and treatment has to be continued to prevent relapse

CASE-HISTORY

A girl, aged 3 weeks No history of anæmia in the family No apparent deficiency in the mother's diet This was her first child Pregnancy normal, breech presentation with easy delivery, birth weight 7¼ lb The child did not suck well and was breast fed for only a week She was then given half-cream Cow and Gate, seven feeds daily She failed to make progress so this was changed to albumin water, 3 oz, alternating with diluted cow's milk, 3 oz (2 parts milk to 3 parts water) The stools were inclined to be loose and on one occasion contained blood, and there was occasional vomiting On admission on May 16, 1941, the child was very ill and rather dehydrated Temperature 104° F, pulse rate 160, respirations 40–60 Signs of general bronchitis and a suggestion of bronchopneumonia Spleen not palpable and liver not enlarged Stools loose, numerous and occasionally dark Bowels often open after feeding Never any trace of jaundice Urine normal Diagnosis bronchitis and possibly bronchopneumonia Weight on May 26, 6 lb 10 oz Diet from May 16 until June 6 she was given Frailac two or three hourly, from June 7 she was graded on to half-cream Cow and Gate three hourly, on June 18 additional Dextri-maltose was added to each feed, and this was continued until

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1 Bachman A L *Amer J Dis Child* 1936, 52, 633
2 Langmead, F S *Lancet* 1937, 1, 1048
3 Smallwood, W C *Practitioner*, 1939, 142, 453

her discharge During the first 24 hours 0 75 g of sulphapyridine was given by the mouth Since there was no response 3 c cm of azosulphamide (Prontosil Soluble) was given intramuscularly on May 17 and 0 75 g of sulphanilamide daily until May 22 The daily dose was then halved until May 25 when it was stopped There was considerable improvement and the temperature became normal on May 18 and remained so until the 27th There was no gain in weight, however, and the stools on the 20th gave a strong reaction for occult blood On the 27th the temperature rose again to 103° F and an empyema was suspected, but radiography of the chest showed no evidence of lung disease The stools then became more frequent and on May 30 a small amount of visible blood was passed Vitamin K, 0 5 c cm, was then given intramuscularly During the next three days the temperature remained up and the general condition rapidly deteriorated On June 2 obvious anæmia was apparent for the first time The baby was then desperately ill with a temperature of 103° F and an almost uncountable pulse It was clearly no use giving iron by the mouth, and blood-transfusion was out of the question, so 1 c cm of anahæmin was given intramuscularly Twenty-four hours after this injection there was an astonishing change, the whole clinical condition improved, dehydration and diarrhœa became steadily less, and the child began to take her feeds better and to gain weight for the first time This progress continued without interruption until discharge Within a week the stools had become almost normal in number Her weight chart and blood counts are shown in fig 1 By the beginning of July she weighed 7½ lb, seemed healthy in every way and has remained well since without further treatment

BLOOD COUNTS AFTER ANAHÆMIN, 1 C CM, HAD BEEN GIVEN ON JUNE 2

—	June 4	June 21	July 3	July 17
Red cells	2,065,000	3,840 000	5,140 000	6,300 000
Hæmoglobin	54%	62%	84%	98%
Colour index	1 24	0 82	0 82	0 83
White cells	15,600	17 000	24,000	
Polymorphs	6085 (39%)	5400 (32%)	6480 (27%)	
Eosinophils	465 (3%)	340 (2%)	960 (4%)	
Lymphocytes	8425 (54%)	9860 (58%)	14 400 (60%)	
Mononuclears	0	850 (5%)	2160 (9%)	
Myelocytes	465 (3%)	510 (3%)	A few immature polymorphs	
Myeloblasts	160 (1%)			
Normoblasts	1 per 200 white cells	20		
Megaloblasts	6 per 200 white cells			
Primary erythroblasts	5 per 200 white cells			

The blood count findings are shown in the table Price-Jones curves are in fig 2 On June 12 blood films showed considerable megalocytosis and variation in size of red cells, megalocytes 12%, microcytes 1%, mean diameter 7 6 μ On July 10 there were very few megalocytes (1%) and less variation in size of red cells, megalocytes 1%, microcytes 1%, mean diameter 7 3 μ Reticulocytes June 9, 22 5%, June 12, 17 8%, June 14, 17 5%, June 21, 5 6%, July 3, 4 4%, July 10, 1 9% Fragility on July 11 hæmolysis begins at 0 38% saline and is complete at 0 26%

Fractional test-meal on June 25 30 c cm 3½% alcohol, no histamine given, 0 036 free hydrochloric acid present in sixth sample Wassermann reaction, negative

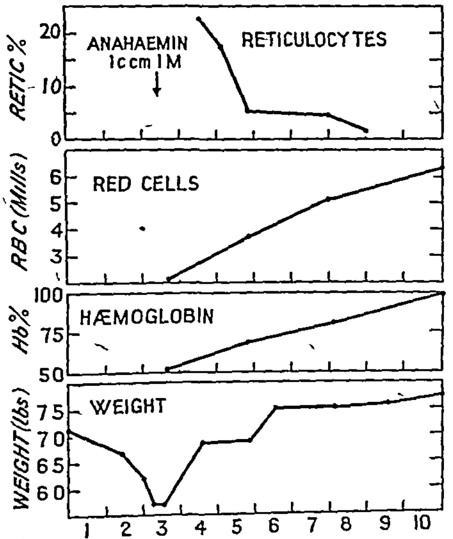

FIG 1

DISCUSSION

In this case the sudden onset of anæmia may have been due to hæmorrhage but was probably partly hæmolytic From its response to treatment it appears to have been due essentially to a temporary lack of anti-anæmic principle or one of its precursors, for the diet was qualitatively unchanged for a fortnight before anahæmin was given until recovery was well advanced The only additional treatment was a single injection of vitamin K four days before the anahæmin, and during this four day progress was rapidly downhill The cause of the deficiency is difficult to explain For the first three weeks of life the diet was certainly deficient in total calories, proteins, vitamins and iron, and as there was also a severe general infection with considerable intestinal disturbance absorption was also probably impaired There was also some loss of blood from the intestinal tract Such a combination in a child of this age is by no means rare but it causes hypochromic anæmia, and not hyperchromic anæmia as in this case Two other possibilities remain—first, that the child started life with deficient stores of anti-anæmic principle, secondly, that treatment with sulphapyridine and sulphanilamide were contributory factors It might also be argued that the recovery was not due to liver extract but was spontaneous, but the striking reticulocyte response is against this The Price-Jones curves although they show some degree of megalocytosis, becoming less after treatment, are within normal limits for the age of the patient

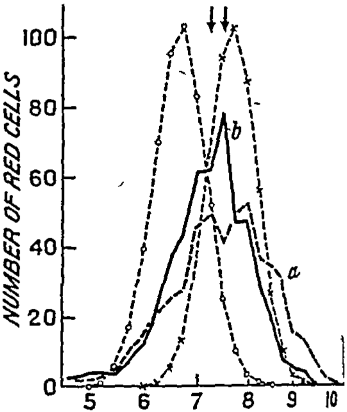

FIG 2

SUMMARY

A case of hyperchromic anæmia in an infant is described in which complete clinical and hæmatological recovery followed a single injection of anahæmin

No qualitative alteration in the diet was made for a fortnight before anahæmin was given or until recovery was well advanced, and apart from a single previous injection of vitamin K, which did not seem to have any effect, no other vitamin preparations, iron or other treatment were given, until the red cells were over 6 000,000 and the hæmoglobin was 98%

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IN his annual report for ECCLES Dr J E Spence states that 90 samples of milk were examined under the Sale of Food and Drugs Act of 1938, and 10 of them were found faulty, 49 samples of other foods were taken of which 2 were unsatisfactory, 4 samples of milk were taken from the same source and found to contain between 19 1 and 23 3% added water (appeals to the cow established bovine innocence and human fraud) Fines and costs totalling £22 2*s* were imposed What proportion of the profits of the swindle was refunded by the fine? Two-thirds of the work entailed by the Food and Drugs Acts is now absorbed by milk, and four-fifths of the sophistication detected is practised on milk, because the penalties imposed when a conviction is obtained are so trivial and the profits of the fraud so considerable that milk watering is a highly profitable business and the courts by the smallness of the fines they impose make it almost respectable This is a particularly dangerous form of fraud, for many people are absolutely dependent on milk for their nutrition and may starve for no apparent reason if their milk is watered It has been suggested that the fraud comes near to constructive murder and should be punished as such

Medical Societies

BIOCHEMICAL SOCIETY

AT a meeting of this society on Nov 29 with Prof E C DODDS in the chair, a discussion on the

Mode of Action of Chemotherapeutic Agents

was opened by Dr G M FINDLAY Chemotherapeutic action, he said may be classified as direct or indirect Except in the case of parasites present in the intestinal canal it is essential that the chemotherapeutic drug should be absorbed into the body that it should penetrate to the site where the parasites are acting, and that it should not be excreted or converted too rapidly into an inert form Time must be allowed for chemotherapeutic action and in some cases for the conversion of the compound from an inactive into an active form Once the drug and the parasite have been brought face to face three stages may be distinguished—adsorption, interference with metabolism, and death or such injury to the parasite that it is destroyed by the phagocytes of the host An absorbed chemotherapeutic drug may prevent an essential food factor from being adsorbed or it may cause a breakdown in metabolism by combining with a specific substrate or by competing with an essential cell metabolite for an enzyme or coenzyme One break in the chain of metabolic reactions may rapidly give rise to others Specific immune serum and sulphapyridine do not compete for the same receptor group in the pneumococcus and may therefore enhance one another Parasites may be killed in the body without the aid of phagocytes but usually when a parasite has been damaged it is destroyed by the normal defence mechanism of the host Indirect action produces such changes in their environment that parasites can no longer grow. Physical changes may prevent growth the temperature or the pH reaction may be altered the formation of immune bodies may be stimulated, or the character of the cells may be altered as in the treatment of gonococcal vulvovaginitis in children with œstrin preparations The highly specific action of certain drugs and the no less specific reactions of certain closely allied parasites can be explained by postulating that after adsorption of the compound at the parasite/solution interface the nature of the interference with the metabolism of the parasite depends on what groupings in the molecule of the compound come within the influence of other acceptor groups in the parasite there is thus a multipoint action

Prof ALEXANDER FLEMING said that in 1929 he applied the name penicillin to an antibacterial substance of unknown constitution elaborated by *Penicillium notatum* It is formed in ordinary bacteriological media or in a modified Czapek-Dox medium The action is mainly bacteriostatic and shows a high degree of specificity Pyogenic cocci, clostridia and some other bacteria are sensitive, while the coli-typhoid, hæmophilic chromogenic bacilli and others are insensitive Pathogenic gram-negative cocci (gonococcus, meningococcus and *Micrococcus catarrhalis*) are sensitive while saprophytic varieties—e g, *M flavus*—are insensitive thus differing from the sulphonamides The action of penicillin is not interfered with by substances that inhibit sulphonamides—bacteria, bacterial extracts pus fluids, tissue autolysates, peptones and *p*-aminobenzoic acid Penicillin is non-toxic to leucocytes and animals but in low dilutions it affects the morphology of bacteria and interferes with division Penicillin has been extracted in an impure form by Florey and his associates and this extract is in blood many times more powerful as a bacteriostatic agent than the most powerful of the sulphonamides In vivo, likewise it has been shown at Oxford to have remarkable curative effects in experimental infections of animals and pyogenic infections in man Since penicillin is apparently of a different constitution from the sulphonamides the isolation and synthesis of the pure active principle will open up a new chemotherapeutic field

Prof WARRINGTON YORKE, F R S, described the action of the aromatic diamides which were evolved by Ewins, after it had been shown that Synthalin acted on trypanosomes not by reducing the sugar but by direct toxic action Some aromatic diamidines exhibited a remarkable trypanocidal activity The most active were 4 4′-diamidinostilbene, 4 4′-diamidinodiphenoxypropane and 4 4′-diamidinodiphenoxypentane Cases of kala-azar have now been successfully treated with diamidinostilbene—Indians children in the Mediterranean area, and patients with the Sudanese-variety which was resistant to antimony Babesia infections in dogs were cured by the stilbene and propane derivatives Diamidinostilbene is active against *Trypanosoma congolense,* but replacing the hydrogen atoms of the ethylene group by methyl groups greatly increases the activity against this infection The various diamidines therefore exhibit a considerable specificity of action Study of the phenomenon of drug-resistance may throw light on the mode of action of drugs Drug-resistance in trypanosomiasis has been extensively studied, but little is known of the phenomenon in other protozoal infections Professor Yorke and his colleagues have recently demonstrated drug-resistance in *Babesia canis* infections of dogs and in *Plasmodium knowlesi* infections of *Macacus rhesus*

Dr FRANK HAWKING, discussing trypanocidal substances said that from the phenomenon of drug-resistance four kinds of receptors on the trypanosome are recognised—for arsenicals, acriflavine &c, for parafuchsin, for diamidine compounds, and for Bayer 205 Trypanocidal action comprises fixation of the drug, secondary chemical reactions inside the cell, and death Only about the first process is much known it occurs quickly in a few minutes and is reversible With arsenical compounds, fixation apparently depends on the trivalent arsenic atom linked to a benzene ring Most side-chains prevent fixation but certain ones (-NH_2, -OH) prevent it for the animal cells but not for normal trypanosomes it is compounds with these side-chains which have chemotherapeutic value The receptors of resistant trypanosomes are modified so that they resemble those of the animal cells and thereby therapeutic action is lost Over a wide range, the amount of drug fixed is proportional to the concentration in the surrounding fluid, in the case of acriflavine the partition ratio—the concentration inside the trypanosome divided by the concentration outside—is 8000 for normal trypanosomes 60 for resistant trypanosomes Some fluorescent compounds—e g acriflavine and diamidinostilbene—are concentrated in the blepharoblast and cytoplasmic granules of the trypanosome With Bayer 205 the mode of action is quite different It is not directly trypanocidal in vitro and, although it does seem to form some kind of direct combination with the trypanosomes the amount which is taken up is quite small There is some evidence that it has an opsonin-like action

Sir HENRY DALE P R S, emphasised the importance of having a theory of chemotherapeutic action It was one of Paul Ehrlich's great contributions to the subject to produce a theory which, though it would probably not survive unmodified, gave a tremendous stimulus to research His speculations sometimes appeared more plausible than convincing, but in many cases they eventually proved to be well founded An example was Ehrlich's explanation of the action of certain dyes on infection by trypanosomes as due to injury of the reproductive power of the trypanosomes, without affecting their other vital functions At the time this suggestion seemed artificial and unconvincing but when Dobell and Laidlaw found a method for growing *Entamœba histolytica* in permanent culture in vitro it could be demonstrated that the action of emetine was just of this type Another factor of chemotherapeutic activity which he believed to be important was the "factor of persistence" Effective chemotherapy is usually if not always a war of attrition rather than a Blitzkrieg This seems to be why a quinquivalent arsenical on the one hand or an arseno-compound on the other is a better chemotherapeutic agent than the arsenoxide produced by reduction from the one or by oxidation from the other although the arsenoxide is recognised as the directly parasiticidal agent In the same way sulphaguanidine seems to owe its effectiveness in bacterial dysentery to its poor solubility enabling it to remain in solid form in the intestinal contents an
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her discharge During the first 24 hours 0 75 g of sulphapyridine was given by the mouth Since there was no response 3 c cm of azosulphamide (Prontosil Soluble) was given intramuscularly on May 17 and 0 75 g of sulphanilamide daily until May 22 The daily dose was then halved until May 25 when it was stopped There was considerable improvement and the temperature became normal on May 18 and remained so until the 27th There was no gain in weight, however, and the stools on the 20th gave a strong reaction for *occult blood On the 27th the temperature rose again to* 103° F and an empyema was suspected, but radiography of the chest showed no evidence of lung disease The stools then became more frequent and on May 30 a small amount of *visible blood was passed Vitamin K, 0 5 c cm, was then* given intramuscularly During the next three days the temperature remained up and the general condition rapidly deteriorated On June 2 obvious anæmia was apparent for the first time The baby was then desperately ill with a temperature of 103° F and an almost uncountable pulse It was clearly no use giving iron by the mouth, and blood transfusion was out of the question, so 1 c cm of anahæmin was given intramuscularly Twenty four hours after this injection there was an astonishing change, the whole clinical condition improved, dehydration and diarrhœa became steadily less, and the child began to take her feeds better and to gain weight for the first time This progress continued without interruption until discharge Within a week the stools had become almost normal in number Her weight chart and blood counts are shown in fig 1 By the beginning of July she weighed 7½ lb , seemed healthy in every way and has remained well since without further treatment

BLOOD COUNTS AFTER ANAHÆMIN, 1 C CM , HAD BEEN GIVEN ON JUNE 2

—	June 4	June 21	July 3	July 17
Red cells	2,065 000	3,840 000	5,140 000	6,300 000
Hæmoglobin	54%	62%	84%	98%
Colour index	1 24	0 82	0 82	0 83
White cells	15,600	17,000	24,000	
Polymorphs	6085 (39%)	5400 (32%)	6480 (27%)	
Eosinophils	465 (3%)	340 (2%)	960 (4%)	
Lymphocytes	8425 (54%)	9860 (58%)	14 400 (60%)	
Mononuclears	0	850 (5%)	2160 (9%)	
Myelocytes	465 (3%)	510 (3%)	A few immature polymorphs	
Myeloblasts	160 (1%)			
Normoblasts	1 per 200 white cells	20		
Megaloblasts	6 per 200 white cells			
Primary erythroblasts	5 per 200 white cells			

The blood count findings are shown in the table Price-Jones curves are in fig 2 On June 12 blood films showed considerable megalocytosis and variation in size of red cells , megalocytes 12%, microcytes 1% , mean diameter 7 6 μ On July 10 there were very few megalocytes (1%) and less variation in size of red cells , megalocytes 1%, microcytes 1%, mean diameter 7 3 μ Reticulocytes June 9, 22 5% , June 12, 17 8% , June 14, 17 5% , June 21, 5 6% , July 3, 4 4% , July 10, 1 9% Fragility on July 11 hæmolysis *begins at 0 38%* saline and is complete at 0 26%

Fractional test-meal on June 25 30 c cm 3½% alcohol, no histamine given , 0 036 free hydrochloric acid present in sixth sample Wassermann reaction, negative

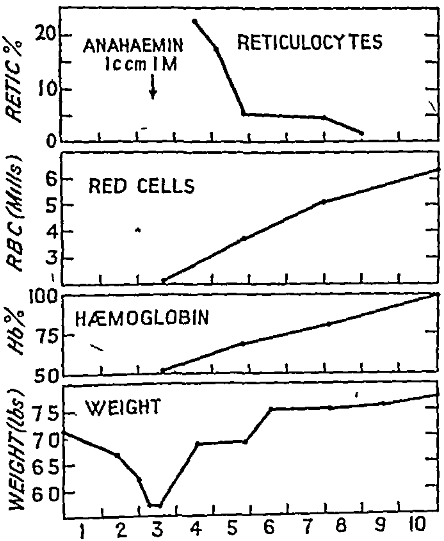

FIG 1

DISCUSSION

In this case the sudden onset of anæmia may have been due to hæmorrhage but was probably partly hæmolytic From its response to treatment it appears to have been due essentially to a temporary lack of anti-anæmic principle or one of its precursers, for the diet was qualitatively unchanged for a fortnight before anahæmin was given until recovery was well advanced The only additional treatment was a single injection of vitamin K four days before the anahæmin, and during this four days progress was rapidly downhill The cause of the deficiency is difficult to explain For the first three weeks of life the diet was certainly deficient in total calories, proteins, vitamins and iron, and as there was also a severe general infection with considerable intestinal disturbance absorption was also probably impaired There was also some loss of blood from the intestinal tract Such a combination in a child of this age is by no means rare but it causes hypochromic anæmia, and not hyperchromic anæmia as in this case Two other possibilities remain—first, that the child started life with deficient stores of anti-anæmic principle, secondly, that treatment with sulphapyridine and sulphanilamide were contributory factors It might also be argued that the recovery was not due to liver extract but was spontaneous, but the striking reticulocyte response is against this The Price Jones curves although they show some degree of megalocytosis, becoming less after treatment, are within normal limits for the age of the patient

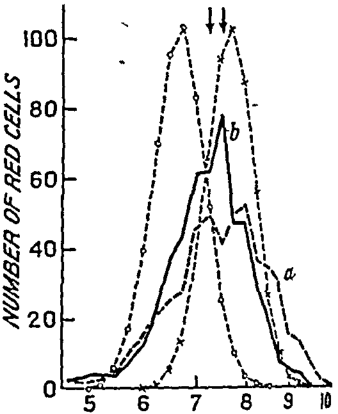

FIG 2

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which Professor Yorke has reported, may similarly owe part of their superiority to their limited solubility He suggested as problems whose solution might greatly accelerate advance in parts of the field of chemotherapy the discovery of a method of keeping trypanosomes alive and reproductive indefinitely in artificial culture, and of treating a strain of trypanosomes which had acquired a drug-resistance so as to restore its normal susceptibility

Mr D D Woods, Ph D spoke of the interference of antibacterial agents and essential metabolites This interference may be due to the formation of a compound between the antibacterial agent and the essential metabolite, as between mercury salts and -SH compounds, or to inhibition of an enzyme reaction involved in the synthesis or utilisation of an essential metabolite An example of this is the competitive inhibition by sulphanilamide of an enzyme reaction involved in the further utilisation of *p*-aminobenzoic acid, this inhibition occurring by virtue of the chemical relationship of sulphanilamide and *p*-aminobenzoic acid The latter has been isolated from natural sources and is a growth factor for *Clostridium acetobutylicum* and higher organisms Working on this hypothesis, the following substances, all chemically related to a known essential metabolite (shown in parentheses), have been found to have some antibacterial activity—pyridine-3-sulphonic acid and amide (nicotinic acid and amide), aminosulphonic acids (analogous aminocarboxylic acid), sulphonic acid analogue of pantothenic acid (pantothenic acid), indole-3-acrylic acid (tryptophane), barbituric acid (uracil)

Mr H McIlwain, Ph D, said that an organism which is deprived of the use of enzymes or metabolites by various types of interference is nutritionally more exacting than in its normal state *Bacterium coli* and *Streptococcus hæmolyticus*, inhibited by acriflavine components, require for further growth two types of material not normally required Type 1 is best replaced by nucleotides, type 2 by a concentrate of amino-acids, but partly by phenylalanine In the presence of type 2 compounds but not without, artificial hydrogen carriers are further active against inhibition of *Bact coli* Type 1 compounds form complex salts with acriflavine components The inhibitors probably inactivate enzyme systems of which type 1 compounds are essential parts, of which type 2 compounds are substrates or products, and of which some can be replaced by the hydrogen carriers

Mr W H Linnell, Ph D, described the relationship between chemical constitution and bactericidal action in certain amino acridines Among the isomeric diamino-acridines, 1-amino group causes complete loss of bactericidal activity and reduces toxicity, a 2-amino group increases activity and this is further enhanced by another amino group in the 2-, 3-, 4- (in the other ring), or 5-positions, accompanied by increased toxicity in the case of a second 2- substituent When two 3-amino groups (= 3 7) are present, activity is moderate, but the 3 8 diaminoacridine (= 2 7) is as active as proflavine but less toxic A 4-amino substituent confers small activity while position 5 is highly active but probably leads to increased toxicity Albert has shown that similar differences in activity exist among the five isomeric monoamino acridines, their activity paralleling their strength as bases and their partition coefficients between oil and water The corresponding acridones are inactive, as are certain amino derivatives of 5 10-dihydroacridine and of iminodihydroacridine, suggesting that the intact acridine molecule is necessary

Mr L G Goodwin, B Sc, said that the uncertain action of antimony in protozoal diseases, of which the resistance of Sudanese kala-azar to antimony is an example, is an added difficulty in investigating its mode of action The active form of antimony may be the stibinoxide grouping, but while this is probable in trypanosome and schistosome injections it is unlikely in leishmaniasis where quinquivalent compounds are the most effective and massive dose therapy is successful Excretion of antimony after doses of the quinquivalent compounds or of stibophen is much more rapid than with tartar emetic There is some indirect evidence that the rapidly excreted fraction of the drug passes through the body unchanged Both direct toxic action on parasites and stimulation of the hosts' defence mechanisms are produced by antimonials Increased phagocytosis may be of primary importance in leishmaniasis, though histological work on the spleens of infected hamsters injected with a quinquivalent antimony compound suggests some degree of direct action

Mr E Chain, Ph D, described the chemical and physical properties of penicillin in relation to its bacteriostatic action It is a strong acid with two or a multiple of two acid groups A purified barium salt gives a carbon content of 55% and an H content of 6 3% only C, H and O are present in the molecule Methoxyl groups cannot be detected but two hydroxyl groups are present The dried Ba salt of penicillin keeps indefinitely and in watery solution is most stable between pH 5 and 7 With heavy metals, except ferric iron, it forms water soluble salts The antibacterial action is lost by oxidation with hydrogen peroxide and potassium permanganate

Mr E P Abraham, Ph D, said that the instability of penicillin necessitated three methods of purification dependent on distribution between solvents, adsorption and reduction The crude barium salt obtained from an amyl-acetate extract of the medium has an activity of 15-25 units per mg Distribution between water and ether at pH 2 and pH 6, adsorption of impurities by charcoal, and chromatographic analysis on alumina yield a light yellow barium salt with an activity of about 150 units per mg On reduction of this material in neutral solution with aluminium-mercury couple the remaining pigment is adsorbed by alumina The white barium salt obtained from the supernatant has an activity of 240 units per mg It completely inhibits staphylococcus in a dilution of 1 in 5,000,000, and partially in a dilution of 1 in 16,000,000

Mr F R Bradbury, Ph D, has studied the behaviour of sulphanilamide, *p*-aminobenzoic acid and chemically related compounds, aniline and sodium benzenesulphonate, at the surface of *Bact coli* by electrokinetic methods The shapes of the curves relating variation of mobility with time of contact for sulphanilamide and *p*-aminobenzoic acid are quite different from those of the curves for aniline and sodium benzenesulphonate The curves for sulphanilamide and *p*-aminobenzoic acid are similar, suggesting that the two compounds behave in a like manner at the bacterial surface

Prof A St G Huggett said that dyes such as chlorazol sky blue FPS (Chicago blue) and chlorazol fast pink BKS are excellent anticoagulants Structurally they resemble afridol violet from which Bayer 205 is derived, they have a trypanocidal action while Bayer 205 has an anticoagulant action The dyes act at two points in the clotting mechanism, as antikinase and as antithrombin Their antienzyme action in blood clotting may have an analogy to their mechanism as trypanocidal agents

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SOCIETY OF M O H 's

At a meeting of the Fever Hospital Medical Service Group of this society on Nov 14, a discussion on

Fever Hospitals and Pathological Services in Post-war Planning

was opened by Dr H Stanley Banks (L C C) who thought that fever hospitals as well as general hospitals should be regionalised Modern fever-hospital work requires the equipment of a general hospital—e g, first class laboratory service, X-ray and physiotherapy departments and operating-theatre Wards for the general sick can be a success in fever hospitals In future, fever units and general units could be combined under one administration Over 80% of fever hospitals outside London have less than 50 beds, and about 55% less than 20 beds Many of these small hospitals should be closed or linked up with others It is important to determine the best method of administration of a regional authority The usual local-authority method by which a chief medical officer appointed by the authority is responsible for both the management and medical direction inevitably leads to a centralised bureaucracy This may be effective for a time by improving the backward units but soon produces atrophy at the periphery, and medical progress depends on initiative at the periphery as well as support from the ntre There should be a proper balance of power and sponsibility between the two, which might be chieved by leaving medical direction to local and gional medical committees of senior staff The egional committee could make itself responsible for onveying medical advice and direction to the authority, y the use of a whole-time staff if necessary Some such cheme of decentralisation of medical direction is essential o preserve the vitality of a hospital service

Dr L J M Laurent (L C C) suggested that voluntary ospitals, owing to increasing grants from the state, are ound to come under state control They enjoy a emi-independence which helps medical progress but does not further mutual support Municipal hospitals under the management of local authorities have become as efficient as voluntary hospitals but labour under a ighly centralised administration Any future scheme of hospital planning should avoid the disadvantages of both and the perpetuation of a dual system of hospitals The creation of a regional authority to control both kinds as equal partners would be a step in the right direction Modern fever hospitals approximate so much to general hospitals that they should come under the same authority Small fever hospitals should be replaced by larger units serving adjacent areas The large fever hospitals as a result of the war are now treating cases of tuberculosis, chronic sick and senile patients pneumonias, skin disorders and casualties, besides cases of notifiable disease After the war a diminution of infectious diseases is to be expected, and the beds left vacant could continue to be used for these cases To meet the needs of medical education fever hospitals should be allowed to receive patients from larger areas than at present An infectious-diseases block attached to a general hospital would benefit both sections

Dr A A Cunningham (L C C) thought that a good deal of the open ward accommodation in large fever hospitals could be made available for general medical and surgical cases This practice was begun in London before the war The head of a hospital should be a medical superintendent, not a layman but there should be well-paid posts for good clinicians Teaching hospitals should have a voice in the appointment of those who train students in infectious diseases

Dr J E McCartney (L C C) said that a pathological service must provide for all classes not only for hospitals but also for medical practitioners and public-health work. As the laboratory must be near the patient, the technical work should be decentralised as much as possible, but supplies, equipment, and conditions of service should be standardised as far as possible The country would be divided into regions, and the regions into groups each under a pathologist working in the main laboratory of the group, which would be similar to a L C C group laboratory According to need there would be sub-group laboratories staffed by assistant pathologists, or where work was insufficient, a technician would be employed No separate public-health laboratories would be provided but the medical officer of health would be in touch with the group pathologist in his area who would organise all pathological work , a mobile laboratory staffed by personnel from less busy parts of the region would be sent to any epidemic The work of the region would be coordinated by a regional pathologist who should not be a whole-time administrator but attached to or in charge of a laboratory, and his work would be mainly technical All regions would be coordinated by a director of pathological services Technical and administrative sides would be run by a committee consisting of regional pathologists and administrative staff—e g , for personnel, finance, buildings London would be organised on similar lines to suit its requirements There should be full cooperation with university teaching departments, many of which would be the main regional laboratories Research would also be coordinated The organisation of supplies would be on the lines of the L C C centralised system which supplies not only its own laboratories but also the Ministry of Health sector laboratories in London The L C C pathological service, now functioning as a regional laboratory service, might become the basis of a national one

Dr Robert Cruickshank (L C C) thought that the association of laboratory services with infectious diseases hospitals needs to be developed, for laboratory help is essential in the diagnosis treatment and control of most infectious diseases Besides, a laboratory on the spot helps to maintain the standard of work in the hospital and encourages coordinated investigation and research To do this the laboratory staff must not be overburdened with routine work, and the intellectual calibre of the personnel should be high In the past, the clinical pathologist has often been regarded as inferior to his colleagues in the teaching and research departments but with full-time adequately paid posts and encouragement of research clinical pathology should be able to attract the best brains The laboratory doing the bacteriological work of the fever hospital should also do the public-health bacteriology of the surrounding area Such an arrangement is specially desirable in London where the liaison between the borough M O H and the local isolation hospital is not as close as it might be Field epidemiology, at present rather neglected would also be encouraged by a system of regional laboratories such as the L C C had established in London

Dr R A O'Brien (Beckenham) was of the opinion that no scheme for the future of the pathological services need look further than the L C C group system for a plan on which to build

Dr E C Benn (Leeds) agreed that hospital regionalisation is inevitable Each part of the country has its own problems and one of the major obstacles to be overcome is local prejudice Full pathological services should be available to every hospital, but small units attached to small hospitals are to be avoided in the interests of economy

Dr A G Troup (Willesden) spoke of general hospitals he has visited in Austria and Czechoslovakia with successful fever sections The admission of ordinary medical and surgical cases to isolation hospitals is safe from the cross-infection point of view and Dr Troup described his experience of this at the Willesden Isolation Hospital Fever hospitals must be considered in any scheme in order that all available beds can be used for the maximum benefit of the community In London the sector system might form the basis on which to found the post-war scheme The better and more modern fever hospitals should be enlarged and the others used for a different purpose or closed The Local Government Act of 1929 and the Public Health Act of 1936 suggested this but no progress has been made owing to the absence of compulsory powers

Dr Fred Grundy (Luton) preferred to substitute for Dr McCartney's " mobility of personnel," a flexibility of personnel, for pathologists should remain long enough in a laboratory to get to know the local doctors No isolation hospital should have less than 200 beds so that each should carry at least one resident medical officer Local government areas should be amalgamated under existing legislation or rearranged But the future of the treatment of infectious diseases will be found in the linkage of cubicle blocks and special wards with general hospitals, or possibly, with children's hospitals Planning should take into account the need for improvement in the training of nurses

Dr D V Hague (Yeovil rural district) thought that separate infectious disease hospitals are unnecessary Greater efficiency would be found in a fever unit of a large general hospital, for there would be greater opportunities for consultation and treatment, better education of medical students in fevers, and all nurses would get fever and general training With competent fever-trained staff the disadvantages are negligible Some of the present isolation-hospital buildings might be used as children's hospitals where the school M O might act in a clinical capacity to the benefit of the patients and the school M O himself, who has far too little experience of sick children If regional control is adopted, there should be some local autonomy, and mechanism for the regular expression of opinion on local conditions to the regional board

Dr William Gunn (L C C) did not think that epidemic diseases will subside much after the war Under a statutory organisation the smaller voluntary hospitals would no longer be run as nursing-homes for the benefit of the consultants The best unit in a hospital system would be a large hospital centre with a minimum of 1000 beds and general and special departments of all kinds A workable scheme on these lines, the "Walton plan"-has been worked out

Dr C A McPherson (Chertsey, and Walton and Weybridge urban district) said that the lack of a pathological service is one of the chief disadvantages of a small isolation hospital The provision of this by the E M S has been of the greatest value X-ray facilities are also needed perhaps as mobile regional units In some provinces in France general hospitals successfully provide treatment for tuberculosis and infectious disease, and have health departments which administer the other public-health services

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THE LANCET

ONDON, SATURDAY, DECEMBER 20, 1941

OLLECTION OF INVASION CASUALTIES

AUTHORITIES have been urged to cooperate with h other so that the combined machine for the lection of casualties shall work as smoothly as sible if we are invaded There are three main emes in operation, and each of them possesses aid-sts of different capacities, all of which, together h all the ambulances, are to be available for both ilian and military casualties An attempt is now ing made to weld these services into one and to range their aid-posts on a network plan, which shall ow the least specialised to be ranged around those more complexity, and these again around the neral hospitals

The first or lowest class of aid-post may be either a tachment aid-post of the R A M C (consisting of ne or two first-aid men and a small satchel of essings), a civilian first-aid point, a Home Guard sualty collecting post, or a wholly unofficial private ouse or factory which may chance to have a certain mount of equipment Walking casualties are xpected to find their way to such points as these, nd Home Guard stretcher bearers will also be expected to carry their charges there, but civilian tretcher cases are to be taken by ambulance direct rom the place at which they are injured to some post n the second or third class The posts of this first class will not have a doctor in regular attendance Between the first and second class of posts there comes an intermediate class which includes advanced dressing stations of the R A M C, regimental aid-posts of the Home Guard and up-graded points of the civil services The precise function of these units is likely to vary with the needs of the moment Their equipment is simple and their staff extremely small The second main class of aid-post comprises main dressing stations of the R A M C, first-aid posts (mobile or fixed) of the civil services, and some of the smaller hospitals These are intended for the treatment and temporary accommodation of cases which do not need specialist surgical treatment but are yet so severely injured as to need inpatient care or to be sent home to bed by ambulance These posts will also deal with walking cases from their own vicinity or cases brought in from a distance without stopping at any lesser post The third and last form of medical aid is to be given at casualty clearing posts of the R A M C or at fully equipped military or civilian hospitals In so far as these may prove to be too near to the battle zone for reasonable safety, their patients will be cleared as soon as possible after operation by Green Line ambulance or hospital train to suitable refuges in remoter areas

These three classes include most but not all of the recognised posts The normal course of a stretcher case from the time of wounding until he reaches hospital will vary according to whether he follows the R A M C, the Home Guard or the civilian route of vacuation The fact that he follows any particular ute does not imply that he is either a soldier or a vilian, each may follow any of three routes

The wounded soldier or the wounded civilian in a military area will be picked up on the battlefield by regimental stretcher bearers and carried to the nearest post of class 1 In the case of the Army this will usually be an advanced dressing station or a regimental aid-post Here he will be looked after until it is possible to load him on an ambulance The ambulance will convey him, according to his needs, to a post of class 2, direct to a hospital, or perhaps an ambulance train for further transport away from the scene of action Having received the best attention possible at the second class post he will if necessary be sent on to hospital This will either be some special hospital—say for fractures or head cases—or a general hospital

2 The Home Guard stretcher case will be picked up on the battlefield by H G stretcher bearers and carried to any post of class 1 If this is a H G casualty collecting post, the Home Guard must then establish contact with the civilian control centre and look after the wounded until ambulances arrive to take them away Home Guard responsibility will then cease and casualties will follow the civilian route of evacuation

3 The wounded civilian will get into touch with the air-raid warden or the police who will in turn get into touch with the control centre This will send out (if possible) both a first-aid party and an ambulance or ambulances The wounded will then be taken to a post of the second class, to one of the intermediate class, or to a hospital according to the needs of the case as assessed by the first-aid party If a number of civilian casualties occur at one spot the control centre may send out a mobile first-aid post with orders to open up in some convenient building and deal with the cases on the spot

These are the main types of post and the main lines of evacuation at present planned, but their harmonious coordination is hampered by several factors Many people suppose that it will not be possible to put ambulances on the road in invaded areas for periods which may be as long as a week Some posts—for example the up-graded points now being established—are required to have accommodation and rations for a week while others, notably the Home Guard posts and ordinary civilian points, are established on the understanding that ambulances will always be available and that they will not be called on to retain patients Until it is generally agreed whether it is wise to depend on immediate clearance by ambulance no satisfactory cooperation is possible If it should prove that ambulances are delayed for periods ranging from 24 hours to a week all posts of the first class would have to provide hasty and probably unsatisfactory accommodation, dressings and food In a settled and well-populated country it ought not to be necessary to depend on last minute improvisations to this extent A second obstacle to cooperation is the present distribution of medical man-power As at present arranged, the civilian services claim to have the first call on all medical men, including those of the Home Guard but not those of the R A M C, even if temporarily idle This claim includes the right to keep medical officers at duty points—such as a garage housing a mobile ambulance—even if there is no work for them to do and even if, as Home Guard or civilian doctors, there may be great need for them elsewhere So long as one Service makes a claim of this sort there is bound to be a serious wastage of medical man-power and this wastage we can ill afford What is needed is some form of clearing house for medical men under the control of a commission representing all three Services, which shall get to work before the emergency comes and continue to operate in time of invasion A third difficulty arises because there is no agreement about decentralisation and dispersal of ments of all kinds A workable scheme on these lines, the "Walton plan" has been worked out

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e patient was then studied and the emotional signi- ance of his illness was assessed as far as possible , st before the round his respiration, pulse-rate and ood-pressure were taken During the presentation his case he was watched for changes in facial expres- on, blushing, pallor, restlessness, laughter or crying etween one and three hours afterwards he was inter- iewed again and his anxiety was judged , he was en asked to define medical terms used at the bedside he patients were adults except for 4 girls between he ages of nine and twelve and 1 boy of thirteen heir ailments included infections deficiency diseases, etabolic disorders, neoplasms, degenerations and sychogenic illnesses The preliminary examination howed that 29 men and 30 women had little, 9 men nd 16 women much, anxiety associated with their llnesses , in 2 women the illness was predominantly eurotic , and there was confusion or a variable degree of awareness, in 11 men and 3 women

The demonstration produced no severe emotional trauma in any of the patients Nearly all were grateful for the preliminary explanation There was, of course some anticipatory anxiety. which reached its peak when the group entered the ward and came to the bed, and then subsided , 24 patients, including both the neurotics admitted to feeling uneasy and tense, 12 of these belonged to the group of 25 who were already anxious about their illness and 7 to the group of 14 who were confused Only the two neurotics showed significant changes in pulse and blood-pressure Repetition of the history distressed 13, especially when this was the occasion for learning unfamiliar facts One youth discovered for the first time that he had had fits during the course of his illness and was greatly disturbed , a woman disliked a reference to a previous attempt at suicide , a man was wounded by the description of his ill-fitting shoes as "second-hand" The physical examination only annoyed 7 Some were embarrassed by being made to undress before an audience, and others were troubled because attention became focused on aspects of the disease which—to them—had previously seemed trivial Thus a boy with diabetes and nephrosis became anxious when his heart was scrupulously examined "I haven't got heart disease, too, have I ?" he asked Group laughter worried nobody , usually the patients could share the joke and joined in Of 69 patients who remained for discussion of their cases 11 would rather have been removed, most of them because they felt tired or hungry or were in pain Of 31 patients who were removed 16 would have preferred to remain , so that on the whole curiosity outweighed discomfort Divergent opinions in the group seem only to have impressed patients with the thoroughness with which cases were being studied which belies the oft-told story of a patient who having listened to the unanimous opinion of a group of dressers that his tumour was benign and the honorary's ' I propose to operate at once," got out of bed and went home, remarking "No, you don t ! '

Definitions of medical terms by patients showed how wide interpretation may be of the mark Neoplasm, mitosis metaplasia and metastasis fortunately had no meaning for any patient Shock, stroke, and paralysis were used interchangeably Neurotic was defined as "nuts ' or ' due to imagination," but "nervous breakdown" was accepted as a respectable consequence of overwork "Degenerative' was interpreted as implying moral decay, and ' prognosis ' meant ' no hope " for some This section of the investigation has a special interest reminding us how constantly we should be on guard against the use of terms which may spread not only alarm and despondency but undue hope Thus it is common experience that for most patients the word ' progressive means a disease which will get progressively better , that "Graves's disease' carries the most gloomy interpretation ; and that many a mother has been convinced that she must face a breech delivery from the use of the term "occipito-posterior ' On the whole, however, Dr ROMANO has shown that though patients may grumble a bit they are not unduly upset by ward rounds , and that a little extra care and vigilance will serve to allay what anxiety such experiences produce.

Annotations

FEEDING THE MINER

SINCE attention was last drawn in these columns to the need for supplementing the rations of workers engaged in heavy industries, such as coal-mining steps have been taken to make supplementary rations available to miners The Ministry of Food has been anxious to secure that this supplementary food is in fact consumed by the miners themselves, and it has therefore been considered necessary to make the issue at the mines concerned There are several possible methods of making an issue of this kind—by the provision of packets of food containing pies meat patties &c which can be given to the miner at the pithead for consumption either underground or when he goes home by the provision of hot meals at the surface on completion of the working shift, or by sending suitable hot food down to be consumed underground during the mid-shift break Each of the first two methods has been adopted fairly widely with what success it is not yet possible to say The first can at best provide a better cold "piece," which is obviously not ideal and it may well be easiest to provide a hot meal in a surface canteen at the collieries that have already been equipped with pithead baths through the activity of the Miners Welfare Commission Mr David Robertson, M P , favours the third method—a hot meal underground in the middle of the miner s working spell. The difficulties of this must vary a great deal from colliery to colliery, but it should not be impossible to serve hot meals under these conditions at several points for comparatively small groups of men Many hospitals use thermos-like containers capable of carrying ample food for twenty or thirty patients and keeping it at constant heat for a time amply sufficient to meet mining circumstances It may be that any system of distributing food underground raises difficulties in relation to payment and so on, and that the only practicable solution may lie in sending down individual containers with one man's ration in each Even that should not be impossible, with a little ingenuity on the part of the makers of containers Experiments have been carried out at a Midlothian colliery which promise good results in this distribution of hot food underground and the men in that colliery are said to favour the method Mr Robertson lately demonstrated some containers to members of the House of Commons and it seems probable that this system will be tried out on a more extended scale It will be interesting to see whether developments along these lines do anything to remedy the notoriously high incidence of gastritis among coalminers Efforts of this sort can scarcely fail to improve the miner s lot and must in the long run contribute to efficiency and output medical equipment and first-aid workers It must first be agreed, of course, whether circumstances will or will not compel the dispersal of casualties and whether concentration of casualties in defended towns and other danger spots should be permitted There are bound to be differences of opinion and no official decision will command universal approval, but these points should at least be discussed and a line of action should be agreed on by the heads of all three Services Otherwise the Services themselves can never cooperate in a way to command the confidence of the public

THE MAN IN THE IRON LUNG

The Drinker type of respirator, so beloved of public fancy, has only a limited use in this country where widespread epidemics of anterior poliomyelitis are rare There are patients, however, whose lives depend on its use, and their management calls for highly skilled medical supervision and nursing In America such cases are more common **Schmitt** and **Seldon**,[1] of the Mayo Clinic, discussing practical points in management, say that negative pressure should not exceed 20 cm of water, and that positive pressure is needed only when the patient is being taught to cough Negative pressure should be increased to 25–30 cm of water for a few minutes every four hours, to keep the costochondral joints from getting stiff The respiratory rate is kept at 18–20 a minute, and rate and pressure should be the lowest possible to keep the patient comfortable and of a good colour His head is kept lower than his feet, making an angle of some 20° with the horizontal, and mucus and secretion draining into the throat as a result of this posture are aspirated by gentle suction Portholes in the respirator make it possible for ordinary nursing care to be given without removing the patient, but for any complicated measure it may be necessary to take him out If the respiratory muscles are not completely paralysed he may be able to breathe without mechanical aid for a few minutes, otherwise if the machine is opened respiration must be maintained in some other way, and **Schmitt** and **Seldon** have devised a simple technique of giving oxygen through a face mask and bag When the machine is stopped, or open, the mask is applied, and the bag is squeezed rhythmically 18–20 times per minute In this way the patient is able to remain out of the machine long enough for essential nursing and medical attention to be carried out thoroughly

Between 400 and 500 patients suffering from poliomyelitis were treated in respirators in the United States last year Two-thirds of them had bulbar paralysis with pharyngeal paralysis, and two-thirds of these died **Wilson**,[2] **Schmitt** and **Seldon** agree with the English findings that better results may be obtained in bulbar paralysis from measures directed to maintaining the patency of the air-passages than from treatment in the respirator **Wilson** mentions the use of tracheotomy in selected cases He says that the respirator is clearly indicated only when the respiratory difficulty is due to intercostal or diaphragmatic paralysis and that a third of the 400–500 cases fell into that category, of which less than 20% died Although it is sometimes questioned whether the use of the respirator is justified for patients who, if they survive, may be so severely paralysed that their lives will be of little value to themselves or **Wilson** points out that at the time when the use respirator must be begun it is impossible to the future degree of paralysis and thus every should be given his chance of survival and r He emphasises the importance of instituting ment in the respirator early if there is evider weakness of the intercostal muscles and diap in the belief that the weakened muscles can be and protected by treatment in the respirator and possibly less strain put on the damaged anterior cells He suggests that the patient should examined for weakness of the neck and shou muscles, which is invariably associated with costal and diaphragmatic paralysis, and he bel that the respirator should be used long before cyanos dyspnœa and air-hunger appear **Schmitt** **Seldon** give as the chief indications for placing patient in the respirator restlessness, monosyllab speech, increased respiratory rate and a vital capaci of less than 250 c cm of air

In America it is difficult to make the ideal ear decision for treatment in the respirator because the are not enough machines, and there it is hoped th some cheap, readily portable and effective respirat perhaps of the cuirass type, will be developed T position is different in Britain where Lord **Nuffi** has ensured that respirators are available in almo every hospital

WHERE THE WARD ROUND RUBS

Patients probably cared little enough for t attentions of medical students even before Martial, the first century A D, wrote

> Languid I called on you, Symmachus, quickly you heard n
> Quickly you came with a hundred raw students behind
> They earnestly pawed me all over with hands like the arct
> I was free from the fever before, but now—by Apollo !
> I'm burning

Certainly this restive spirit in the clinical material h not changed since Repeated examinations are n the only harrying part of the business the patie may be perturbed by other aspects of the ward rou —by anticipation, by the conflicting opinions of t examiners, or by his own misinterpretation of so technical term which he is too frightened to ask abo Dr **John Romano** has investigated[1] 100 unselect patients at the Peter Bent Brigham Hospital befo during and after the Saturday morning teachi round and has shown some of the ways in which t patient may be unwittingly dismayed On th rounds one or two patients from each of the fo medical wards are presented to a group of 50- people, including members of the staff, visiting d tors, students and nurses The patient's bed is plac in the centre of the ward, the history is given, t patient is questioned and examined, and finally case is freely discussed The occasion thus has important publicity and the patient may have to w for a period ranging from a few minutes to an ho for the ward round to reach him The patie investigated were all prepared for the experience the senior house-officer who told them, on the d before the round, that they were being shown to large group of physicians because their cases present difficulties which would be better understood a treated after general discussion The personality patient was then studied and the emotional signi- nce of his illness was assessed as far as possible t before the round his respiration, pulse-rate and od-pressure were taken During the presentation his case he was watched for changes in facial expres- n, blushing, pallor restlessness, laughter or crying tween one and three hours afterwards he was inter- wed again and his anxiety was judged he was en asked to define medical terms used at the bedside e patients were adults except for 4 girls between e ages of nine and twelve and 1 boy of thirteen eir ailments included infections deficiency diseases, etabolic disorders, neoplasms, degenerations and ychogenic illnesses The preliminary examination owed that 29 men and 30 women had little 9 men nd 16 women much anxiety associated with their lnesses; in 2 women the illness was predominantly eurotic and there was confusion or a variable egree of awareness in 11 men and 3 women

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[1] Schmitt, G F and Seldon, T H *Proc Mayo Clin* 1941, 16, 453

[2] Wilson, J L *J Amer med Ass* 1941, 117, 278

[1] *J Amer med Ass* Aug 30, 1941, p 664

The demonstration produced no severe emotional rauma in any of the patients Nearly all were grate- ul for the preliminary explanation There was, of course some anticipatory anxiety which reached its peak when the group entered the ward and came to the bed and then subsided, 24 patients including both the neurotics admitted to feeling uneasy and tense, 12 of these belonged to the group of 25 who were already anxious about their illness, and 7 to the group of 14 who were confused Only the two neurotics showed significant changes in pulse and blood-pressure Repetition of the history distressed 13, especially when this was the occasion for learning unfamiliar facts One youth discovered for the first time that he had had fits during the course of his illness and was greatly disturbed, a woman disliked a reference to a previous attempt at suicide, a man was wounded by the description of his ill-fitting shoes as "second-hand" The physical examination only annoyed 7 Some were embarrassed by being made to undress before an audience and others were troubled because attention became focused on aspects of the disease which—to them—had previously seemed trivial Thus a boy with diabetes and nephrosis became anxious when his heart was scrupulously examined "I haven't got heart disease, too, have I?" he asked Group laughter worried nobody, usually the patients could share the joke and joined in Of 69 patients who remained for discussion of their cases 11 would rather have been removed, most of them because they felt tired or hungry or were in pain Of 31 patients who were removed 16 would have preferred to remain, so that on the whole curiosity outweighed discomfort Divergent opinions in the group seem only to have impressed patients with the thoroughness with which cases were being studied, which belies the oft-told story of a patient who, having listened to the unanimous opinion of a group of dressers that his tumour was benign and the honorary's "I propose to operate at once" got out of bed and went home, remarking "No, you don't!"

Definitions of medical terms by patients showed how wide interpretation may be of the mark Neoplasm, mitosis, metaplasia and metastasis fortunately had no meaning for any patient Shock, stroke, and paralysis were used interchangeably Neurotic was defined as "nuts" or "due to imagination," but "nervous breakdown" was accepted as a respectable consequence of overwork Degenerative was interpreted as implying moral decay, and "prognosis" meant "no hope" for some This section of the investigation has a special interest reminding us how constantly we should be on guard against the use of terms which may spread not only alarm and despondency but undue hope Thus it is common experience that for most patients the word "progressive" means a disease which will get progressively better, that "Graves's disease" carries the most gloomy interpretation; and that many a mother has been convinced that she must face a breech delivery from the use of the term "occipito-posterior" On the whole, however, Dr ROMANO has shown that though patients may grumble a bit they are not unduly upset by ward rounds, and that a little extra care and vigilance will serve to allay what anxiety such experiences produce

Annotations

FEEDING THE MINER

SINCE attention was last drawn in these columns to the need for supplementing the rations of workers engaged in heavy industries such as coal-mining steps have been taken to make supplementary rations available to miners The Ministry of Food has been anxious to secure that this supplementary food is in fact consumed by the miners themselves and it has therefore been considered necessary to make the issue at the mines concerned There are several possible methods of making an issue of this kind—by the provision of packets of food containing pies meat patties &c which can be given to the miner at the pithead for consumption either underground or when he goes home by the provision of hot meals at the surface on completion of the working shift or by sending suitable hot food down to be consumed underground during the mid-shift break Each of the first two methods has been adopted fairly widely with what success it is not yet possible to say. The first can at best provide a better cold "piece" which is obviously not ideal, and it may well be easiest to provide a hot meal in a surface canteen at the collieries that have already been equipped with pithead baths through the activity of the Miners Welfare Commission Mr David Robertson MP, favours the third method—a hot meal underground in the middle of the miner's working spell The difficulties of this must vary a great deal from colliery to colliery but it should not be impossible to serve hot meals under these conditions at several points for comparatively small groups of men Many hospitals use thermos-like containers capable of carrying ample food for twenty or thirty patients and keeping it at constant heat for a time amply sufficient to meet mining circumstances It may be that any system of distributing food underground raises difficulties in relation to payment and so on, and that the only practicable solution may lie in sending down individual containers with one man's ration in each Even that should not be impossible with a little ingenuity on the part of the makers of containers Experiments have been carried out at a Midlothian colliery which promise good results in this distribution of hot food underground and the men in that colliery are said to favour the method Mr Robertson lately demonstrated some containers to members of the House of Commons and it seems probable that this system will be tried out on a more extended scale It will be interesting to see whether developments along these lines do anything to remedy the notoriously high incidence of gastritis among coalminers Efforts of this sort can scarcely fail to improve the miner's lot and must in the long run contribute to efficiency and output

TRANSPORT OF CARBON DIOXIDE

MOST of the carbon dioxide carried from the tissues to the lungs is in the form of bicarbonate in the blood plasma The limiting factor of the rate of CO_2 absorption in the veins and evolution in the lung capillaries is the stage $CO_2 + H_2O \rightleftharpoons H_2CO_3$, because this reaction, being molecular and not ionic, proceeds comparatively slowly, so slowly that if it were unassisted only 1% of the CO_2 known to be given off in the lungs from the blood could be given off in the second or so that the blood takes to pass through the lung capillaries The assistant is the enzyme "carbonic anhydrase" which catalyses the reaction so that it proceeds at a proper rate Oddly enough carbonic anhydrase is chiefly found not in the plasma but in the red blood-cells, so that evolution of the CO_2 in the lungs involves a complicated series of reactions

The CO_2 is derived from H_2CO_3, carbonic anhydrase assisting the reaction, within the red cells , the H_2CO_3 comes from the potassium bicarbonate in the cells, which reacts with hæmoglobin, $KHCO_3 + H\ Hb \rightarrow K\ Hb + H_2CO_3$, the potassium bicarbonate of the cells is derived from sodium bicarbonate of the plasma by the exchange of Cl^- ions

$NaHCO_3 + Cl^- \rightarrow NaCl + (HCO_3)^-$ in the plasma
$(HCO_3)^- + KCl \rightarrow KHCO_3 + Cl^-$ in the cells

This interchange, familiar as the "chloride shift," occurs because the cell envelope is permeable to anions—Cl^-, $(HCO_3)^-$—but not to kations—Na^+, K^+ The net result is that CO_2 is given off and the plasma bicarbonate is reduced, and it is the activity of carbonic anhydrase that governs the final velocity of the reaction The original work on carbonic anhydrase involved the destruction of the red cells by laking because standard manometric and colorimetric methods could not detect the activity of the enzyme in the intact red cells Keilin and Mann,[1] by using a spectroscopic method, have now been able to show carbonic anhydrase at work within the intact red cell They utilised the fact that hæmoglobin can be oxidised to methæmoglobin while the red cells remain intact Methæmoglobin can act as an indicator since it changes its colour and its absorption spectrum when the acid form changes to the alkaline form between pH 6 5 and 9 5 Acid methæmoglobin can be changed to the alkaline form by adding carbonate or alkaline phosphate to a red-cell suspension or vice versa by adding CO_2 or acid phosphate By using a special spectroscopic microscope eyepiece and matching the spectrum of the reaction chamber with the spectrum obtained by illuminating a movable wedge-chamber containing standard solutions of acid and alkaline methæmoglobin, they were able to estimate the amount of acid or alkaline methæmoglobin formed at regular time intervals, and so obtain a graph showing the velocity of their formation When carbonate was added to a suspension of red cells containing acid methæmoglobin, 50% was changed to the alkaline form in 34 seconds From what is known about CO_2 transport and its relation to changing alkalinity of the plasma, it was expected that carbonic anhydrase was also the limiting factor in these test reactions Mann and Keilin[2] had previously shown that carbonic anhydrase is strongly inhibited by sulphanilamide, and this drug has the advantage of not reacting with methæmoglobin If therefore sulphanilamide inhibited the test reactions, confirmatory evidence that carbonic anhydrase was the active enzyme responsible would be provided This evidence was easily obtained, addition of sulphanilamide to the cell suspension greatly slowed the reaction , in a concentration of 5×10^{-4} M the 50% formation of alkaline from acid methæmoglobin took 210 seconds In a similar but more complicated experiment, still with intact red cells, Keilin and Mann were also able to show that the actions which induce the chloride shift are also d by sulphanilamide and are dependent on the acti carbonic anhydrase

We might thus expect that in anæmia, and also in sulphanilamide poisoning, insufficiency or tion of carbonic anhydrase would lead to disturbance CO_2 transport and also of oxygen transport since the closely interact There are two reasons why does not happen First, there is a large reserve of bonic anhydrase, estimated by Lambie[3] as equal to times normal physiological requirements He fo that the anhydrase content of the blood could be redu to a fifth of the normal without any signs of CO_2 re tion appearing The second fact is that there exists alternative method of CO_2 transport which does require acceleration by an enzyme or catalyst carbonic anhydrase is put right out of action the bl still takes up about 20% of the possible CO_2 instant eously, the rest being taken up gradually as expecte Roughton[4] showed this was due to the formation of carbamino hæmoglobin compound according to reaction

$$Hb\ NH_2 + CO_2 \rightleftharpoons Hb\ NH\ COOH$$

This alternative is actually more important than is first obvious because reduced hæmoglobin has be found to form this carbamino compound more readi than oxyhæmoglobin, so that Roughton estimates th 75% of the extra CO_2 taken up at constant CO_2 pre when hæmoglobin is reduced is due to this reaction a only 25% is carried as bicarbonate Thus thorough does nature provide for the protection of the vital C elimination and oxygen absorption under the mo adverse circumstances

VENEREAL DISEASE AND HOME VISITING

THE inoculation of a sensitive social conscience in those who lack one is the aim of many workers in t field of social service From time to time efforts ha been made to visit defaulters from venereal disea clinics in their homes and a recent successful experime of this kind was reported by Dr J L Burn in ou columns[5] A health visitor who acted as part time nur in the venereal disease clinic undertook the hom interviews and confined her visits to defaulting wome and children She succeeded in getting more th a third of the 134 defaulters to attend regularly an another eighth to attend irregularly There are dif culties in the way of extensive home visiting, howeve though they are not necessarily insuperable At small clinic, where the consultant only attends on give days, it is relatively easy to arrange for the social work to do her visiting in the intervals of his attendances, b in a larger clinic, where consultants are working dail it is difficult to arrange for the social worker to be absen And now that many more women patients are at wor much of the visiting must in any case be done aft clinic hours In small areas the V D social worker also the health visitor for the antenatal and maternit and child-welfare departments This was so in the are described by Dr Burn, and the arrangement had th advantage that the patients and their neighbours kne her and did not identify her merely with the venerea disease clinic In larger areas it is unlikely that a soci worker could undertake such a combination of duti and the visiting would have to be done by an almon or nurse connected only with the clinic , the drawbac here is that the patient's neighbours might recognis the visitor and draw their own conclusions Expectan mothers are probably the easiest group to visit wit success, since they are often at home and probabl alone, except for any other children, during the greate of the day The anonymity of the visitor will n much to patients, and methods of maintaining hould be well considered Where children are ring from congenital syphilis or have acquired ovaginitis it is rare for parents to refuse treatment them , when they do the N S P C C is willing and petent to deal with the situation This voluntary y will also help when an infected mother refuses tment for herself or wishes to have her child who has n cured of vulvovaginitis back at home with her large hospitals visiting may be difficult because the hering ground is so great, and if many names and resses turn out to be fictitious it may be deemed to te too much time There is evidence, however, that ple are not giving false names and addresses so freely vadays , and the provision of a little car for the itor—anyhow in peace-time—should overcome diffities of range No doubt the personality of the doctor n by the patient at the first attendance and the truction then given verbally and by leaflet on the ture of the disease are important in keeping the faulters rate low At the Lock Hospital much iance is placed on this first interview, and letters only e sent out to recall defaulters Only a very small rcentage finally default under this system, and it must remembered that some patients only come to a spital to get an expert second opinion , when their spicions are confirmed they return for treatment to e private doctor or the medical officer at the local inic who first made the diagnosis Yet no system can e regarded as perfect which allows even a few infected eople to escape the net of treatment and spread the isease among their fellows

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[1] Keilin D and Mann, T *Nature, Lond* Oct 25, 1941, p 493
[2] *Ibid*, 1940, 146, 164
[3] Lambie C G *Edinb med J* 1938 45 373
[4] Roughton, F *Physiol Rev* 1935, 15 241
[5] *Lancet*, Nov 22, 1941, p 655

IN DEFENCE OF A SEA DOG

WHAT distinguishes a pirate from an honest man ? hiefly, it seems, the lack of a licence to practise , but this is a distinction which ought to appeal to the medical profession Drake was a pirate until Queen Elizabeth made him a captain in her Navy , after which he went on doing exactly what he had been doing before—but how much more respectably Thomas Dover, whose memory Prof J A Nixon tells us (p 774) we have been slandering, was never a pirate at all He was a member of a privateering expedition against Queen Anne's enemies in the South Seas As we were then engaged in the war of the Spanish Succession, it is a pleasure to record that Dover's share in the sacking of the city of Guayaquil in Peru, and the taking of a Spanish prize, come under the heading of strict attention to duty He was captain of the *Duke*, and later of the prize ship, but his colleagues, feeling no doubt that navigation was always a difficult art, would not let him sail them They gave the responsibility to Alexander Selkirk, picked up from Juan Fernandez where he had been waiting for a lift for over four years and unconsciously providing the scenario for "Robinson Crusoe" After sacking the Peruvian city the English sailors slept in churches where they were much annoyed by the smell of the recently buried corpses of victims of a plague epidemic ; and forty-eight hours afterwards, when aboard again, they all fell sick On this occasion Dr Dover can be exonerated less confidently from a suspicion of piracy, anyhow in a professional sense , he held no medical charge as Professor Nixon reminds us, but he took over conduct of the epidemic, directing the official surgeons to bleed the patients in both arms to the tune of 100 oz apiece After that he gave them dilute sulphuric acid to drink, and they all recovered except eight—no mean achievement on their part since the malady proved to be true plague Dover, however, was never afflicted with the miserable virtue of moderation He was a natural partisan of remedies, especially of metallic mercury which earned for him the name of the Quicksilver Doctor Pirate or not—and we must of course agree with Professor Nixon and Sir William Osler that he was *not*—he was a fine full-blooded figure to have in our medical annals, from whom we, as his anæmic posterity, might welcome a transfusion Such an enthusiast for phlebotomy should make an ungrudging donor

PNEUMONIA TREATED AT HOME

THE value of chemotherapy in pneumonia is well authenticated from the records of patients treated in hospital where diagnosis can be readily confirmed by X ray and pneumococcus typing, and where treatment can be controlled by laboratory tests and the patient's progress continuously watched The proportion of pneumonias treated in hospital varies greatly in different areas, but the ease of administration of the sulphonamides and the ready response of the patient to these drugs will doubtless lead to a greater number of cases being treated at home It is therefore important that the home treatment of pneumonia should be both efficient and safe , in other words, that it should destroy the invading parasite without damaging the host Some physicians are too heroic with this new weapon, forgetting that the sulphonamides are toxic substances, and unfortunate accidents occur—anuria from too high a concentration of the drug and insufficient fluid intake, or granulopenia from too persistent treatment. Others are over-cautious with the size of dose or stop treatment too soon so that the infection either smoulders on, perhaps with a pneumococcus now rendered drug-fast, or relapses after apparent cure Treatment, with either sulphapyridine or sulphathiazole (the latter if available is as effective as sulphapyridine and less upsetting to the stomach), should aim at moderation American workers[1] have found that there is no difference in the response of a pneumonic infection to blood-concentrations between 2 and 15 mg per 100 c cm of these two sulphonamides, and they regard a total dosage of 25–30 g as sufficient to control most pneumonias The initial dose should be 2 g (4 tablets) of sulphapyridine or 3 g of sulphathiazole, followed by 1 g every four hours for the first two days, and 1 g every six hours for the next three days With sulphathiazole particularly it is advisable to continue the four-hourly dosage day and night, for this drug is quickly excreted and therefore a steady blood level is less easy to maintain Here, sulphadiazine has a distinct advantage, for an effective blood-concentration of it can be maintained with smaller and less frequent doses

Pneumococcus typing has never been popular in this country, and the new chemotherapy has pretty near sounded its death-knell Yet pneumococcus typing not only gives valuable help in diagnosis—the isolation of a type I or II pneumococcus in an ill patient is practically diagnostic of lobar pneumonia and in most urban areas over half the lobar pneumonias are due to these two types —but it also helps considerably in prognosis and gives useful epidemiological data That it can be carried out and prove informative in domiciliary practice has lately been demonstrated by McClure,[2] working in the central laboratory of the Provincial Department of Health of Ontario in close association with practitioners in the surrounding districts Pneumococcus typing for the practitioners had been done in this laboratory since 1934, and of 1000 questionnaires sent out for information about the typed cases 647 were returned In 495 cases pneumonia was present, and some form of chemotherapy, usually sulphapyridine, had been given to 386 of these There were 21 deaths but in 2 of the fatal cases sulphanilamide had been given and in 6 others death was due to some other condition after the pneumonia had resolved Excluding these 8 cases the fatality was 3 7% which may be compared with a rate of 9 5% in an earlier and similar series of 306 untreated cases , 80% of the deaths in the latter group, but only 30% in the drug treated series, were under 60 years of age The average amount of drug given was 18 4 g per case, and McClure notes that not only was there a tendency to give too little drug but also to stop the drug too soon As for the distribution of pneumococcus types in this series, it is noteworthy that only 83 out of 386 (21 5%) belonged to types I and II, a striking difference from the usual distribution in towns Similar investigations could be organised in this country and would probably yield much interesting information

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[1] Flippin, H F Reinhold, J G and Schwartz, L *J Amer med Ass* 1941, 116, 683

[2] McClure, W B *Canad med Ass J* July, 1941, p 28

INTRAMUSCULAR BLOOD IN CŒLIAC DISEASE

Arguing that some disturbance of the internal secretions is the cause of cœliac disease, J Wickstrom[1] of Helsingfors advocates its treatment by intramuscular injections of whole blood The blood, from healthy adults, usually relatives of the patient, was injected into the gluteal region in doses of 15–20 c cm without any additions at intervals of 2–5 days for a series of 10–30 injections During this treatment all other measures were suspended An average mixed diet, suitable for the child's age, was given with generous milk and milk mixtures, porridge and so forth—in fact a diet which would usually be considered quite unsuitable for patients with cœliac disease Several cases were treated at training hospitals for nurses with frequent changes of staff so that the good results obtained cannot be attributed to expert nursing care Five children with different combinations of symptoms, but all undoubtedly examples of cœliac disease, were treated No sudden change in symptoms occurred and to begin with the stools remained unchanged But after a few injections the weight began to rise and this improvement continued steadily throughout the course of injections with a corresponding bettering of the appetite After 2–3 months the weight had risen by between 1 and 4 kg and the whole picture of the child had changed The extra weight gave the limbs a better-proportioned appearance, the abdomen became less distended, muscle tone improved and the child's general behaviour, including temper, showed a striking change for the better The stools tended to remain of the cœliac type for some time when normal stools began to appear, often alternating with cœliac stools The blood sugar curves, however, retained their low characteristics and a tendency to low blood-phosphorus was also unchanged It is not claimed, therefore, that cœliac disease is cured by whole blood injections, but it seems clear that the general condition is so much improved that other treatment is unnecessary Wickstrom urges that this form of treatment is indicated when the general state of the child with cœliac disease is bad, with much wasting and loss of appetite In fact it is during the worst phases of the disease that good results can be obtained by whole blood, and thus a big step towards final cure can be taken just when other therapeutic measures have failed It might equally be argued that it is just at such a stage that a dramatic turn for the better often takes place without any special method of treatment, so that Wickstrom's modest claims will have to be confirmed

INCREASE OF SCABIES

Using as his material the patients admitted to infectious diseases hospitals in five English cities during the past ten years, Kenneth Mellanby[2] deduces that the incidence of scabies from 1931 to 1937 was low and regular in distribution but in 1938 began to rise briskly and since that year the rise has accelerated Roughly, before 1938 the incidence in fever patients was 3 per 1000, whereas by 1941 it had risen to 25 per 1000 The incidence varied in the five hospitals but the upward trend was the same in all The rise started before the war, and though war conditions have probably helped the spread of the disease they cannot be proved to have done so In one of the cities there had been evacuation, in another there had been little, and life" was common in two but absent in a third scabies graphs are nearly similar for all three cause of this rising epidemic of scabies is Mellanby suggests that the increase in dancing cinema-going between 1930 and the outbreak of be in part responsible for it Some will not accep thesis that the incidence of scabies in the general po tion is similar to that in patients admitted to hospitals, but there can be little doubt that the will be much the same Attention was called to increase in scabies by many school medical office their 1938 reports, so the beginning of the can be dated

THORACIC SURGERY AT LEEDS

Mr P R Allison has taken over the direction department of thoracic surgery at Leeds Genera firmary, relinquishing his appointment as hon surgeon This teaching department is breaking ground, the London Hospital and the General Hospital have such units, and there are tho surgeons at many large hospitals, but Leeds clai have the first thoracic department to be opened provincial teaching hospital At present there 10 surgical beds—5 for women and 5 for men—res for thoracic cases, which will form a war time nuc later, when the hospital has its normal complemen beds, it is hoped to have more Mr Allison, to w energy and foresight the department is largely due, be assisted by an anæsthetist and a resident surgical of

SIDEROCYTES IN MAN

Not long ago Grüneberg[1] found that granul "free" iron could be detected by the prussian test in the red blood cells of mice suffering fro inherited disease typified by "flexed tail and spot" A few such cells also appeared in embryo newly born normal mice and rats, and Grüne thought that they might also be found in man, if were looked for He now reports[2] that small perc ages of siderocytes have been found in the bloo human fœtuses, the figures varied from 0 10 to 4 and the amount of siderotic material was usually s Gruneberg has tried to link up the presence of sideroc with the change from megaloblastic to normobl erythropoiesis, this is unlikely since in man the ch takes place at an early stage, being complete at the 8th week whereas the age of the fœtuses w blood was examined for siderocytes ranged from 3 40 weeks The significance of the siderocytes is known, present theory points to iron being transp in the plasma and combined with hæmoglobin in bone marrow, nor does it normally become "f again until the hæmoglobin is liberated by the br down of the red cell Their presence in normal emb favours the suggestion that the free iron represen hitherto unknown mode of hæmoglobin synthesis ra than a disturbed hæmoglobin metabolism

Sir **Alfred Webb-Johnson**, P R C S, has elected a vice-president of the Middlesex Hosp This is we believe the first time this honour has conferred on a member of the active staff

Dr **R Dawson Rudolf**, emeritus professor of th peutics in the University of Toronto, died on No after a short illness He was a graduate of Edinb University and was elected to the fellowship of Royal College of Physicians of London in 1910 renewed old associations on the European battle in 1917–18, taking special interest in trench fever, his popular little book on the Medical Treatmen Disease had the critical outlook which marks scientific observer

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1. *Nord Med* 1941, **12**, 2889 2 *Med Offr*, Nov 1, 1941, p 141

1 See *Lancet*, Aug 16 1941, p 195
2 Grüneberg, H *Nature*, London, Oct 18, 1941, p 469

In England Now

unning Commentary by Peripatetic Correspondents

or some of us it is hard not to feel sentimental about tately-homes-of-England-how-beautiful-they-stand, we must reluctantly face the fact that they are al- y anachronisms, lovely vestiges of a more leisured If it seems unlikely that any more of them will e in our time it is consoling to reflect that many of e still standing, their owners gone or roughly herded a couple of unwanted attics are proving useful for sing evacuated communities of one sort or another ne of them are making excellent hospitals convalesc- homes or school buildings even if the spectacle of ith minor carving his initials on the old oak in the ing-hall causes their former masters to revolve steadily in the family vault But the smaller places taining let us say, a mere score of rooms have not n accustomed to harbouring a population of more an 20 all told (including the indoor staff) and when ed to accommodate perhaps two and a half times that mber are apt to show their resentment in various ys If the old squire his family and retainers could ike do well enough with three bathrooms and the same mber of water-closets the new school needs twice as any The fact that these are constructed as fast as revailing conditions permit does not solve the problem, r at this point the wells run dry, and the new bath- oms, to the eye imposing as they are, yield but few d scanty baths and in dry weather go on strike alto- ther, calling on the water-closets to follow suit To be ashed with success may be for you or me just a pleasant xperience, for a water-closet it is imperative More ells have to be sunk, pumps and storage tanks installed before the old house is satisfied

* * *

Our examination system is very fair, particularly in ssociating a newly appointed junior with a senior of xperience to calibrate his sense of values and teach him hat he must not be too exigent He learns in time that a candidate may be an excellent practitioner in embryo lthough he has the most feeble capacity to describe and xhibits a contempt for good English which is not the contempt bred of familiarity A favourable impression s hardly created by the statement of a candidate that he patient is usually a male or a female, that such and uch should be suspected until found absent, that the mportance of this symptom is very important, that sleep should be attended to, that a fat person may cause confusion (apparently the intention was to inform the examiner that adiposity handicaps diagnosis), that the occurrence is unfortunate but of no significance For such as these we have pity, but it is not the pity that is akin to love

We soon abandon any expectation of encountering even the most elementary approach to style and construction we accept the pabulum as containing all the necessary elements for our nutrition and do not trouble about the way it is cooked and served Later we lose our wonder at the evidence of extreme illiteracy I have collected the following from the paper of *one* candidate (I am telling the truth, although I am certain that nobody will believe me) I omit the errors which are practically universal such as preceed, accomodate, occurence, apetite and others of that type, and confine myself to technical terms Flem, Sharco joint, scabalæ, Pix disease, ematiated, caxecia, paracytic syphillus, sight (site), stimulous, physic (physique), tacicardia, inflamertory, annorhexia, naushia, tabbacco, tick (tic), spescial, redenned, tosis, fibrilattion, ocluds (occludes) Now here is a queer thing This candidate scored well over 60% in his paper and I am puzzled to explain his illiteracy The obvious explanation is that his knowledge was acquired exclusively or mainly through his auditory channel and that he had never familiarised himself with the appearance of the words Yet this plausible explanation is not satisfactory since the character of his answers supplied evidence of fairly extensive reading One is inclined to suppose that spelling must be a special ability which comes to some people independently of phonetics or the extent of reading

Not only may the paper be unreadable, it may be illegible I sometimes marvel at my own patience when plodding wearily through almost completely undecipherable scrawl and even tolerating such carelessness as pinning pages out of order In fact I am inclined to believe that illegibility may, like stammering, be a distinct advantage The conscientious examiner, remembering that there may be much fertile matter in a muddy stream and unwilling to court a possible injustice may prefer to presume the existence of something which might be identified through more trouble on his part He would rather be a good-natured fool than conscience-stricken, remain self-convicted of caddishness in penalising a physical defect or an attribute albeit premature, traditionally regarded as a doctor's perquisite

There appears to be some difference of opinion among the experts as to the best procedure to ensure the highest possible degree of professional efficiency and general culture as a writer in the *Lancet* put it a few weeks ago in advancing his "plea for graduation at an earlier age" He deprecated the smattering of Greek and Latin and preferred the arrangements whereby clever boys of 16 already possessing a good grounding in biology are plunged in medias res Yet actually on the same day I was confronted with a letter to the *Times* from the headmaster of a famous public school approbating my illustrious friend Professor Ryle and condemning early specialisation (I was sorry to see his reference to the Regius Professor of "Physics" at Cambridge University but I am sure that this must have been a playful printer's variant and not a lapsus calami) Other things, he reminds us, are expected of a doctor than technical knowledge—he is notably a man of science; he is a citizen holding a most responsible position in society, and as such his education should equip him with wide interests. In support comes a letter from a Scottish professor of anatomy whom we recall with affection when once upon a time he instructed our London youth until the call of his native town proved too strong against even our blandishments He says that on returning to his own university he was relieved to find an absence of that degree of sheer illiteracy to which he had become painfully accustomed in examination papers in the south This he attributed not to any inherent superiority in modern Scottish school education but to the proper proportion of the cultural subjects Is it too late, he asks, to plead for the restoration of Latin as a compulsory entrance subject? An elementary knowledge of Latin or Greek is he thinks surely essential to the study of a profession whose terminology is almost entirely founded on those languages He instanced the student who duly impressed by the derivation of the omo-hyoid muscle inquired "Well what about 'omo sapiens"? The story he assures us is painfully true and recalling the examination papers I have recently corrected I have no difficulty in believing it

* * *

It is good for the soul from time to time to re-examine principles, and try to find out how much foundation they have in fact One may be led to strange conclusions It has long been assumed that the bigger chubbier and heavier the baby the better it is that the child should be large and firm with a "good" colour and good teeth, in fact the standard nutrition should be "A" *in terms* of the school medical examinations This phrase nutrition A is vague Nearly all the experiments done to demonstrate the desirability of this state of health have used children or young animals and the rate of growth has been one of the main criteria There is indeed some evidence that with the improved diet which many children get there has been an increase in average size (post or propter?)

If we ask the obstetrician whether a hard, large and well-calcified infant, or a small relatively rubbery infant makes the passage through the birth canal more easily we are told that the latter has an easier voyage Does any mammal increase its food intake or drink the milk of other lactating animals during pregnancy? Is it not possibly an advantage to have a low blood-calcium near term, so that the uterus may be more sensitive to the stimulus to contract? Immediately after recovery from labour I imagine that most mammals increase their food intake, and so should women Let them take their lime and phosphates their ergosterol and carotene derivatives and their metallic salts in the puerperium, both as an aid to lactation and in anticipation of their next pregnancy

The strictest physical examination in Britain is probably that of prospective pilots in the Royal Air Force I don't know what the average height and weight of these men is but they seem to be below the average of the population both in stature and girth, yet they are physically one of the soundest groups of men in the world Again, complete life tables show that age for age men of slightly less than average height and weight have a better expectation of life than men of greater stature and bulk So is nutrition A really for the best? We might do better to produce a race of small wiry individuals

* * *

The most beautiful thing in my garden at the present moment to me at any rate, is the notched green leaf of *Barbarea præcox*, a winter cress which is going to provide me with salad for the next few months It is, I am told named after the holy Barbara of Nicomedia, patron saint of gunners, who has her day on December 4 The summer flowers flaunt their fading beauty, the chrysanths like hardy courtesans beckon me with waving grace and dye and subtle smell, I scorn the lot With sense and season I seek more solid pleasures The feeling of beauty in man (pace Professor Joad) is entirely utilitarian in origin and in younger communities is demonstrably so now It was only with the coming of the unnatural leisured class unheld by primary needs, that it became elaborated Colour that was meant to tell of ripeness became a creed, productive country a landscape, the beauty of woman and child, a lure to breeding, became in form and contour a fetish Then this feeling was in many cases seized and refined by that strange phenomenon which I term "exclusive grouping" This you see best in the small boy whose gang has a secret sign, an adult form is Freemasonry You see it in dress—that fellow who wears a made-up tie is beyond the limits of loathing But above all you see it in the arts—he who cannot appreciate (as we do) the music of Bong is surely bestial, or the painting of Cong is a class outsider, or the verse of Dong is a tick of the outer edge Probably protective

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As a change from a life made up of sewers forms and the horrors of the state let loose in medicine, I have become an amateur veterinary surgeon Now I am seeing as many furry patients as their human counterparts, and it is strange how akin they are Diana, a sleek lady spaniel in black satin, is as perpetually feminised as a certain sophisticated patient of peace-time practice As soon as a male of her species enters, Diana exerts all the usual tricks of her sex, although her languorous eyes are sadly handicapped by a streaming conjunctivitis Her human counterpart could also spare a glance of interest and appreciation even when in the most excruciating agony Both had, of course, "seen many other doctors before I came to you, doctor" There the resemblance ends, for Diana's eyes cleared up at a surprising pace and she is glamorous again The rapid onset and equally rapid cure among the animals surprises me Porky, a spunky sealyham, was brought with a large corneal ulcer and corneal vascularisation In other spheres I should have given a gloomy prognosis, but from a dull, torpid, butting-into-chairs quadruped, he was back to cat chasing and all other normal activities in two weeks I nearly said "fit for parades, P T, parashot, guards, and games," but the Service has not caught me as much as that—yet A host of minor points crop up which puzzle me in this new vocation How much sulphapyridine should be given to a flock of hens suffering from coccidiosis and when and how should it be given? The vet said "Burn 'em all" but the large flock is surprisingly still in being after change of ground and thorough cleaning of the pens I hope to succeed in this hen racket, as most traditional hen cures seem to go back to the tar-water and boiled-beetle era Various fractures have also appeared, but my ambition to treat a bilateral fractured femur of the hind legs (how do the vets describe this?) in a dachshund by a roller skate strapped under the tummy did not meet with the approval either of the dog or the owner A haughty spaniel scorned to use my plaster with walking iron applied to his fractured femur (off fore), now I know which fractures need plaster and which do better by natural methods Another pitfall turned up when a little terrier pup was treated for worms on evidence which was later found to be an elastic band one of many swallowed in a successful raid on the stationery The cure of some pets has baffled me, including pekinese, who seems to say a doctor's family is badly treated I believe a large beer bottle filled hot water between the legs is helpful, although it him into a caricature of an incorrigible toper a last pint in bed After all this I must write a dum on pets The home treatment is confused wifish and needs drastic overhaul I can see no why what works in the rest of the family should not in them (if we can get the doses right)

Special Articles

SURPLUS OF IRISH DOCTORS

THE Eire papers have been discussing whether are too many doctors in Ireland It seems that knows how many there are at present or how many were in more normal times Neither the M Register nor the Medical Directory gives much many medical men practising outside of Ireland the habit of giving their home addresses for years they have left the country, probably because the home is their only permanent address A few years it was calculated that though there were between and 3000 practitioners in the Medical Register wi Irish addresses, the number in actual practice in Eir itself was not more than 1500 The number now, including those in practice and those unemployed, i probably much greater than this The reasons for the increase are not far to seek For generations the Irish schools have educated large numbers of medical men for export The output was far greater than the home demand Young Irish graduates went to make their living in England and the British Dominions where the Scottish graduates they were well received and were usually reasonably successful This outflow is much diminished since the war began It has not been eas to obtain a permit to cross the Irish Sea, though th authorities do not, as a rule, refuse permits to tho who have obtained posts in Great Britain The usually refuse permits, however to those who merel wish to seek employment In the past many youn Irish doctors took resident posts in the British provinci hospitals, after attending a preliminary interview they are now unable to obtain travel permits in order t attend such interviews, and so a high proportion o recent medical graduates are compelled to remain i the land of their birth Moreover a considerab number of young Irish medical men who were worki in England have returned home crowding further a already overcrowded market No doubt some of the had always intended to return to Ireland when they ha gained some experience in England

Lay and professional correspondents in the Irish pre have pointed out that the present supply of medic men is greater than the present demand, but few see to have asked whether it is greater than the present nee They have been more concerned with the livelihood those in the profession than with the needs of the countr Many of the essential public services are, in fact, mu undermanned This applies especially to the coun hospital service and public-health services Most of t county hospitals are new and well constructed but qu inadequately staffed The personnel usually includ a single surgeon, who is a whole-time officer except f consulting work, an anæsthetist, and in some cases visiting physician The surgeon must also fill the rôles gynæcologist radiologist and pathologist No speciali help is provided except for the occasional visits of a ophthalmologist in some cases However able t surgeons may be—and they are good all-round surgeo —they have no opportunity of doing first-class work

In the local health services a county medical offic of health and a county tuberculosis officer are to be fou in each county The county M O H has to be scho medical officer in addition, this school work has be undertaken with great zeal, but in few counties has t M O H had time to examine each child more than on during its school life Without more assistance t service—which should be one of the most repaying—mu continue to fall short of what is possible The poor-la dispensary service is probably adequately staffed in t ntry districts, but is grossly undermanned in the es , much of its work is undertaken by the outpatient artments of the voluntary hospitals, which are reby diverted from their proper task of providing sultant services The country needs an increase of personnel of the public services by at least half as ich again, but at the moment the central and local thorities are unable or unwilling to provide the quired funds Yet until the public services are veloped there should be no talk of too many doctors

Some medical teachers maintain that teaching is mpered by the large numbers[1] in the classes, and ecially in the clinical classes This difficulty, if d where it exists, seems to arise from faulty organisa- n of the clinical teaching, which in the Dublin hospitals done by seniors, who, as examiners, naturally attract large number of students If they shared more of eir work with their juniors, the size of classes would come more manageable

It would be hard to break the tradition of the Irish hools in educating more doctors than the country can ovide work for, even if it were wise to do so Many ink that the country gains prestige from the quality f the doctors who leave it to work in other lands Were he schools to limit drastically the number of students, any would still choose the wider field for their future areers and Eire would be inadequately supplied But rish emigrants—whether professional men or manual abourers—are not a complete loss to their country Many of them send home help to their parents and elations which more than repays them for the expense of heir education

THE FORTIFICATION OF FOOD

On Dec 3, in the rooms of the Chemical Society at Burlington House, a successful joint meeting of two societies was held to hear papers on the Fortification (Enrichment) of Human Foods by the Addition of Specific Nutrients The chair was taken in the morning by Mr E B **ANDERSON**, chairman of the Food Group of the Society of Chemical Industry, and in the afternoon by Mr E B **HUGHES**, D Sc , president of the Society of Public Analysts Mr A L **BACHARACH**, F I C , who discussed the principles of food fortification, said he used the terms " fortification " and " enrichment " synonymously, although Mr D W Kent-Jones, F I C , and Mr A J Amos, F I C , who read the second paper on the technology of fortification, suggested applying " fortification " to procedures adopted to increase the amount of a nutrient present in a processed or manufactured food to the level present before such treatments, and " enrichment " to the addition of further nutrients over and above those normally present in the untreated food After considering the standard examples of food fortification—the iodisation of table-salt, the addition of vitamins A and D to margarine, and the Government's proposals for fortifying white bread (from 75% extraction of flour) with aneurin and calcium carbonate—Mr Bacharach put forward some general principles which should govern the fortification of all foods He insisted that there was no difference between " natural " and synthetic vitamins, that the object of food fortification was, in general, not restorative, that is to say, was not made primarily to restore to a food something taken from it by refining process, and further, that no heed should be given to the arguments that a particular addition to a food was undesirable because the added nutrient was not " natural " to a food Rather, he argued, fortification must be considered solely in relation to the proven need of a particular population for a given nutrient, and to the suitability of the food to which it was proposed to add the nutrient as a fortifying agent Questions of stability, price and palatability must all be taken into account All the resources of organic chemistry and chemical engineering, as expressed in the manufacture on a large scale of essential nutrients, should be mobilised to make good such specific dietary deficiencies as could be prevented by substances whose commercial production could be economically undertaken

Dr **KENT-JONES** and Dr **AMOS** summarised the methods adopted during the " vitaminisation " of margarine, in which thorough blending, with avoidance of aeration and critical choice of suitable fats and the application of rapid but adequate control tests at every stage in manufacture were all necessary to give a satisfactory final product They gave details of the fortification of bread with vitamin B_1 by the mechanical introduction into the flour stream of a specially prepared flour concentrate, the nature of white flour and crystalline aneurin being such as to make the direct admixture of one with the other impracticable They also referred to the irradiation of milk, or its fortification with vitamin D in other ways, as carried out fairly extensively in the United States, and to the incorporation of vitamin C in jams and preserves, a procedure not practised on foods to be sold in this country but carried out commercially on supplies intended for British prisoners of war They mentioned the difficulties that had arisen in the selection of a suitable type of calcium carbonate for the fortification of bread, but said that the creta præparata of the B P was satisfactory for this purpose

METHODS OF ANALYSIS AND CONTROL

After the lunch interval Mr H E **COX**, D Sc discussed the machinery for the enforcement of standards laid down for fortified foods. He thought that with the lapse of defence regulations, the Minister of Health would be found not to have the powers, at present held by the Minister of Food to enforce the positive fortification of food, but would return to the status quo ante bellum, under which he would at most be able to prohibit objectionable procedures and demand a maintenance of certain natural standards New legislation would be necessary if even voluntary fortification was to be permitted and adequately controlled At present, the addition of wholesome ingredients to foods was not forbidden by law unless this was specifically stated in particular statutes or regulations , it would be desirable for fortified foods to comply with certain legal stated requirements in which both minimum and maximum should be given for each permitted addition It was most undesirable to make regulations about the quality of food in general, and the nature and quantity of additions in particular, unless adequate analytical methods were available for those who had to help in the enforcement of such regulations Whether or not official methods of testing were desirable, recognised and standard methods would almost certainly be necessary, and in supplying these both the Food Group and the Society of Public Analysts should continue to play the valuable part they had played in the past. It was ultimately the public analyst's responsibility to secure that fortified foods, like any other foods, conformed with their descriptions on label and advertisement

The methods at present available for the estimation of minerals and vitamins in foods generally, and particularly in fortified foods, were surveyed in the last paper, on the analysis of fortified foods by Mr H E **MONK** After dividing the available methods into biological, microbiological and chemical or physico-chemical, and referring to the advantages and disadvantages of each, Mr Monk discussed the special methods devised for vitamin A vitamin B_1 (aneurin) riboflavin (sometimes incorrectly called vitamin B), nicotinic acid, ascorbic acid, and vitamins D (D_2 and D_3), showing that adequate chemical or physico-chemical methods were available for all of these, except for vitamins D_2 and D_3, for which a biological test is as a rule essential He also referred to the possibilities of a polagraphic method for estimating members of the " vitamin B_2 complex " and to the microbiological methods which are being developed in the United States much more extensively than in this country

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MIDDLESEX HOSPITAL —It was announced at the meeting of the court of governors of this hospital on Dec 10 that repairs to the north east wing were now nearly complete, and part of it had been reopened Five new huts (200 beds) erected by the Ministry of Health at Mount Vernon Hospital have been allocated to the Middlesex The Emergency Medical Service is also shortly opening a radiotherapy centre which will be able to deal with 150 patients at the Mount Vernon Hospital

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[1] The number of students attending courses in medicine and dentistry during the sessions 1940-41 in the three colleges of the National University of Ireland has recently been given as

	Dublin	Cork	Galway
First year students	352	79	57
All students	937	360	214

Letters to the Editor

SALT-WATER SURGEONS

SIR,—"Dover's powder, the nostrum of a pirate," you say in your issue of Nov. 8 (p. 568). This strange accusation against Thomas Dover, pupil and friend of Sydenham, seems to have been the invention of the late Sir William Osler. The expedition of the *Duke* and *Dutchess*, commanded by Captain Woodes-Rogers, on which Dover sailed was in no sense a piratical cruise. In 1708 some members of the Bristol Society of Merchant Venturers fitted out two ships which sailed to the South Seas. Captain Edward Cooke was second captain on the *Dutchess* and left a journal of the voyage which has been published. It is less well known than Woodes-Rogers' book and is the work of a better educated man. In it Cooke says that the commanders of the *Duke* and *Dutchess* had "commissions from his Royal Highness Prince George of Denmark, then Lord High Admiral of Great Britain, Ireland, etc." In other words the expedition sailed under letters of marque. They set out with four other ships, including the *Hastings*, *man-of-war* under Captain Paul. Commissions were granted to the two ships "to Cruise on the coasts of Peru and Mexico, in the South Seas, against her Majesties enemies the French and the Spaniards." Sir William Osler before his death frequently expressed his satisfaction that Dover was, as he put it, "such a respectable character," and fully retracted the charge of piracy. Dover's place in the expedition was that of representative of the owners, and in that capacity he was president of the council. He did not rank as one of the surgeons. These were, John Ballet who had sailed with Dampier previously, Samuel Hopkins, a nephew of Dr. Dover, James Wasse, surgeon, Charles May, his mate and John Lancy, assistant. Mention is made also of "John Vigor, a reformado, to act as Captain Dover's ensign when ashore." Yet Dover received £423 as *chief medical officer* in addition to his profits as a shareholder. Woodes-Rogers disliked Dover and complained of "want of sufficient medicines with which till now I thought we abounded, having a regular physician, an apothecary (i.e. Hopkins) and surgeons enough with all sorts of medicines on board." He would have preferred that Dover should have confined himself to the duties of a "regular physician." But this was not Dover's way. When a prize had been taken he claimed, successfully, to be appointed to command her. However the navigating officers felt no confidence in his seamanship and he was forbidden to interfere in any way with the navigation of the ship. It was agreed by a majority of the council (Dover presumably being in the chair) that "Capt. Robt. Fry and Capt. Will. Stretton, shall both act in equal Post in the Sole Navigating Sailing and Engaging, if Occasion should be, under Capt. Tho. Dover, on board the *Batchelor Frigate*"—thus the prize was newly named—"and that the said Capt. Tho. Dover, shall not molest, hinder or contradict them in their business, and we do appoint Alexander Silkirk master." The last-named was Selkirk whom the expedition had taken off the island of Juan Fernandez.

Dover's famous powder, compounded of ipecacuanha and opium, was not introduced by him as a narcotic. It was no "symbol of drowsiness and perspiration" to him. Dover regarded ipecacuanha as the active ingredient in his powder, a drug which was prescribed both as a febrifuge and as a remedy for dysentery. In fact it ranked almost with cinchona bark as a stand-by in the tropics. He added the opium to counteract the nauseating effects of ipecacuanha. Callander, in his "Voyages to the Terra Australis" (London 1768) speaks of this expedition as one of the best organised and equipped that ever left England.

The *London Magazine* for April, 1742, records the death of "Dr. Thomas Dover, famous for administering quicksilver to his patients, in the 85th year of his age. The last years of Dr. Dover's life were spent at Stanway House. He was buried at his own request in the vault belonging to the Tracy family." The statement in Munk's Roll of the College of Physicians that he died in London at his house in Arundel Street is wrong. The register of Stanway Church, in Gloucestershire, contains the entry that Thomas Dover, M.B., was buried there on April 20, 1742. The vault of the Tracy's is under altar, *but the church contains no memorial of the f* nor of Dover—an omission which it was Osler's have rectified, but the war of 1914 intervened.

Bristol. J. A.

CERTIFICATES FOR EXTRA MILK

SIR,—A good deal has been said in your columns about lax certification and multiple certificates but look like being put still more severely to the test with the distribution of extra milk and eggs. pressure will be put on us to sign certificates for c tions outside those for which we are entitled to do. These are very limited, but the indications are definite and leave no room for borderline lesions might be brought within them. Unfortunately t schedules have been issued in such a way that the will have the greatest difficulty in refusing a certif. No doubt before sending out the instructions the of the Ministry of Food thought it over carefully and good reasons for imposing secrecy on all co. They have come under "Confidential Cover—for *information of registered medical practitioners* only," with the added heading "Not to be Divulged to Public." How a doctor is to carry this out with a patient persistently demanding the certificate as a right remains to be seen. After having said ten times "No! your complaint does not come in the schedule of conditions qualifying for priority claims in liquid milk," he is almost bound to show the schedule in order to get the patient out of his consulting-room. We have to consider this in the light of the drink-more-milk campaign of recent years. Many a mother feels she has saved her weedy-looking son from consumption by making him drink a pint of milk a day. Many a shorthand typist who once had a lump in the neck thinks she will get "glands" unless she does the same. After supporting that campaign we cannot go telling them that it really does not matter. We can only say that the Ministry of Food has not got enough to go round, and that they must risk the invasions of the tubercle bacillus as they have the bombing plane. They will take it if they know, but the way in which it has been put forward makes it seem as though the doctors were capriciously depriving them of what they have a right to, and the medical profession was going back on these standards of preventive medicine that they have laboriously been building up of recent years. The reasons for the secrecy which balance these facts must indeed be weighty, and if the Ministry of Food can see their way to advertise the schedule in the daily papers and to post them on the doors of local food offices they will have a far better chance of their instructions being carried out. The people as a whole do not rush to obtain commodities to which they are not entitled and if they know that there is no extra milk for them thousands will refrain from asking their doctors for the certificate. We shall then be in a stronger position to resist the persistent demands of those who through fear or greed badger us for wrongful ones. Under the best conditions this resistance will not be easy.

Streatham. T. B. LAYTON.

POSITION OF THE BODY DURING SLEEP

SIR,—During my short period of clinical work I began to record from every medical case, and *indeed from* every available colleague or friend, the position he or she took up during sleep. It soon became clear that this was definitely characteristic for each individual. The individual seldom varied the position and when he did he was *fully conscious that he had made a change*. I often checked the statements of patients during night duty and found them to be correct, and I observed that the great majority maintained their position throughout the night. Two facts which are not unknown to physicians were often found: *that people with angina* pectoris avoid lying on the left side, and that patients suffering from acute and painful diseases occupy a position in which they feel the pain least. *A comparison of the position of the body during sleep in cases of true* angina pectoris and of heart neurosis might be worth following up.

I always asked specifically if there was any period in the lives of the subjects when they slept on their abdomen. Many people who did so for long periods were of either past or present liver or gall-bladder e Of 18 cases of catarrhal jaundice 15 had slept e abdomen from their youth up, or at least for years, whereas of 392 patients and healthy ols without any history of liver affection only 11 red this position A high proportion of patients cholelithiasis said they slept on the abdomen My amounted to only 400 and there were obviously too healthy controls on which to base a conclusion her research however, should show whether this vation in cases of liver affection can be confirmed, if so whether it is primary or secondary The minal position during sleep may be either the result he liver trouble or one of the factors which have ributed to it Some simple considerations seem to ate that the latter possibility can by no means be uded a priori The mechanical conditions under h the bile flows from the gall-bladder vary greatly the body position but there are other factors which play a more important rôle than gravity The a-abdominal pressure and its variations caused by iratory movements (of the diaphragm &c) may differ atly according to the position in which the subject is ig If he lies on the back the abdominal wall easily ves upwards when the diaphragm is lowered But en he lies on the abdomen the anterior abdominal wall omes much more rigid, so that inspiration should cause e intra abdominal pressure to rise much more To ese considerations may be added the effect the respira-ry variations in intra-abdominal pressure have on the culation of blood (and possibly lymph) in the liver e physiologist put it shortly by saying. "The liver pressed out like a sponge by the breathing move-ents.' These points show that it will not be easy to ecide whether the symptom is post hoc or propter hoc even one of the causes which predispose to an injury to e liver cell

These incomplete observations may perhaps encourage omeone who has the clinical material at hand to carry hem further and throw some light on a subject which eems to have been neglected hitherto

University of Birmingham. F SCHÜTZ

THE STICKINESS OF PLATELETS

SIR.—May I be allowed to make some remarks with regard to your annotation of Nov 15? In 1929 I published in collaboration with Miss Szekely the first functional test for blood platelets In these investigations the velocity of disappearance of platelets was determined in Kristensen's counting fluid This was called the velocity of platelet disintegration Mrs Payling Wright objects to that designation showing that many platelets disappear because of sticking to the glass walls Really neither of the conceptions is absolutely correct The extravasated platelets undergo a series of changes resulting in their disintegration Agglutination and adhesion are among these changes As the direct enumeration of platelets sticking to the glass walls is impossible, we are at the present moment unable to decide how much of the disappearance of platelets in vitro is due to their adhesion and how much to disintegration In a plaque of platelets adherent to a glass surface it is impossible to decide how many of them are intact The formation of substances with vasoconstrictor action during the coagulation of blood (O Connor H Freund) suggests a fairly rapid at least partial disintegration Wright's observation that higher concentrations of anticoagulants lessen the stickiness of platelets is in agreement with the findings of Bürker and others that substances inhibiting the coagulation of blood prevent also the agglutination and disintegration of platelets, and supports the opinion that adhesion and disintegration are two stages of the same process

Although from Wright's interesting investigations it is evident that a considerable number of platelets adhere to the glass walls and are incompletely if at all disintegrated, we feel justified for the sake of simplicity, in calling our test the "disintegration test' of blood platelets We have shown with our method that hæmophilic platelets have a normal "disintegration" velocity This finding disproves a conception of Howell's which has later been abandoned by Howell himself The only condition in which at that time the disintegration was found to be absent, very slow or delayed was in thrombocytopenic purpura Later I described a case of chronic thrombocytopenic purpura in which after adrenalone treatment (Klima) the platelets rose to 1 million but their disintegration was still absent The clinical symptoms were not improved In the last three years the velocity of platelet disintegration has been determined in the Children's Hospital Birmingham in a series of cases with hæmorrhagic manifestations by me by Dr T W Lloyd and recently by one of my laboratory assistants Five cases of hæmorrhagic disease with normal or only inconsiderably reduced numbers of platelets and absent or retarded disintegration were found One had a hæmolytic anæmia one a severe hæmorrhagic disease of the newborn, one a purulent peritonitis (all three with prolonged bleeding and clotting time) and two were clinically typical cases of Werlhof s disease with prolonged bleeding and normal clotting time but with 120 000–150 000 and 220 000–250 000 platelets respectively

Horwitz has improved our method using the counting method of Flossner-Hoffmann He has confirmed all the observations published in our first paper Shortly afterwards important work on the function of platelets was done by Morawitz and his pupils Jürgens used the agglutination as a test for platelet function and Morawitz himself has constructed an apparatus for determining the formation of a platelet thrombus By means of that apparatus the real nature of a familial hæmorrhagic diathesis observed in Finland and described by Willebrand has been elucidated Unfortunately there are no definite morphological signs of a functional deficiency of platelets The only certain fact seems to be that platelets with signs of immaturity (large forms with basophilic plasma, Ogata's tails) are also functionally deficient Glanzmann who was the first to put forward the conception of a functional disturbance of blood platelets based that idea on morphological findings which unfortunately are contestible His idea however, proved to be true as the functional tests have later shown In recent years several cases have been described with hæmorrhagic manifestations and extremely large numbers of platelets They have been called hæmorrhagic thrombocythæmia In a few of the papers photograms are reproduced of blood films in which not only the large number of platelets can be seen but also that they are not agglutinated thus more resembling a magnesium sulphate film than an ordinary blood film We regard it as probable that in that condition the platelets are functionally deficient their susceptibility to agglutination being reduced

The Children's Hospital, Birmingham H S BAAR

WHEN TO TIE THE CORD

SIR —Regarding your reference to Barcroft's experiments influencing the time when the cord should be tied I would like to put forward the following suggestion If oxygen lack as shown by Barcroft is the stimulating factor in promoting respiration surely it means that oxygen is normally cut off at the end of the second stage, and it therefore matters little how early or late the cord is tied from the aspect of apnœa in the fœtus

As for blood loss to the fœtus I do not agree with Mr. Chisholm s argument first because he considers that bleeding takes place from the fœtus into the placenta until pulsations in the cord cease and secondly, because he states that the only propelling force of fœtal blood from the placenta is the fœtal heart He suggests that the cord should be tied earlier because of the risk that the fœtus will lose blood in two ways by bleeding into the "placental lake" and by actual bleeding from the placental surface at the time of separation It is difficult to decide how much blood does actually enter the placenta at the end of the second stage Because the cord is pulsating it does not follow that blood is flowing in it, but merely that the pulsations are transmitted as in any other fluid medium (If an artery is tied, it still pulsates on the proximal side of the ligature until obliterated by the relatively slow process of thrombosis) Mr Chisholm himself infers that, because the inert placental lake may offer such resistance that the fœtal blood-pressure is largely overcome, therefore there is little or no venous return I suggest that the whole crux of the case is the fœtal arterial blood-pressure versus the passive resistance offered by the placental channels, which at this stage are greatly narrowed by shrinkage of the placenta following reduction in size of its surface of attachment to the now almost empty uterus The "intraplacental blood-pressure" must also by this means be greatly increased and thus add to the resistance of blood flow from the fœtus If this is so, the increased intraplacental pressure will mean increased venous return to the fœtus, as well as decrease or cessation of blood loss via the umbilical artery

So we arrive back at the question of when to tie the cord, not from the point of view of the presence or absence of pulsations in it but of how long it will take the *placental venous pressure to equalise the fœtal venous pressure*—i e, how long it will take the placenta to empty itself into the fœtus I have always tied the cord rather as a routine procedure than as a carefully premeditated step influenced by the immediate state of the fœtus or a remote one of the infant At the end of the 2nd stage the exchange of blood gases between maternal and fœtal blood must be negligible, owing to the greatly limited uteroplacental circulation caused by the retracted uterine muscle For this reason, I cannot see why apnœa in the newborn fœtus can be appreciably influenced by tying or not tying the cord early What it does influence is the amount of blood returned to the fœtus by the placenta by virtue of its own raised venous pressure, but that there is an appreciable intraplacental pressure is easily shown by the gush of blood which follows removal of the hæmostat from the placental end of the cord

Mr Chisholm's second point, concerning the blood loss to the fœtus from the placental surface at the time of separation, depends on how early the placenta separates, which usually does not happen until after the cord has been tied even by those who "stand and wait" before tying it

To summarise (1) Apnœa of the newborn fœtus is uninfluenced by the early or late tying of the cord (2) The amount of blood gained or lost via the placenta in the 3rd stage depends more on the intraplacental blood-pressure and the time allowed before tying the cord, than on the presence or absence of pulsation in the cord (3) The fœtus rarely has the opportunity to bleed from the placental surface

Seaforth, Liverpool ROBERT C PERCIVAL

HYPERTENSION

SIR,—We would like to reply to Dr Izod Bennett's letter of Nov 29 We did not suggest that Goldblatt's work indicated that hypertension was usually produced by a unilateral renal lesion We pointed out however that in a few cases hypertension and unilateral renal lesions coexisted, and that in some of these the hypertension has been relieved by nephrectomy Unilateral renal disease is frequently "silent," and although Dr Bennett states that each of the cases described in our article had localising signs from the very outset a more careful perusal of case 1 would show that this was not so It is on this account that we suggested that since in some cases there appears to be an ætiological association (not explained by Goldblatt's work) between hypertension and unilateral renal disease, and since a unilateral renal lesion may be otherwise symptomless, it is most reasonable and humane whatever the financial cost to exclude such a lesion by a complete urological investigation That this should be carried out in all cases is perhaps an overstatement, but it seems that this is necessary in order to disturb the complacency with which so many clinicians seem to regard this very common disease

G O RICHARDSON,
G A SMART

CRUSH INJURIES

SIR,—The ill effects of "crush syndrome" have been ascribed to the liberation of toxins from the trapped limb after its release It has been suggested that the application of a tourniquet to the limb before it is released, above the site of compression, might prevent this There is another sequel of such an injury which might almost be called "release syndrome" Here the patient remains comparatively well and cheerful while trapped, but dies suddenly soon after release, presumably because of an even more violent flooding of the system with toxins It would be interesting to hear whether M O s of mobile units have experimented with tourniquets In the raids of last autumn many patients were not reaching hospital alive or w soon after admission, and it might well be tourniquet would have saved them

Highgate R L BE

ANÆSTHETIC FLOWMETERS

SIR,—With reference to the note on flowme gas or liquid in the *Lancet* of Dec 6 (p 718) I ma forthwith that I make no claim to have been to suggest the use of rotameters for anæsthetic g *cannot be accused therefore of any attempt to s* thunder of Richard Salt of the Nuffield Depart Anæsthetics Nevertheless, in recognition of v help extended to me in the past by instrument I feel that the moment is opportune to rec following facts

In 1928 Messrs Siebe Gorman & Co Ltd flowmeters of the rotameter type to my speci for N_2O and O_2 After clinical trial these flo were fitted to an anæsthetic apparatus made for Messrs Allen and Hanburys in the same year In following an inquiry from Mr A Charles King, Rotameter Company offered to make rotameters N_2O and O_2, calibrated for anæsthetic purposes [illegible] informed that the original correspondence bet[illegible] Mr A Charles King and the Rotameter Company [illegible] in existence While it is more than probable [illegible] rotameters were used in connexion with anæsthesia in Germany before 1932 it is thus apparent that in England the possibility of using them for anæsthetic purposes was mooted before 1937, and by Mr A Charles King

Harley Street, W 1 I W MA[illegible]

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS, M P

THE *parliamentary week under review began* with the declaration of war against Japan on Dec 8, included a statement by the Prime Minister on the war situation which is to be the subject of a debate, and was filled u with the second reading, committee stage and third reading of the National Service Bill No 2 In the House of Lords the first and second readings of the bill took place and it will pass into law at once Provision was made during the week for a debate on the allowances granted to the dependants of the men in the services There was also a debate fixed on a Supplementary Vote of Credit for War Expenditure and for the passage of a special Consolidated Fund Bill through all its stages

* * *

The impact of such tremendous events as the extension of the war to the Far East and the Pacific Ocean, the virtual mobilisation of the whole nation for war purposes and the further drawing of astronomical sums of money for war expenditure are rather stunning in their effect o parliamentary practice But criticism and the norma work of Parliament continue The Prime Minister was able to clear up a little parliamentary storm which grew out of a misunderstanding of the effect of the new bil on M P s of the age-groups called on to serve It has i fact been the recognised practice for some time to leave i to individual M P s to judge where their duty lies an whether they should serve in the forces or in Parliament It has also been the practice that an M P in the force wishing to be freed to devote himself to parliamentar duties is given this freedom But some members wer not aware of this as these *rules and practices* had not bee embodied in a considered statement

The Prime Minister made it clear that while it woul not be appropriate to confer on members a statutor exemption from the obligations they share in commo with everyone else they have also "the high duty" o service in the legislature They are therefore given free choice by virtue of their position as Members o Parliament and not as a favour

* * *

Mr Bevin as Minister of Labour in charge of th National Service Bill has done a long and difficult jo effectively within the limits imposed by the form of th but there have been some breezes one of which ed Mr Henderson Stewart, who had made certain icisms of the A T S The words he used were, "We r in this House and in the Lobbies the reports of lical officers about the conditions in the camps re is not a constituency of which I have ever heard t has not this general but very definite impression t the A T S is not the sort of Service to which a nice goes" Sir Percy Harris interjected "Hear Hear," Mr Stewart continued "My right hon friend has parently had the same experience" and called on the r Office to do something drastic and on Mr Bevin to e drastic measures to remove "these unfortunate nditions' Mr Bevin's reply to this was to say, "Why there concerning the A T S the assumption that cause women are drafted somewhere, immorality is und to ensue? That is a lot of unutterable nonsense I say that the conduct of our young people during s war has been cleaner than in the whole history of our untry"

Mr Henderson Stewart at once protested, "I was not r one moment thinking about morals I was thinking bout the physical conditions in which they live I ink the morals are excellent" Mr Henderson Stewart hould have used plainer words about the lack of proper amp accommodation and dirt in the A T S quarters nd it is unfortunate that this suggestion of immorality mong the A T S was dragged into the debate through misunderstanding The facts are all against it What is true and what needs improvement is the arrangements for the comfort of A T S, including lavatory and washing accommodation But this is also true of the W A A F s—as Mr Bevin indeed suggested After this little fracas Mr Bevin went on to speak of the provision of hostels and welfare arrangements but as these matters are outside the scope of the bill they could not be dealt with by amendment

What did come out of the debate is a bill which will be an act by the time these words are in print That act gives the Government very drastic powers over the whole population and especially over the age-groups 18–65 In the original discussion of the Maximum Effort resolution tabled by the Government the Speaker described this as a de-facto "first reading" discussion of the bill But it turned out to be nothing of the kind The bill is limited to powers over persons The provision of welfare and medical services is not touched and could not be discussed They are left as far as legislation is concerned to some date in the future and there is uneasiness about them in the minds of members

Another matter left out of the act—although adumbrated in the original Government resolution—is the position of young people from 16 to 18 These young people are to be looked after and directed as to their activities and there was some suggestion that they should be under the services This suggestion was contested and the "direction" is to be through the Board of Education and voluntary youth societies It is all rather vague but the situation is to be explored in a debate on the adjournment at an early date But if youths of 16 are eligible for Home Guard duties and the Air Training Corps it is hardly clear how the services can be kept out or whether they should be kept out The nation even at this stage has not got really used to total war We don't like young people being drawn into the war But perhaps the best we can do is to keep the control of any "direction" in the hands of the Minister of Education And these directions will have to be carefully considered for it is on the shoulders of the youth of today will lie the heavy responsibilities of directing democratic opinion in the decade after the war

FROM THE PRESS GALLERY

National Service Bill

IN the debate on this bill in the House of Commons it was pointed out, almost fearfully, that in conscripting our women we are "actually taking the initiative," for the Nazis have failed in the attempt, and noble Lords in the upper house thought the bill was "a tremendous compliment to democracy" Both houses were anxious that the Government should recognise that there would probably be a higher rate of sickness, breakdown and discharge among the men of the age-group 41–51 than among their juniors Sir E GREGG promised that their duties would be carefully allocated according to their medical grade, but it was generally felt that the Government should consider the pension claims of these men sympathetically

Moving the second reading of the bill in the Commons Mr E BEVIN confessed that the human is the most awkward animal of all to handle, but proved himself adroit in the management of his colleagues He gave an assurance that one woman doctor should be present at the medical examination of women He also gave a pledge that if a man has been discharged on medical grounds he will not be called up again, but would be directed into industry Mr T M SEXTON urged that when women left home to work in another district they should register at once with a panel practitioner in the new area Sir FRANCIS FREMANTLE called attention to the need to safeguard the water-supplies of the country Water undertakings must be allowed to keep some of their skilled personnel Dr HADEN GUEST asked the minister to give some indication of the provision he would make for hygienic and medical supervision in the new factories There was a shortage of medical manpower and they would not get what they wanted unless they had the whole medical services of the country pooled Mr BEVIN replied that he could not deal with the nationalisation of the medical services by this bill, they were constantly being expanded and he had early made a great innovation by introducing a compulsory medical service in industry, which now included nursing Mr R DAVIES said the bill had as its background the population problem, and asked what effect the conscription of women would have on the birth-rate

In the debate in the Lords on Dec 12, Lord MOYNE was able to reassure Lord GREVILLE about the provision of domestic staff for hospitals Last week Lord Greville complained that these workers were steadily seeping away Now an order is to be made laying down that no woman between 20 and 30 working in a vital industry—which includes hospital work—may change her employment except with the approval of the Minister of Labour

War-time Nurseries

At the cinema the news reel informs us that we "live in the presence of history" Against this background the question "What to do with the children" may seem trivial But as Lord NATHAN pointed out in the House of Lords on Dec 9 when asking the Government what provision they were making for war-time nurseries, the need for an answer is urgent if we are to make full use of our woman-power. Industry is dependent on what might be called immobile mothers, and it is essential to morale that women should have confidence that the arrangements made for their children are adequate Minders are no doubt all very well, but he reminded his peers that children under five are brittle It had been stated that by the early part of next year 500 nurseries would be open, taking an average of 40 children each, or 20,000 in all But Lord Nathan suggested and he believed that it was an understatement that 200,000 children would have to be provided for, and provided for at night as well as in the day And what was to be done about the children between five and fourteen during school holidays when their mothers were at work? The Government were confronted with a great social problem Upon the right solution depended the health and happiness of the generation for which we were fighting

Lord SNELL acknowledged the Government's responsibility for what was a human as well as an industrial problem He did not suggest that the figures given by Lord Nathan were exaggerated, because no-one at present could estimate what the intake of married women into industry would be, but the Government's answer was that first it was necessary to observe the rate of intake and then to try to provide sufficient nurseries to meet the demand, but instructions had been given to local authorities to prepare for the expected need and to be ready for quick development The Ministry of Health, the Ministry of Labour and the Board of Education were collaborating closely in this matter and so were the local maternity and child welfare and the education authorities At the end of November 194 nurseries were in operation, and a further 209 approved but not yet in full action, providing for something over 15,000 children A further 264 were in active preparation and the Government felt that this programme was fairly satisfactory But Lord **Nathan** said that neither he nor the other Labour Lords could agree It might be sound policy to observe the intake of married women into industry and then take action if this matter were being dealt with as one of child welfare in a scheme of social readjustment But the problem was to get the mothers into industry, and the provision of accommodation for the children is the inescapable precedent for these women going into industry at all He therefore hoped that the Government would ensure that steps were taken in advance of the intake and did not lag behind it

QUESTION TIME

Inspection of Mental Defectives

Mr H C **Charleton** asked the Minister of Health the number of visits made by the commissioners and inspectors of the Board of Control to mental defectives under statutory guardianship in the administrative area of the county of London during each of the 12 months ended michaelmas in the years 1939 and 1940 —Mr E **Brown** replied The numbers of visits by commissioners were 98 and 0 respectively, and the number of visits by inspectors were 35 and 4 respectively Article 83 of the Mental Deficiency Regulations, 1935, permits but does not require visits by commissioners or inspectors and arrangements have been made to visit all cases placed under guardianship in the years 1940 and 1941 and establishments where there are a number of mental defectives under care I am informed by the London County Council that their officers have duly made the visits prescribed by Article 86 of the regulations —Mr **Charleton** Is the Minister not aware that the figures he has given reveal a serious evasion of duty by the Board of Control ? How can the commissioners carry out their duties to these unfortunate people if they do not see them and understand their condition ? Is he aware that there is evidence that some have not been visited for a number of years ? Is he aware that the figures in 1939 should have been in the neighbourhood of 550 and in the next year 500 ?—Mr **Brown** The commissioners were working under great difficulty and as he knows the inspectorate has other duties to perform in addition —Mr **Charleton** Does the Minister not see that the first duty was during a prewar period when there were no difficulties ?

National Wheatmeal Loaf

Sir **Ernest Graham-Little** asked the Parliamentary Secretary to the Ministry of Food to what proportion of the population the white loaf, fortified in accordance with the undertaking given in July, 1940, was now supplied , what proportion of the consumption of the national wheatmeal loaf now bore to the total consumption of bread in this country , what had been the expenditure to date by the ministry in advertising the national wheatmeal loaf, and whether the Ministry had now abandoned or diminished such advertising —Major G **Lloyd George** replied Figures relating to the proportion of the population to whom the fortified white loaf is now supplied are not available, but approximately 25% of the white bread and flour consumed in the United Kingdom is now being fortified with vitamin B_1 It is estimated that 7% of the bread consumed is in the form of the national wheatmeal loaf The expenditure to date on advertising national wheatmeal is £29,000 The advertising has included many thousands of posters which are displayed in all parts of the country The use of national wheatmeal bread and flour forms an important subject in the ministry's food advice service to housewives The ministry has not abandoned this advertising but there is a wide range of subjects to be covered in the space available for the ministry's , consequently there are periods during which there is space for no more than occasional mention of wheatmeal in advertisements primarily devoted to other subjects

X-ray Examination of Recruits

Sir **Francis Fremantle** asked the Minister of Labour whether he had considered the adoption by medical boards of X-ray examination for tuberculosis of every recruit, in the light of American experience, and in the interest of those found to be affected and of Exchequer liabilities —Mr **Ernest Bevin** replied This suggestion was fully considered last year by the Medical Advisory Committee under the chairmanship of Lord Horder, and the committee decided that its adoption was impracticable I am advised that this

here ?—Mr **Bevin** I understand that at the time it question of preparing a complete supply of equipment

Increase in Juvenile Delinquency

The number of persons under 17 years of age found guilty of offences in England and Wales has in since the war by about 30% (Mr H **Morrison** replying Mr D L **Lipson**)

Certificates in War-time

In answer to a question Mr **Brown** said I have asked by the British Medical Association to consider w steps can be taken to reduce the demands made on medical profession for certificates in connexion with activities A conference took place between repre *of Government departments and of the association at w* the whole matter is now being considered by the de individually with the object of reducing to a minimum number of purposes for which medical certificates are to be required

Suspension of Dudley M O H

Captain G S **Elliston** asked the Minister whether he proposed to intervene on behalf of the M O H for Dudley who had been suspended for the duration of the war because he had registered as a conscientious objector, as permitted by the Military Service Act —Mr **Brown** replied The appointment, dismissal or suspension of the M O H of a county borough does not require my approval and I have no authority to intervene between the council and their officers in this matter

Diphtheria and Immunisation

Sir F **Fremantle** asked the Minister whether he had any statistics of the results of immunisation against diphtheria in New York, Chicago and Toronto as compared with London. —Mr **Brown** replied In New York City, since large-scale immunisation of children began in 1929, diphtheria has steadily decreased from an average of about 10,000 cases year during 1920–29 to just over 400 cases in 1940, in relatio to a population of over 7 million Information about Chicag is not readily available In Toronto in the five years durin 1933–37 there were no more than 209 cases of diphtheria in al In two of these years, 1934 and 1937, there was not a sing death, while in 1940 there was neither a notification nor death In the county of London, with a population of abou 4 million, notifications of diphtheria in recent years hav averaged close on 8000 cases a year

Committee on Nurses Salaries

In reply to a question from Miss M **Lloyd George** Mr **Brown** said The committee on nurses salaries held its firs meeting on Nov 27 It is my intention that the committee scope should extend to nurses possessing or in training f the certificate of the Tuberculosis Association, and that should also extend to health visitors Before the scope so extended it may be necessary to make some adjustmen in the committee I have decided to set up a separa committee to draw up agreed scales of salaries for midwi on a national basis Lord Rushcliffe will act as chairman the committee for midwives as well as of that for nurse Some nurses and midwives posts involve the practice bo of nursing and of midwifery and I shall request the committ to consult together before making recommendations abo these overlapping matters

Leprosy in the West Indies

Mr G H **Hall** in reply to a question from Dr H **Morgan** gave the following table setting out the incidence leprosy in the British West Indies

Colony	Year	New cases	Total cases	Populati
Bahamas	1940	3	17	70,3
Barbados	1939	5	63	193,0
Jamaica	1939	N S	249	1,195 4
Turks and Caicos	1938	2	5	53
Antigua	1940	N S	6	36 07
St Kitts	1939	3	59	37,9
Montserrat	1939	N S	N S	13 5
Virgin Islands	1940	N S	N S	61
Trinidad and Tobago	1939	77	377	473,4
St Lucia	1939	5	29	69,7
St Vincent	1940	0	18	61,4
Grenada	1939	0	12	90,08
Dominica	1940	3	17	52,7
Bermuda		0	0	30 81
British Guiana	1939	45	565	341,2
British Honduras		N S	N S	57,76

N S =Not stated

Obituary

FRANCIS HENRY MOSSE

M R C P.

ARLY this year Dr Mosse who had been working as a ical missionary in China since 1920 fell ill with erculosis and was sent to America for treatment seemed to be making good progress and his death on 6 after an operation was unexpected Robin se, as his friends called him was the son of the Rev H Mosse, vicar of St Paul's, Covent Garden He educated at King's School Canterbury and Trinity llege, Oxford and qualified from King's College spital in 1913 During the last war he served as ptain in the R A M C in Egypt and Palestine and was th General Allenby s forces at the capture of rusalem His heart was set on medical missionary ork, and after taking the M R C P he sailed for China nder the S P G , to take up the post of physician at the eloo Christian University at Shantung, in North ina Here for twenty years Mosse trained young hinese men and women— A picked group of the finest udents in the world " he called them He counted imself " the happiest man in Asia " to be allowed to erve them, and he worked with them in refugee camps n times of flood and famine, as well as in the lecture alls and wards of Cheloo Hospital After the Japanese ccupation of North China most of the 4000 students at Cheloo trekked west to free China but the hospital emained and Dr Mosse stayed with it He leaves a widow and two daughters who are in the United States

ELWIN H T NASH

M R C P , D P H

THE loss of Elwin Nash brings a flood of memories Nash was no ordinary official The fire of the enthusiast burned brighter in his eye as each year added to his age It was in fact in the later years of his life that he really found his feet and became a pioneer in public health One of the particular qualities for which we admired him was his practical mastery of the improvements he advocated Years ago he came to the conclusion that many of the nutritional problems of the nation would be solved if it were taught to buy better and to cook more skilfully He wrote a book on the subject and sold it at a price which the poorest could pay And before writing it he went into the kitchen and became a first-class cook himself For him armchair administration did not exist ' I attend at one welfare clinic and at one school clinic regularly every week " To know that a thing was good and needed in public health was sufficient to awaken his determination that his district should pioneer He was one of the first to commence immunisation against diphtheria on a large municipal scale the records he kept were meticulously accurate One day a dentist spoke to him of the disastrous effects in appearance and in health that could arise unless children's teeth were carefully regulated What was good enough for Park Lane was good enough for Heston and Isleworth and he started a clinic where the poorest in his district could obtain orthodontic treatment Elwin Nash just could not let disease go untreated He gave a lecture on myxœdema at the Society of M O H 's and confessed how he had secured his patients " I saw them in the bus, I saw them in the train and in the street I stopped them and secured treatment for them if I offended against ethical canons, I place myself without reserve in the hands of you who are my colleagues and friends " He was an enthusiast and a fighter Yet big, burly and determined no-one had a gentler touch with children, they trusted him and realised he would look after them as individuals—just as in the bigger realm of public health his council trusted him to look after them as a community

Cromwell Studios Hounslow

D H G

Elwin Harral Thomas Nash was born in 1872 in Guernsey the eldest son of Joseph Nash, R I He was educated at St Paul's School and St Thomas s Hospital, qualifying in 1896 after which he filled a series of house-appointments in London and the Home Counties and assisted in several departments at St Thomas's Then for a while he was in general practice at Accrington, but after taking the D P H at Manchester and holding a public-health research scholarship he went to Derby to assume charge of the isolation hospital became assistant M O H there and then M O H of Wimbledon, finally ending up at Heston and Isleworth In 1938 just after his retirement the society of M O H 's elected him president, and at their annual banquet he foretold amazing developments in the growing association between practitioner and health officer which he did much himself to foster Many of the high lights of his work have been noticed in these columns, among the more recent an early venture (1934) in the use of adult serum to modify measles in fever hospital contacts a forecast of planned obstetric practice (1937) and some indication of the aim and purpose of ' Dr Nash's Cookery Book ' In 1899 he married Mary Monica Oldershaw who survives him with four sons and a daughter

ERNEST JOHN FRANK HINDE

M R C S , CAPTAIN R A M C

IN a recent casualty list it is announced that Captain E J F Hinde has died of wounds He was born in 1912 the eldest son of Dr E B Hinde of Norwich and was educated at Gresham's and Emmanuel College Cambridge where he won his athletic colours At Guy's he played hockey for the hospital and occasionally ran but here his keenness for his work left him little leisure He qualified in 1938 and the following year obtained a house-appointment at Guy's but soon after the outbreak of war he resigned to join the R A M C He served at first with the East Anglian field ambulance, as his father had done in the last war, and afterwards with another field ambulance Later he volunteered for foreign service and it was on his way abroad that he met his death at sea He married Miss Norah Steeds in 1940

Polyfoto

ANTONY FLEMING BALDWYN

M B LOND FLYING-OFFICER R A F

Flying-Officer Baldwyn has been reported missing but is presumed to have lost his life on active service in the Middle East He was the eldest son of the late Captain C F Baldwyn He entered St Bartholomew's Hospital in 1935 and took his London degree last year at the age of twenty-two and joined the R A F after six months as house-physician at the base hospital of the Bart's sector One of his friends writes Baldwyn showed aptitude for learning new things quickly and he applied his knowledge for his patients He was good at most games and could sail any sort of boat

DAVID ROBERTSON TAYLOR

B A CAMB , M B, EDIN D P H

Dr Taylor who died at his home in Belfast on Nov 8, was the only surviving son of the Rev D A Taylor D D of the Presbyterian Church in Ireland Born in 1870 Taylor was educated at the Royal Belfast Academical Institution and Cambridge University where he took his degree in 1901 He proceeded to Edinburgh University and graduated M B in 1906 *After* service in the R A M C he obtained the D P H at the Queen's University of Belfast in 1918 He was a medical referee under the National Health Insurance scheme in Northern Ireland, and was engaged in general practice until the day *before his death* In 1903 he played rugby for Ireland, but cricket was his enduring passion and he played for Gentlemen of Ireland in 1924 An accomplished musician he was an enthusiastic member of the British Music Society of Northern Ireland David

Taylor's qualities of simplicity and modesty won him many friends and his unfailing gentleness and kindness were valued by his patients He leaves his widow with two daughters

DERMOT HARRY TUTHILL DUGGAN

M D DUBL , SURGEON LIEUTENANT R N V R

Surgeon Lieutenant Duggan, who was reported missing in August 1940, is now posted as missing, believed killed in action He was serving on H M S *Ardent* which took part in convoying troops to Narvik and was lost in battle off the coast of Norway in June 1940 He was the only surviving son of the late Captain George Grant Duggan, who was killed at Gallipoli in 1915 Duggan was educated at the Imperial Service College Windsor and entered Trinity College Dublin in 1929 He graduated in arts in 1933 and in medicine in 1935 He was an active member of the Dublin University harriers, of which his father had once been captain He passed his examinations punctually and after qualifying in the minimum time he held house-appointments at the Fermanagh County Hospital, Enniskillen, and at the Kent County Ophthalmic and Aural Hospital, Maidstone He also travelled to New Zealand as surgeon on the s s *Durham* In 1939 he was granted his M D for a thesis on chemotherapy in acute ear disease which was later published in the *Irish Journal of Medical Science*

Medical News

Royal College of Surgeons of England

At a meeting of the council of the college held on Dec 11, with Sir Alfred Webb-Johnson, the president, in the chair, Mr Seymour Barling was reappointed representative on the court of governors of Birmingham University, Mr L E C Norbury as representative on the Central Council for District Nursing in London

Diplomas of fellowship were granted to the following candidates —

E O Harris M B Lond H L Blake L R C P P M G Russell, M B Lond , V A J Swain L R C P T L S Baynes M D Lond B G A Lilwall M B Lond E W O Adkins, M B Camb G A Fairlie Clarke M B Lond R N A R Leask L R C P , S I Green M B Lond H J Richards M B Lond James Moroney, M B Lpool , G M Muller, M B Lond A G Apley M B Lond , J B Kinmonth, M B Lond D A J Ebull M B Lond , H E Hobbs M B Lond W H Weston, L R C P , E T Taylor, B M Oxfd L H Aitken, M B N Z , H B Boctor, M B Cairo , C H Cullen M B Belf , Stephen Eisenhammer, M B Edin J D Gray, M B Sheff , C G D Halstead M B N Z , J N Nish M B Melb , C M Ley, M B Melb William Parke M B Lpool , J J Richmond M B Melb W L Springford M B Lond , and Norman Waddle, M B N Z

Diplomas in anæsthetics were granted, jointly with the Royal College of Physicians, to the following —

J B Adams, J H Crawford H de L N Davis D C Devitt R R Dickson J K A Dorman Henry Edwards, H R W Franklin Ysobel M Garland, E F Gleadow, T C Gray P S A Heyworth Werner Kupfermann, C B Lewis A M McKinlay, J V Mitchell, L G Morrison G B Oliver Joseph Patterson, George Quayle, G M Rose, Enid B Roulston R D Scott, R P W Shackleton A A Shein, Janet Todd E C Whitehall Cooke, Joyce Worthington, and A M Young

Royal College of Physicians of Edinburgh

At the annual meeting of the college on Dec 4, Prof Charles McNeil was re elected president and the following council was elected for the coming year Dr R B Campbell, Dr L H F Thatcher, Prof D M Lyon, Dr A G Ritchie, Prof L S P Davidson and Dr A Rae Gilchrist Professor Lyon was nominated vice president

First Polish Graduates in Edinburgh

There was a historic addition this year to the small winter graduation at Edinburgh University on Dec 12, when the first degrees were conferred on students of the Polish School of Medicine at the university Sir Thomas Holland, the vice chancellor, presided and the degrees were conferred with the authority of the Polish government by Prof A T Jurasz, dean of the Polish faculty of medicine The new Polish graduates were Miss Jadwiga Mickiewicz of Warsaw, Second Lieutenant Stanislaw Schta, Asp Wladyslaw Kazimierz Gatuszka and Asp Ferdinand Solich, all of Cracow

22nd General Hospital R A M C

The fifth week end course in war medicine will be held at this hospital on Jan 3 and 4 The visiting lecturer at this course will be Mr H Morriston Davies

Medical Honours

The M B E has been awarded to Dr W L M Bigby

Dr John Findlay

Dr Bigby who is assistant medical officer for civil defence Southampton has worked long hours helping to extricate tra people and has several times entered wrecked buildings to re the suffering of the injured

Dr Findlay, who is in charge of a first aid post at Peterh was thrown to the floor and injured when a bomb burst but grave risk to himself he crawled under debris and gave inject to three casualties

Posthumous Honour

The Royal Meteorological Society has awarded the Sym gold medal for 1942 to Dr J S Owens, whose death recorded in our columns last week

King Edward's Hospital Fund

This year the fund is again distributing £300,000 amo the voluntary hospitals of London The fund is now propo ing, with the help of the Nuffield Trust, to extend the work o its nursing recruitment service to provincial training school

West Ham Practitioners Coordinating Committee

The discussion group of this society will meet for the fir time on Tuesday, Dec 23 at 2 30 P M , at the Y M C A Hal Woodgrange Road, Forest Gate, E 7, to consider the exten sion of the panel system versus an all out state medi service Dr A V S Davies will speak in favour of a extension of the panel system, and Dr R N Brandwood wi advocate a state medical service Practitioners from adjoinin areas are invited to attend

Births, Marriages and Deaths

BIRTHS

ARTHUR —On Dec 1 at Wolverhampton the wife of Squadro Leader Hugh Arthur F R C S E , R A F V R —a daughter

BONNELLA —On Dec 11 at Oxford, to Dr Gertrude Bonnella (n Afoumado), wife of F George Bonnella, of Chinnor— daughter

BOLAM —On Dec 7, at Gosforth Newcastle on Tyne the wife Dr Mason Bolam—a daughter

BRYAN —On Dec 4, at Plumstead, Capetown, the wife of Dr T B Bryan—a son

DANIELS —On Dec 13, at Grantham, the wife of Dr Marc Dani —a daughter

LUNN —On Dec 12, at Guildford the wife of Captain H Fletch Lunn R A M C —a daughter

RIORDAN —On Dec 7 at Newcastle on Tyne, the wife of Capta T P Riordan, M B R A M C —a daughter

SODDY —On Dec 13 at Cambridge the wife of Temp Majo Kenneth Soddy R A M C —a daughter

THOMAS —On Dec 3, at York the wife of Dr Rene Thomas— daughter

MARRIAGES

CUDDIGAN—REDFERN —On Dec 10 at Ripley, Simon Thom Cuddigan M B to Betty Redfern

DUFFY—BOWERS —On Nov 29, at Chichester, Charles Allan Gav Duffy, M R C P , captain R A M C , to Margaret Marian Lucy Bowers

ELLIOT—HICKS —On Dec 9, at Blockley, Glos , Thomas Ell Elliot, F R C S E , major R A M C , to Mary Catherine Hic

DEATHS

CARMICHAEL —On Dec 7, at Lahore, John Carmichael, F R C S lieut colonel, R A M C retd of Srinagar, Kashmir aged

MOORE —William David Moore, M B Edin , captain, R A M aged 43

MORTON —On Dec 10 at Glasgow, Hugh Morton M D Glas F R F P S

RUDOLF —On Nov 2 in Toronto Robert Dawson Rudolf, C B M D Edin , F R C P

SOUTH —On Dec 7 at Banbridge N Ireland Frank Montag Wilson South, M R C S , of Peckham

Appointments

CAMERON, DONALD, M B Edin examining factory surgeon f Plymouth East

CLEVELAND, A J , M D Lond , F R C P medical referee f Downham Market East Dereham Fakenham, Holt, Kin Lynn North Walsham, Norwich, Swaffham, Thetford a Wymondham

LLOYD, ALEXANDRA, M B Glasg examining factory surgeon f Stewarton Ayr

MCCLATCHEY, S J , M B Belf , D P H temp asst M O H f Kent

WILLIAMS MARJORIE M B Birm temp asst M O (matern and child welfare) for Northampton

The fact that goods made of raw materials in sho supply owing to war conditions are advertised in th paper should not be taken as an indication that they a necessarily available for export

Notes, Comments and Abstracts

THE STUDENT ON HIS STATE

e British Medical Students Association which is only national organisation claiming to represent al students and has the status of a faculty com- s of the National Union of Students has been d by the Medical Planning Commission to draw up morandum on the reform of the medical curriculum der that opinion may be as nearly unanimous as ible when the memorandum is drafted the B M S A est that special committees should be set up in the rent medical schools to organise wide discussion and l in reports To make this easier the B M S A e drawn up an outline,[1] summarised here, of some of points which it is hoped to cover

he *emphasis, in medical education should be on the* enance of health and the prevention of disease rather r on cure No suitable student should be debarred from heme for financial reasons, and all medical schools should open equally to men and women A state medical mination might replace the varying examination standards existing More full-time salaried teachers should be pointed Vacations for students might be reduced in the clinical years, but should be at least six weeks annually ring the clinical years

The premedical course should provide a broad scientific *Thus* biology should be taught as a general study of e rather than as a detailed study of a few forms representing ended ends of evolution chemistry and physics should taught with more emphasis on general principles, and the rse might be widened to include the elements of sociology nthropology and genetics In the preclinical years there hould be more emphasis on scientific and experimental ed the teaching of anatomy and physiology should be rdinated, and there should be more attention to the developmental approach and to surface anatomy clinical cases should be used to illustrate anatomical and physiological principles

During the clinical years the teaching of hygiene should be incorporated in a fuller course on preventive medicine, and hological medicine should be taught more thoroughly A course in general pathology should be completed by the end of the first three months of clinical work Clinical instruction should be organised for small groups rather than large classes, and the basic teaching should be in the form of tutorial If attendance at them is compulsory, means must be devised to ensure that the standard of formal lectures is maintained The value of the clinical material in hospitals under the sector and regional schemes is appreciated, and the aim after the war should be to extend still further the number of hospitals in which experience can be gained Finally, a hospital education is not felt to be enough; students should get experience of general practice either by a system of apprenticeship to selected general practitioners or by a dispensary system similar to that in operation at some Scottish medical schools

The B M S A suggest that members of the various medical schools besides sending in additions to or criticisms of the outline should review the system of education at their own schools, indicating the hours spent at lectures and ward rounds in the wards and in the outpatient departments and giving their experience of the value of work in base and evacuation hospitals; and should send in a detailed account of the reforms they would like to see in their own schools

THE DIABETIC FRONT

THE diabetic clinic of University College Hospital has published a handbook giving its war-time diets and instructions for diabetic patients (Diabetes in Wartime London H K Lewis and Co 1s) Prof H P Himsworth's hand is evident in the book although his name does not appear The booklet sets out the rules of the Food Ministry dealing with extra and substitute rations for diabetics and gives practical advice on special identity cards and discs precautions against shortage of insulin and interruption of routine by air-raids evacuation and the like The usual advice to send for medical help promptly when a diabetic develops a complicating illness is emphasised and the patient is told what to do about food and insulin if the doctor is delayed The diets are adapted to the present rationing scheme and range by steps of 250 calories from 1500 to 2500 calories Two skeleton diets are given at each level and a substantial list of alternatives is added at the end The content of these diets in calcium and vitamins A B_1 and C is well above the accepted standard requirements A 1000-calorie diet for use during recovery from coma and another for the temporary invalid or convalescent are also included The book ends with half a dozen recipes for puddings and a ruled sheet on which the patient can keep notes of his diet insulin dosage and weight There is only one criticism the diets aim at a high standard of precision in weighing and no alternative household measures are given for those patients who cannot be expected to weigh ' an extra ¼ oz bread and an extra ⅛ oz butter "

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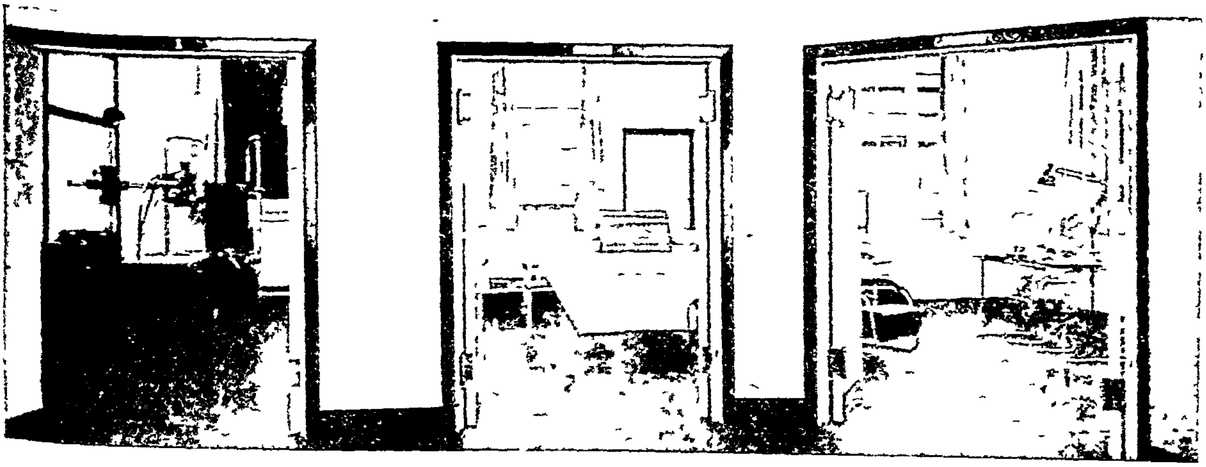
[1] Students and Medical Education 2*d* Copies may be obtained from the hon secretary, B M S A., 3 King s Parade Cambridge

THE AUSTIN MEDICAL DEPARTMENT



The new resuscitation and treatment rooms opened by Sir David Munro at the Austin works Birmingham on Dec 3 The new department also contains treatment rooms for men and women a bathroom an examination room a consulting room, a laboratory doctors' rooms and an office for clerical staff and record filing, it is staffed by three doctors and a nurse with experience of radiography, and serves the 25 000–30 000 workers employed The medical officers will investigate health problems and occupational illness give immediate treatment for major and minor injuries and illness, undertake medical examinations, grade a man s work to his capacity after sickness, and supervise the nurses in charge of ambulance rooms throughout the works

HOW IT WAS DONE

NINE-TENTHS of general practice today is the care of panel patients and their dependants, but in a pleasant chatty book[1] Dr E A Barton recalls the conduct of medicine in the spacious manner now passing away—of general practice limited to the well-to-do in an exclusive neighbourhood Perhaps this is the very reason why it makes such good reading either for the doctor or the layman we rub elbows with great men and women of the past and we are not introduced to any social problems of the present That Dr Barton is a man of great age is evident, he was a fellow student of Rose Bradford and he once went to a dance in Hampton Court seated on the knees of his aunt in a sedan chair But his chapter on quacks will be of value to the contemporary layman, and that on medical etiquette to the medical profession And in connexion with etiquette he tells a story—proving that though medicine and practice alter human nature remains the same—about a man of highly strung neurotic temperament who explained with pantomime that he endured the agonies of the damned in the abdomen "His appetite was excellent he snored like a trombone—so his suffering wife told me—eight hours every night without turning but he suffered intensely There was nothing very much wrong with him physically but when a man is so ill as to think that he is ill when he is not ill then he is very ill" This man Dr Barton saved, not from the abdominal surgeon but from an abdominal physician a Dr X who saw nothing but duodenal ulcer in every stomach-ache for twenty years after this incident to the time of his death the patient "ate and drank anything, slept like the dead but suffered intensely if anybody asked after his pains" But then Dr Barton belongs to the days when it was considered the function of the doctor to protect not only the body, but also the pocket of his patient from the consultant who "conscientiously and seriously" thought as Dr X did With the development of investigations and operations not to mention psychotherapy the G P 's task is harder in this respect than it was forty years ago This book will make an excellent New Year present to a doctor, his relations acquaintances and patients

TEAM OF TWO

BREAST-FEEDING is admitted to be an important process whether from the viewpoint of nutrition or psychology The psycho analyst regards suckling as the child's first erotic experience and one which will leave traces later on his character and personality Dr Merell P Middlemore, whose work ceased with her untimely death, wrote her last book ("The Nursing Couple" London Hamish Hamilton Medical Books Pp 191 7s 6*d*) as an orthodox Freudian analyst, but its chief value may well lie in the detached observations of breast feeding which it records and in her original comments Careful observations of the behaviour of the suckling are scarce, as Dr Edward Glover points out in his foreword Dr Middlemore was fortunate in having the chance to carry out her study in the lying-in wards of a general hospital, and though this environment does not capture the atmosphere of the home it at least ensures that breast-feeding is conducted favourably from the nutritional point of view and thus cuts down psychological factors arising from faulty technique in feeding She watched an unselected group of mothers and infants during feeding, making no attempt at statistical study but recording clinical facts and found that there are trends in feeding behaviour which occur irrespective of the success or failure of the mother to give adequate nourishment She distinguished between satisfied and unsatisfied sucklings regarding as satisfied those who sucked steadily by the fourth day of life and took 2–3 oz at most feeds Those who were unsatisfied she grouped as "excited ineffective sucklings" and "inert sucklings", the inert group were further subdivided into the "simply inert" and the "irritably inert" Excited ineffective sucklings were fussy, either taking the nipple but failing to hold it or refusing it repeatedly for days, or changing their behaviour at every feed Sucklings who were simply inert were lazy from the start and failed to suck for some days irritably inert began actively but with many cap tricks and became drowsy after three or four showing a progressive distaste for the breast, which obviously failed to satisfy them Recovery from inertia might take place at a single satisfying f only gradually as the child began to take pleas feeding Dr Middlemore speculated on the cau irritable inertia, it might, of course derive f defect in the nervous arc of the sucking reflex, far more likely to develop from faulty conditio Clumsiness in putting the child to the breast or handling may associate sucking with discomfort in mind It is characteristic of this group of infants when they pass from the restless to the inert stage adopt a peculiar immobility which Dr Middle likened to the defensive immobility of some h animals it might she thought be an example of instinctive fear reaction—in this case fear of ro handling—used inappropriately, so that it worked the child's disadvantage Further analysis of her c and other studies on the same lines, may throw as m light on feeding difficulties as on mental and psych logical development

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LANCET CROSSWORD

1B	I	2S	E	3C	T	4S	▨	5A	C	6O	N	7I	T	8[illegible]
R	▨	A	▨	O	▨	T	▨	P	▨	U	▨	M	▨	R
9E	N	C	E	P	H	A	L	O	G	R	A	P	H	Y
A	▨	C	▨	L	▨	R	▨	S	▨	S	▨	E	▨	T
10S	O	H	O	▨	11A	M	B	I	T	▨	12I	N	C	H
T	▨	A	▨	13M	▨	H	▨	T	▨	14P	▨	E	▨	R
15J	U	R	G	E	C	N	▨	16A	B	L	A	T	I	O
▨	▨	O	▨	A	▨	▨	▨	▨	▨	E	▨	R	▨	▨
17A	L	M	O	N	E	18R	▨	19A	D	A	M	A	N	20T
M	▨	Y	▨	S	▨	E	▨	B	▨	T	▨	B	▨	O
21O	U	C	H	▨	22S	N	O	R	E	▨	23S	L	A	P
E	▨	O	▨	24I	▨	E	▨	A	▨	25T	▨	E	▨	P
26B	A	S	E	D	O	W	S	D	I	S	E	A	S	E
I	▨	I	▨	E	▨	E	▨	E	▨	A	▨	I	▨	R
27C	U	S	T	A	R	D	▨	28D	E	F	O	R	M	S

ACROSS

1 What the cell does during mitosis (7)
5 Deadly ace on it (7)
9 Does it show the mind at work? (15)
10 Where you are fed up by the Italians (4)
11 It takes a horse to make the opening move (5)
12 Give one and lose 45 (4)
15 The Man Behind the Lancet (7)
16 Oil a bat and show detachment (7)
17 Looks after lame ducks and is no lamer herself (7)
19 This is hard—as the man said who found it in his pants (7)
21 A hundred more would make a bed for a consulting room (7)
22 South of a Thames anchorage heard in the shelter (5)
23 Beheaded, where the boss put the typist the whole, the result (4)
26 Teutonic version of a funereal diagnosis (two words 8 7)
27 'Eggs and Milk? Sauce!' said Lord Woolton (7)
28 'F' morsed disfigures (7)

DOWN

1 Home dames (7)
2 Yeast in the wrong plac (15)
3 A vestment helps one to contend (4)
4 Old Moore or Orion? (Two words 4 3)
5 The very reverse of poly dipsia (7)
6 Be with the French (4)
7 Wrapped in an — — of mystery, like the hero of an old melodrama (Two words 12 3)
8 Red head for blast (7)
13 This — averages to the statistician and — income to the economist, but it just — — to me (5)
14 Physical training round the field brings all into the fold (5)
17 This movement is achieved by putting a false foot fore most (7)
18 New breaks the rush (7)
19 Was the candidate who just scraped through? (7)
20 Victorian physicians who were wore (7)
24 Add it to your list for a dreamer (4)
25 Back quickly (4)

The solution of the crossword will be given next week

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[1] A Doctor Remembers E A Barton M R C S London Seeley, Service and Co Pp 287 12*s* 6*d*

ORIGINAL ARTICLES

BACTERIAL CONTAMINATION OF CEREBROSPINAL FLUID

WILSON SMITH
D DIP BACT. MANC
ESSOR OF BACTERIOLOGY,
IVERSITY OF SHEFFIELD

MURIEL M. SMITH *
M.A. CAMB

SERIES of cases of meningitis in patients who had n subjected to spinal anæsthesia in the Sheffield ral Hospital was reported by Barrie[1]. Routine eriological examinations of the cerebrospinal fluids de throughout the epidemic had proved negative ept for three colonies of a gram-negative bacillus on e plate and towards the end of the series one of us was ed to investigate the condition. In a note contributed Barrie's paper we reported that circumstantial evince indicated a cold-water filter of the Berkefeld type the probable source of infection. This filter supplied ter in which the lumbar-puncture needles which had en previously sterilised by treatment with formaldeyde were rinsed before being used. The repeated olation of a small actively motile gram-negative acillus from samples of the water proved that the filter as faulty. The isolated organism was completely on pathogenic for laboratory animals; furthermore glutination tests with the sera of convalescent patients iled to yield any evidence that it was ætiologically lated to the outbreak of meningitis. Nevertheless no rther cases occurred after the filter had been put out of mmission.

We were able to obtain samples of cerebrospinal fluid from only two of the later cases. At the time attempts to isolate an organism from them by both cultural and animal inoculation methods were unsuccessful. A spare portion of one of the specimens however was stored in the ice chest at about 4° C and 16 days later was found to be slightly turbid from bacterial growth. Whether this organism was the causal agent in the series of meningitis cases could not be determined largely because of its extreme instability in suspension which made satisfactory serological tests with convalescent sera impossible. The facts that it failed to grow on all the usual laboratory media except peptone water and peptone-water agar and that temperatures above 30° C completely inhibited its growth, make it much more likely that it was merely an accidental contaminant. Further study left no room for doubt that it was a water organism originally derived from the filtered water used for rinsing the lumbar-puncture needles. While not identical with the bacillus repeatedly isolated from the water it was a closely related strain or species possessing similar morphological and cultural characters and showing some degree of serological relationship. Both organisms were small actively motile gram-negative cocco-bacilli in young peptone-water cultures; they became non-motile and extremely pleomorphic in old cultures, they fermented none of the usual carbohydrates reduced nitrates to nitrites and failed to produce indole. They could not be identified with any established species.

On inquiry we learnt that the practice of rinsing needles in sterilised water either to cool them quickly or for some other purpose is common in many hospitals. The results of the investigation of Barrie's cases indicated that this practice may not only lead to contamination of cerebrospinal fluid at the time of collection but may even constitute a serious danger to the patient. The present investigation was planned in order to determine the frequency with which specimens of cerebrospinal fluid, sent to the laboratory for examination are contaminated with water-borne organisms which would be missed by the routine bacteriological methods usually relied on and to discover whether the presence of such organisms in cerebrospinal fluid is always attributable to the technique of lumbar puncture employed. It comprises the bacteriological examination of 223 cerebrospinal fluids and of a number of sterilised waters in current use at several different hospitals. Finally a few cerebrospinal fluids were examined which had been specially collected by techniques designed to avoid any possibility of contamination.

EXAMINATION OF CEREBROSPINAL FLUIDS

Methods.—Cultures were made from all specimens of cerebrospinal fluid received at the laboratory irrespective of the purpose for which they had been submitted. Quantities varying from 4 to 15 drops, according to the amount available, were seeded into duplicate tubes of Witte peptone water one of which was kept at room temperature and the other at 37° C for 7 days. If either tube showed any opalescence or other sign of bacterial growth within this period stained films and dark ground preparations were examined and subcultures made on fresh peptone water digest broth, agar and blood-agar plates. The organisms isolated were investigated sufficiently to place them in one of the groups listed in table II; in many cases definite species identification was simple. No attempt was made to duplicate the tests carried out in the routine department. After sufficient fluid for the peptone-water cultures had been withdrawn specimens were passed on to that department for the examinations required by the clinicians; thus fluids sent in for Wassermann reaction or chemical tests only received no further cultural examination while those submitted for bacteriological diagnosis were cultured on agar and blood-agar plates and the remaining portion of fluid incubated, all at 37° C and for not longer than 48 or 72 hours. It was no part of our intention to obtain the maximum percentage of positive cultures of all types of organisms by the employment of special culture media or improvements on the routine technique.

Results.—The results obtained by prolonged cultivation in peptone water at both room temperature and 37° C are summarised and compared with those yielded by the routine tests in table I. While 154 specimens were examined by both methods an additional 69 were cultured in peptone water only. These latter were sent to the laboratory for Wassermann reaction or chemical tests only and were presumably from patients without signs of bacterial infection; their inclusion therefore weighted the chances of yielding positive cultures against the peptone water (P.W.) group in favour of the routine group. Nevertheless the percentages of C.S.F.s giving growth of organisms in the two groups showed no significant difference—43% in the P.W. group against 37% in the routine group. This was so in spite of the fact that meningococci or pneumococci were isolated by peptone-water cultures from only 8 of the 42 specimens which were shown by routine culture to contain these pathogens. If the organisms that were responsible for disease in the C.S.F. donors are excluded from consideration the value of the P.W. technique is strikingly illustrated, 39.9% of fluids giving positive peptone-water cultures as compared with 9.7% giving positive routine cultures. There are several obvious reasons for this difference. The amount of cerebrospinal fluid inoculated into the peptone-water tubes was usually much greater

TABLE I—ISOLATION OF ORGANISMS FROM CEREBROSPINAL FLUIDS

Cerebrospinal fluids	Peptone water culture	Routine culture at 37° C
	No and %	No and %
Total examined	223*	154
Growth at—		
37° C only	30	—
RT only	15	
RT and 37° C	52	
Total giving growth	97 (43.5)	57 (37)
Organisms isolated—		
Pathogenic	8 (3.6)	42 (27.3)
Contaminant	89 (39.9)	15 (9.7)
Sterile	126 (56.5)	97 (63)
One species only isolated	89 (39.9)	54 (35.1)
More than one	8 (3.6)	3 (1.9)

* These included the 154 specimens also examined by routine culture. RT = Room temperature

than the amount spread over routine plates and P W cultures were incubated for 6–7 days instead of the routine 2–3 days Moreover, it will be seen from table I that 15 specimens of C S F contained bacteria which grew out in culture at room temperature but failed to grow at 37° C It should be added that many more specimens contained organisms which preferred the lower temperature though capable of multiplying to some extent also at 37° C The majority of contaminated C S F s contained only one bacterial species but a few contained two or even three different species

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* Working with part time grant from Medical Research Council.

[1] Barrie, H. J. *Lancet*, 1941, 1, 242.

TABLE II—TYPES OF ORGANISMS ISOLATED FROM CEREBROSPINAL FLUIDS

Contaminant	PW culture at RT and 37° C No (223) and %	Routine culture at 37° C only No (154) and %
Water organisms—		
Unidentified species	23 } (14 8)	0
Ps fluorescens	10 }	0
Staph albus	33 (14 8)	8 (5 2)
Sarcinæ and *Micrococcus tetragenus*	9 (4)	1
Non hæmolytic streptococci	4	1
Coliform organisms	11 (4 9)	4 (2 6)
Sporing aerobes	3	5
Proteus vulgaris	1	0
Diphtheroids	0	1
Yeast	1	0
Meningococci and pneumococci	8 (3 6)	42 (27 3)
Nil (specimens sterile)	126 (56 5)	97 (63)

PW = peptone water

Table II shows the different types of organism isolated The most striking feature is the frequency with which those organisms considered to be water-borne were isolated by P W culture (14 8%) and the complete failure of routine culture methods to reveal the presence of contaminants of this nature in any single instance The water-borne organisms included *Pseudomonas fluorescens* and unidentified species belonging to that genus and to the groups *Chromobacterium* and *Achromobacterium* Many of them showed some degree of serological relationship by cross-agglutination tests although quite distinct in their morphological and cultural characteristics Three species were by normal human sera to a titre of about 1 in 20, sera tested all gave the same result

Apart from the water organisms the contaminants were *Staphylococcus albus* (derived sumably from the skin of either patient or coliform bacilli and micrococci Somewhat to surprise these species also were isolated from a proportion of fluids by P W culture than by culture

EXAMINATION OF HOSPITAL "STERILE" WATERS

On inquiry at four hospitals in and around we learnt that in each of them cold sterilised water used for rinsing spinal-puncture needles before the operation Different methods of sterilisation were employed, not only in the different hospitals but in different units of the same hospital, technique adopted in each case being traditional some instances the job was carried out in the wards the nursing staff, in others by the hospital laboratory technician in yet others by the dispensary pharmacist In no unit was the destruction of all possible contaminants, including resistant spores, ensured by the method of autoclaving the water at increased pressure Water once treated and labelled "sterile" was considered to be sterile until the bottle was empty, no matter how many withdrawals had been made or what time had elapsed since it had been first put into commission In several cases the time interval between sterilisation and collection of our sample could not be ascertained, 7 days was the longest recorded

Eleven samples were obtained, each being collected with a sterile pipette into a sterile test-tube and transported immediately to our laboratory for culture The technique of peptone-water culture and subsequent investigation was the same as that used for the cerebrospinal fluids The results obtained are summarised table III Six samples were found to be contaminated the other five were apparently sterile though it is possible that some of them would have given growths had a variety of culture media been used Contaminated specimens were obtained from all four hospitals In hospital A, six specimens were taken from different blocks and two of them were found to be contaminated It is significant that in each of these two cases a special note was made at the time of sampling that the bottle was already half empty

TABLE III—ISOLATION OF ORGANISMS FROM HOSPITAL STERILISED WATERS

Specimen	Hospital	Growth	Characteristics of isolated organisms									Water sterilisation methods
			Shape	Gram	Motility	Sugars	Indole	Litmus milk	Pigment	37° C	RT	
1	A Block 1	–										Bottle kept for 3 hr in bath of boiling water Samples taken 3½ hr after sterilisation
2	A Block 3	+	CB	–	+	–	–	NC	–	+	++	Winchester in bath of boiling water Most of contents already used at time of sampling 7 days after sterilisation
3	A Block 4	–										Bottle kept for 1¼ hr in bath of boiling water Samples taken 2 days after sterilisation
4	A Block 9	+	CB	–	+	–	–	NC	Yellow	–	+	Winchester in bath of boiling water Half contents already used at time of sampling 2 days after sterilisation
5	A Block 9	–										Winchester in bath of boiling water Unused before sampling 5 hrs after sterilisation
6	A Cas dept	–										Water filtered then heated in steriliser to 200° C Sample taken direct from steriliser
7	B Ward 1	+	CB R	– –	+ –	– –	– –	NC Alk	– Orange	+ ++	++ +	Tap water boiled in kettle for 5 min, then poured into a sterilised bottle Bottle about half full when sampled
8	B Ward 2	+	CB	–	+	–	–	NC	–	+	++	Ditto
9	C	+	R	–	–	–	–	Alk	–	++	+	Autoclaved Winchester filled direct from a Stokes still Bottle almost empty at time of sampling
10	D	–										Jug sterilised in a boiler for 20 min then filled from kettle and covered with jaconette Full at time of sampling
11	D	+	R	–	+	–	–	Alk	–	+	+	Glass stoppered pot sterilised in boiler for 20 min and filled from kettle Half contents used at time of sampling 24 hr after sterilisation

CB = cocco bacillary R = rod shaped, NC = no change, Alk = production of alkali

TABLE IV—BACTERIOLOGICAL EXAMINATION OF SPECIALLY COLLECTED CEREBROSPINAL FLUIDS

[illegible]	Hospital	Result of culture	Technique of C S F collection
1	A	Sterile	Needle and syringe autoclaved in plugged test tube Rubber gloves and mask worn by operator Patient's skin washed with soap and water swabbed with spirit and painted with 10% aqueous iodine Local anæsthetic (2% procaine) injected with autoclaved needle and syringe
2			
3		Growth +, diphtheroid	
4	"	Sterile	
5	"	"	
6	"	"	
7	B	Growth +, 2 different organisms identical with species isolated from sterilised water (no 7, table III)	Routine technique Needle rinsed in sterilised water (no 7, table III) before use
[illegible]	C	Growth + organism identical with that isolated from sterilised water (no 9, table III)	Needle kept in spirit, rinsed in sterilised water (no 9 table III) before use
9		Sterile	Lumbar puncture performed in operating theatre with full aseptic precautions Local anæsthetic given Needles and syringes sterilised by boiling at time of operation
10	"		
11	"		
12	"		

All the organisms isolated were similar to some of those obtained from routine cerebrospinal fluids They were all gram-negative bacilli or cocco-bacilli indole-negative and fermenting no sugars, but they showed differences in respect of morphology motility production of alkali in litmus milk and formation of pigment Direct proof of the transference of such bacteria from water to C S F at the time of spinal puncture is afforded by the results from waters nos 7 and 9 (table III) and C S F s nos 7 and 8 (table IV) These C S F s were collected through needles which had been rinsed in the respective waters and identical organisms were isolated from the corresponding specimens In the case of water 7 and C S F 7 each specimen contained the same two quite different species

EXAMINATION OF SPECIALLY COLLECTED CEREBROSPINAL FLUIDS

Of the 89 routine C S F specimens contaminated with non pathogenic bacteria, rather more than a third contained water-borne organisms and rather less than two-thirds organisms which were mostly derived from skin and clothing (tables I and II) It is clear therefore that the technique of C S F collection in general and hospital practice is unsatisfactory quite apart from the use of so-called sterile water A small number of specially collected specimens was examined to convince ourselves that sterile fluids can be obtained provided just a little extra trouble is taken They were supplied from hospitals which had previously sent full quotas of contaminated C S F s to the laboratory for bacteriological diagnosis The special precautions adopted and the results of peptone-water culture are given in table IV Two of the specimens (nos 7 and 8) have already been discussed they were collected by the old technique and examined in parallel with the waters (nos 7 and 9 table III) used to rinse the puncture needles From them the water contaminants were readily isolated Apart from these one fluid only out of ten gave bacterial growth, the organism being a diphtheroid probably of skin derivation The use of boiled or autoclaved needles and syringes led therefore, as was expected, to the complete elimination of water contaminants and the application of reasonable standards of cleanliness prevented other contamination except in one instance

COMMENT

It is clear that spinal puncture is performed in many hospitals and presumably in private practice also, in light-hearted fashion without the ordinary measures of asepsis which patients and laboratory workers have the right to expect It is probable that this bad practice leads, as a rule, to nothing more serious than the contamination of specimens withdrawn for laboratory tests but the possibility of operative infection of the meninges is obvious This danger is of course, greatly increased when material such as anæsthetic fluid is injected into the spinal canal

The practice of using previously sterilised or filtered water for rinsing syringes and needles cannot be too strongly condemned, for it is entirely unnecessary and the contamination of stock water bottles appears to be the rule rather than the exception The contaminants are mostly species which are usually considered non-pathogenic, but the outbreak of meningitis reported by Barrie strongly suggests that potential pathogens may sometimes be present. The possibility of the transference of infective viruses like the virus of lymphocytic choriomeningitis in filtered water though remote also merits consideration The adoption of simple boiling, or better still either oven sterilisation or autoclaving in plugged test-tubes for the sterilisation of needles and syringes would at once reduce the number of contaminations by over a third and eliminate one of the chief sources of potential infection

SUMMARY

Of 223 unselected specimens of cerebrospinal fluid 89, or 39 9%, were shown to be contaminated with non-pathogenic organisms by cultivation in simple peptone water at both room temperature and 37° C Bacteriological examinations of 154 of the same specimens by routine methods revealed contaminants in only 15 or 9 7%

The peptone-water technique was superior to routine culture for the isolation of almost all types of non-pathogenic bacteria and was essential for the demonstration of water organisms which accounted for 37% of the contaminants

Many sterilised waters used in different hospitals for rinsing spinal puncture needles and syringes were found to be contaminated.

Direct evidence was obtained that bacteria may be transferred from such water to cerebrospinal fluid at the time of operation

Of 10 cerebrospinal fluids collected with reasonable aseptic precautions 9 were bacteriologically sterile and 1 was contaminated with a diphtheroid

We are indebted to Mr J Hardman, Dr K. J G Milne and Dr H J Barrie for their help in the collection of material

TREATMENT OF AIR-RAID CASUALTIES [*]

JOHN A SHEPHERD M D ST AND F R C S E
SURGEON LIEUT COMMANDER R N V R

THE publication of every experience in the reception and treatment of air-raid casualties is of great importance It is by the pooling and collection of all results and even impressions, that many gaps in our knowledge will be filled At a Service hospital there has been a special opportunity for testing planned resuscitation and operative schemes

RECEPTION AND RESUSCITATION

It was found best to admit patients into resuscitation wards irrespective of their condition and then filter them through into the operating-theatres or other wards Patients who were obviously severely wounded were placed in beds on one side of the ward so that they could be examined first When the first resuscitation ward was full admission was diverted to the second The patients were placed between warmed blankets and the clothing completely taken off in every case It was found that delay in taking off clothing results in important injuries being missed, and the thick often damp clothing cannot be penetrated adequately even by heat from shock cages Only one examining team was utilised to prevent overlap and confusion and they moved round the ward methodically examining the cases in strict rotation A list for operation was made at an early stage and this enabled the operating-tables to be fed within an hour of receipt than the amount spread over routine plates and P W cultures were incubated for 6–7 days instead of the routine 2–3 days Moreover, it will be seen from table I that 15 specimens of C S F contained bacteria which grew out in culture at room temperature but failed to grow at 37° C It should be added that many more specimens contained organisms which preferred the lower temperature though capable of multiplying to some extent also at 37° C The majority of contaminated C S F s contained only one bacterial species but a few contained two or even three different species

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[*] A more detailed account of these casualties appeared in the *Journal of the Royal Naval Medical Service* for October 1941 p 330

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On inquiry at four hospitals in and around Sheffiel we learnt that in each of them cold sterilised water wa used for rinsing spinal-puncture needles immediatel before the operation Different methods of wate sterilisation were employed, not only in the differen hospitals but in different units of the same hospital, th technique adopted in each case being traditional I some instances the job was carried out in the wards b the nursing staff, in others by the hospital laborator technician in yet others by the dispensary pharmacist In no unit was the destruction of all possible contaminants, including resistant spores, ensured by the metho of autoclaving the water at increased pressure Wate once treated and labelled "sterile" was considered to b sterile until the bottle was empty, no matter how man withdrawals had been made or what time had elapsed since it had been first put into commission In several cases the time interval between sterilisation and collection of our sample could not be ascertained, 7 days was the longest recorded

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CB = cocco bacillary, R = rod shaped, NC = no change, Alk = production of alkali which an acute Volkmann's ischæmic contracture, with all the typical signs developed 12 hours later The brachial artery was explored and found to be contracted to a diameter of about ⅙ in in its entire extent An arterial sympathectomy and excision of an arterial segment failed to relieve the arterial spasm Both legs had to be amputated for crush injuries in this case and the patient collapsed and died shortly after the operation

Simple fractures —These 34 cases (14% of the total) illustrate the great importance of a specialised knowledge of the treatment of fractures in air-raid cases The upper and lower limbs received an equal proportion of injuries A patient with a dislocation of both hip-joints and multiple pelvic fractures was admitted with severe shock (systolic blood-pressure unrecordable) after a heavy mass of concrete had fallen on his sacral region while he was bending down After resuscitation with 3 pints of plasma and early skeletal traction through the tibial crest he recovered

Burns —With certain exceptions burns were treated successfully with tannic acid 5% and silver nitrate 10% This produces a rapid coagulum, an important point when many cases have to be treated Certain areas were never tanned—the eyelids, lips, genitalia ears and fingers Burns of the fingers were treated on light plaster splints in the position of function with Ambrine wax applied on strips of gauze This method has given excellent healing and good functional results where the initial injury was not too severe The bad results attributed to tanning methods are more likely due to the initial damage by the burn The ambrine wax method is, however, much more comfortable, and indeed has been applied to other areas

Eye injuries —There were only 4 cases of eye injury and in 2 of these the damage was due to metallic splinters, for which the affected eyes had to be removed Multiple fine corneal foreign bodies and corneal abrasions accounted for the other 2 cases

Minor and unclassified injuries —There were 71 cases of minor injury (29% of the total), most of them having minor lacerations sprains or slight shock Many required X-ray examination In the unclassified list are included 16 patients (7% of the total), several of whom had multiple injuries or had been buried for some time There were 2 who developed all the signs of a crush-syndrome lesion of the lower limb and recovered, and 4 cases of blast lung, 2 of which were diagnosed by X ray A stout bronchitic man, with no other lesion except a fractured radius, died after a hæmoptysis which suggested a blast lesion Included in this unclassified list are 3 patients with multiple bone injuries to the trunk who died shortly after admission

There were 2 cases of spinal-canal injury Both were explored and the missiles removed The one recovered fully but in the other there was damage to the cord with paraplegia

COMMENT

Antitetanic serum was given as a routine in all wounds including burns; no case of tetanus occurred Patients with muscle damage were given 8000 units of anti gas gangrene serum No definite conclusions have been reached on the practical value of chemotherapy either generally or locally During actual convalescence, after the study of a number of blood-counts in a series of cases, it was found that fresh blood-transfusion is of great value in the post-operative period The importance of close observation of urinary output and renal efficiency must be particularly stressed to the nursing staff especially in amputation cases and crush injuries Post mortem examinations wherever possible are desirable, but owing to administrative difficulties in obtaining the necessary permission much material is being lost

SUMMARY

In a series of 245 air-raid casualties the mortality was 10% The use of intensive resuscitation measures was shown to be fully justified in severe cases of injury, and a planned system of resuscitation and treatment is advocated

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Dr Herbert Spencer who left an estate of £46,000, bequeathed £3000 to University College Hospital, £3000 to the Medical Society of London, and a residue to the Royal Medical Benevolent Fund

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VITAMIN A AND DARK-ADAPTATION
EFFECT OF ALCOHOL, BENZEDRINE AND VITAMIN C

SIMON YUDKIN, M B LOND, M R C P
FLIGHT LIEUTENANT, R A F V R
(*Department of Chemical Pathology, University College Hospital Medical School*)

THE relation between vitamin A and dark-adaptation depends on three known facts First, vitamin A is a constituent part of the photosensitive pigment of the rods and possibly also of the cones (Wald 1935, Hecht 1940) Secondly most cases of night-blindness are cured with vitamin A (Hecht and Mandelbaum 1939, Lewis and Haig 1940, Edmund and Clemmesen 1936) Thirdly, night-blindness can be produced by feeding on a diet deficient in vitamin A (Wald et al 1938, Booher et al 1939) All relevant investigations are based on one or more of these facts Many of the workers who have argued as to their truth have used inaccurate methods of testing dark-adaptation, either of the "recovery-time" type or a similar method (see Dow and Steven 1941 for detailed criticism of these methods) The present study was undertaken in the hope of throwing further light on some aspects of the subject

Methods —Dark adaptation was measured by the apparatus and method described by Yudkin (1941a) The initial part of the curve was obtained by using no neutral screen for the first few minutes The vitamin A content of the blood was estimated by the method described earlier (Yudkin 1941b)

The significance of changes in the dark-adaptation curve and the blood vitamin A following any treatment must be considered in the light of their normal variation

The final rod threshold tested as described on any one subject varied by about 0 2 log unit from day to day, by about 0 1 log unit in a shorter period of a few hours and hardly at all during an hour The cone threshold, owing partly to the absence of a "fixation spot" in the instrument, varied more than this—i e, about 0 3 log unit from day to day and about 0 2 log unit over a short period The rod-cone transition time varied up to about 2 min from day to day but less than 1 min on any one day These variations are not apparently related to fatigue or practice (personal observation) but may be related to changes in the blood-sugar (McFarland and Forbes 1940) Only differences greater than those described can be considered significant in any one case If, however, there are significant changes in several subjects after a particular treatment this increases the importance of smaller changes in other subjects if they are all in the same direction Also if several control tests have been made with any one individual, any change from these may be significant even if less than the normal range of variation It is worth noting that although the final rod threshold varies in any individual by 0 2 log unit, the total variation among normal people was found to be 0 3 log unit (for definition of "normal" see Yudkin 1941a) It is possible, therefore, for the values for the final rod threshold of an individual to lie in the upper part of the normal (total) range of variation and yet show a significant lowering after vitamin-A therapy

The resting level of vitamin A in the blood varies by about ± 5% over periods of days or weeks, and it is not affected by food unless this is very rich in vitamin A These changes may be due to different degrees of adrenal cortical (Malmejac, Chevallier and Choron 1935) or medullary (Thiele and Guzinski 1940) stimulation

These variations in blood vitamin A and dark-adaptation are quite independent and may be in opposite directions, so that a lower level of blood vitamin A may be associated with a better dark-adaptation curve and vice versa

EFFECT OF VITAMIN A ON SUBJECTS WITH POOR DARK-ADAPTATION

Effect of a single dose —Single doses of about 100,000 I U of vitamin-A alcohol in gelatin capsules containing 25 000 I U each were given on an empty stomach The effect on the dark-adaptation curve was followed during the next 24–36 hours or longer if the effect was prolonged, food being taken after 3 hours The dark-adaptation was measured at 1, 4, 7, 10 and 24 of the casualties. This operating list was of course subject to frequent revision, but unless it was begun early it was inevitable that it would prove difficult to deal with patients in the "safe period." We were impressed with the necessity for examining the whole body from top to toe and it was astonishing how small but serious wounds could otherwise be missed. The best and simplest method of recording injuries was under anatomical regional headings such as head, arms, chest, abdomen, legs and spine.

The average degree of shock encountered in air-raid casualties far exceeded that seen in the casualties of civil life. The nature of the injuries and the state of the blood-pressure were the best signs of its gravity. Early rapid resuscitative measures were strongly advisable. Severe shock had to be tackled whole-heartedly. Besides heat, elevation of the foot of the bed on 18 in blocks, and intravenous therapy with blood, plasma or reconstituted serum in large doses were necessary. A cannula was always inserted into a vein in cases requiring intensive anti-shock treatment over a long period.

Seriously shocked cases must be given plasma in quantity and given it quickly. It should be possible to run in two pints of plasma in 20 minutes and further quantities up to six pints at rather slower rates as the patient's condition improves. The blood-pressure is usually the best guide to the success or otherwise of plasma- or blood-transfusions. If the systolic pressure does not rise with three pints given quickly it is unlikely that the patient will recover. Patients have been seen with systolic pressures below 50 mm Hg and have improved at the rate of 10 mm Hg for each pint of plasma or blood given. It is useful to maintain a sphygmomanometer cuff on the patient's arm throughout treatment and easy to train the ward staff to take the systolic pressure accurately. In certain cases admitted early after injury the blood-pressure was either maintained or raised for a variable period. In such cases the type and degree of injury led one to suspect that a fall was imminent and this could be prevented if plasma was given to compensate for the fall in circulating blood-volume. Oxygen therapy with the B L B mask was frequently used and with obvious immediate improvement in colour, pulse, and depth of respirations. If the patient did not tolerate the mask it usually meant that he did not require oxygen. Many patients asked for it to be reapplied if it was removed. Instruction in the use of the mask had been part of the regular training of the ward staff. Among other adjuncts to the treatment of wound shock are the intelligent temporary splinting of fractures especially those of the femur, the utilisation of early skeletal traction under local anæsthesia in the ward, and the local blocking of injured limbs with 1% procaine.

Resuscitation measures are only temporary in their effect in most of these cases. Where operation is delayed a patient may reach a peak of improvement and then relapse despite all further resuscitative measures. Patients must if possible be operated on when on the up grade. Approximately 70% of the cases given intense preliminary resuscitation survived operation.

CASES ANALYSED

	Total	Died
Head injuries	35	4
Chest injuries	3	2
Abdominal injuries	8	8
Compound fractures	22	5
Simple fractures	34	0
Bomb splinter wounds of soft tissue	37	0
Laceration of soft tissues	7	0
Burns	8	0
Eye injuries	4	1
Minor injuries	71	0
Unclassified	16	4
Total	245	24

A consecutive series of 245 air-raid casualties aged 20–50 years, most of whom had previously been healthy, are analysed here. Nearly all were admitted within 1–3 hours of the injuries and all patients admitted alive into the reception wards are included. The death-rates have been calculated up to a period of a week from t day of injury. The total fatality-rate was 10%.

Head injuries include scalp lacerations, concussion a closed or compound fractures of the skull. Altogeth there were 35 cases (14% of all cases), 9 being sca injuries and 12 suffering from concussion. The fatalit rate was 11%. The diagnosis of these head injuries w simple in some cases but in many with other multip severe injuries the degree of shock made it difficult assess the cerebral lesion. Accurate neurological e amination was often impossible in the early stages examination. It was made the rule to take every sca laceration to the theatre for thorough exploration a toilet of the wound. Most of the compound injuri of the skull were due to falling debris, and it should more widely realised that steel helmets are as usef indoors as out. There were 8 cases of compou depressed fracture of the skull and 6 were fit for oper tion, all of which recovered.

Abdominal injuries.—These made a depressing serie there were 8 cases (3% of the total), of which only reached the operating-table and all subsequently died 3 of these had hopeless lacerations of the abdomin contents and died immediately or soon after abdomin closure. In one case, where the liver had been injure by a bomb splinter the patient died a few days afte operation from a pneumonic infection and a sma subhepatic bile-stained abscess.

Chest injuries.—Of the 3 patients admitted with che injuries 2 were quite inoperable and died shortly afte admission. Both these patients had multiple bomb splinter penetrating wounds with other compound injuries. The one patient who was successfully operate on received a small bomb-splinter wound in his lef lower chest and the fragment actually lodged in the righ side of the chest. The only operative interference wa excision of the entry wound. He subsequently develope a hæmothorax on the right side which was treated b aspiration.

Compound limb injuries and soft-tissue lacerations.—These 65 cases made up 26% of the total. The value o the closed-plaster method was confirmed. Among it other advantages it enabled amputation cases and other to be rapidly transferred to base hospitals. This wa found to be particularly important from the patients point of view, for with the prospects of further nightly raids they were apt to be nervous or sleepless. The wounds were widely and thoroughly excised, sutures were avoided wherever possible and the wounds packed with Vaseline gauze. By adopting the pattern technique for plastering the limbs much time was saved. A hip spica could be applied in 8 minutes. All cases were examined radiologically before operation; in this way the presence of metal fragments was confirmed and their type and localisation noted, so that the scope of the operation required for excision of the track could be assessed. The small penetrating wounds of fascia with gross damage of underlying muscle were a real danger unless adequately treated. Complete plaster immobilisation was an essential in soft-tissue limb injuries as in compound fractures.

There were 36 cases (14% of all cases) of bomb splinter wounds of soft tissues, 15 of them involving either the buttock or thigh. The high incidence of such wounds is presumably due to the prominence of the buttocks when people throw themselves down for protection. There were no deaths in the soft-tissue injuries, which included 2 cases of severe local gas gangrene infections; these recovered after wide local drainage serum and early immobilisation in closed plaster. There were an additional 7 cases of lacerations due to glass. It was found safe to employ primary suture for these inside 12 hours.

There were 22 compound fractures of the limbs and 8 of these required amputations; 2 patients requiring upper-limb amputation recovered, but 4 out of the 6 patients whose lower limbs were amputated (2 double amputations) died. Subsequent renal failure, with a probable associated cerebral lesion, was responsible for 2 of these deaths. Of the remaining 14 compound fractures, including 4 of the femur, all recovered except one patient with aortic incompetence who collapsed and died suddenly 24 hours after the injury. Of special interest was a case of compound injury to the humerus within the normal range dark-adaptation and blood vitamin A may vary in opposite directions also shows that other factors must affect dark-adaptation Moreover congenital and hereditary night-blindness and certain diseases of the retina affect the dark-adaptation independently of vitamin A The only proof that any subject has poor dark-adaptation because of deficiency of vitamin A is the improvement of the dark-adaptation curve with vitamin-A therapy It is essential to use a stringent test such as that described if very deficient subjects are not to be missed, because of the transient effect of small doses on such subjects In practice, by far the commonest cause of a high threshold is deficiency of vitamin A and surveys of threshold values in a population show almost entirely differences in the state of nutrition in respect of this vitamin

Even when it is known however, that vitamin A can cure a case it is not known what part of the cycle of vitamin A metabolism is at fault Any of the stages between the diet and the conversion to the retinal pigment may be affected and any of these conditions might be cured by large doses of vitamin A Investigations into the different parts of this cycle are very sparse (see Patek and Haig 1939 Chevallier and Choron 1938, Thiele and Klodwig 1939 Lindquist 1938 May et al 1940)

The relation between the blood vitamin A and the degree of night-blindness is also complicated It is clear that since vitamin A can improve hemeralopia there must be some relationship between the vitamin A available to the retina and the curve of dark-adaptation From the results described here it is certain that there is no standard level of blood vitamin A which could be used as a test for deficiency instead of the "threshold lability" test On the other hand in any individual there does appear to be a critical level of blood vitamin A below which the final rod threshold is abnormal Below this level the lower the blood vitamin A the higher the rod threshold Raising the blood vitamin A above this level however does not improve the final rod threshold

It is not known whether the level of blood vitamin A bears any relationship to the reserves of the body, as found in the liver, or why there should be different normal levels of blood vitamin A in different people

The mechanism of the action of alcohol and benzedrine on dark-adaptation is obscure nor is it necessarily the same in both The effects are not related to the amount of subjective effect produced and in the case of benzedrine the general effects are maximal after the effect on dark-adaptation has worn off They are also not associated with changes in the blood vitamin A, in fact, they may produce an improvement beyond that possible with vitamin A and threshold values may be found considerably lower than those met with in even the best normal individuals The use of these drugs, and especially of alcohol, for improving dark-adaptation must be considered in the light of their other, more obvious, effects

SUMMARY

In a subject with night-blindness due to vitamin-A deficiency a single dose of the vitamin may produce no improvement, an improvement lasting a few hours, or one lasting several days or weeks

A severely deficient subject given repeated doses of vitamin A will show no response or a transient response at first and a more prolonged effect after further dosing

The dose of vitamin A required to produce prolonged improvement is usually between 300 000 and 2,000,000 I U This dose is not related to the initial degree of night blindness

In testing whether a case of night-blindness is due to deficiency of vitamin A possible transient responses must be borne in mind It is necessary to ensure (*a*) that the dose is adequate and (*b*) that the test is performed at a time when improvement is likely

There is no standard level of blood vitamin A which would indicate whether a subject is deficient in vitamin A or not

In any single individual there is a critical level of blood vitamin A Below this level, the lower the blood vitamin A the higher the final rod threshold

Alcohol and benzedrine both produce transient improvement in dark-adaptation without any corresponding rise in blood vitamin A The resulting improvement may be beyond that possible with vitamin A

Vitamin C has not been found to improve any subject tested even if originally deficient in this vitamin

I should like to thank Prof C R Harington for his encouragement and for the laboratory and other facilities, and Dr A G Spencer for his coöperation in some of the preliminary investigations

I am indebted to British Drug Houses Limited for generous supplies of vitamin-A alcohol and esters

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SIGNIFICANCE OF INTELLIGENCE IN SKIN CASES

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In a previous paper (Hodgson 1941) I showed that subnormal intelligence was very common among Army patients suffering from scabies During recent months the intelligence of 1002 patients attending a military dermatological clinic was tested by the R E C I matrices (Penrose and Raven 1936, Raven 1939), and allotted by a method previously described to one of the following grades (*a*) very inferior intelligence, (*b*) below average intelligence (*c*) average intelligence, (*d*) above-average intelligence

Every patient who attended the clinic during the period suffering from a disease shown in the first column of table I was tested in this way This table also shows for each disease the number of patients examined and the results of the intelligence test

For the purposes of comparison these diseases can be classified into three groups skin diseases, infestations;

TABLE I—GROSS FIGURES FOR ALL DISEASES

—	Cases	Grade			
		(*a*) Very inf	(*b*) Below av	(*c*) Av	(*d*) Above av
Skin diseases—					
Alopecia areata	27	3	8	13	3
Eczema	37	0	7	19	11
Impetigo	73	2	24	39	8
Pityriasis rosea	12	2	2	7	1
Psoriasis	48	4	9	25	10
Seborrhoeic dermatitis	66	3	19	38	6
Tinea (all cases)	33	2	12	15	4
Warts (excluding venereal)	10	0	3	6	1
Infestations—					
Scabies	407	72	155	153	27
Pediculosis pubis	90	18	32	36	4
Venereal diseases—					
Gonorrhœa	137	24	49	51	13
Syphilis	62	10	17	22	13

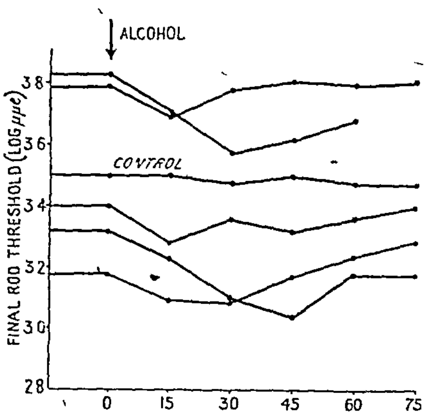


FIG 5—Final rod threshold in 5 subjects given 20 ml alcohol and in a control without alcohol

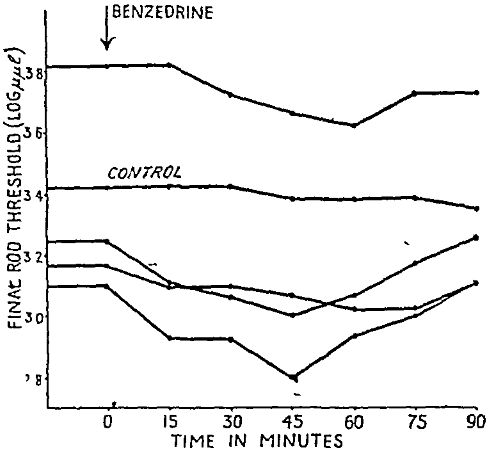


FIG 6—Final rod threshold in 4 subjects given 10 mg of benzedrine and in a control without benzedrine

more accurately than this, for the reaction did not always occur at a definite fixed time. The effect on blood vitamin A was determined by estimating a sample taken before and at the probable time of maximum effect after the substance was given.

Alcohol.—The dose of alcohol used was 20 ml in the form of 100 ml sherry. Preliminary testing showed that there was no difference in the reaction whether pure diluted alcohol or sherry was used, so that the more pleasant vehicle was given. The effect of the final rod threshold in five cases is shown in fig 5. It is seen that there is a definite improvement in each case even when the original threshold was very low. The change begins almost immediately and continues for about an hour.

The effect on the rest of the curve is shown in table II. The alcohol was given half an hour before the test was started. It is seen that the part of the curve showing most change was not always the same, the divergence probably depending on differences in the time of maximum effect of the alcohol. Although the changes were not always significant, even the smaller improvements were in the same direction and there was no curve which was worse after the alcohol. Three cases (12, 13, 14a) showed no effect in any part of the curve by this test. In one of these (14a) the alcohol was given on another occasion immediately before the test, and a significant change occurred in the first part of the curve but passed off in about 20 min (14b). The other two cases may have shown no response for a similar reason.

There was no significant change in the blood vitamin A in any case. The results varied in both directions and always within normal limits. To emphasise this point—that the improvement does not depend on a concomitant rise in blood vitamin A—two subjects whose normal variations were in the upper part of the normal distribution curve were given 120,000 I U of vitamin A and tested at intervals thereafter. There was no definite change in any part of the curves, though the blood vitamin A rose to more than 500 I U per 100 ml serum. These same two subjects showed a significant effect with alcohol.

Benzedrine (amphetamine sulphate).—The dose used was 5 or 10 mg on an empty stomach, given half an hour before the test. The effect on the final rod threshold is shown in fig 6, and the rest of the curve in table III. Again the parts of the curve most affected varied in different subjects. Only one of the subjects tested (9) showed no effect in any part of the curve. The blood vitamin A, as with alcohol, showed no significant change. The two subjects who showed no improvement with vitamin A but reacted to alcohol also responded to benzedrine. The effect seemed to be wearing off after an hour and a half. The mental effect was greatest several hours later but two subjects tested at this period showed no change in dark-adaptation.

VITAMIN C AND DARK-ADAPTATION

It has been said (Stewart 1941, Kimble and Gordon 1939) that vitamin C may produce an improvement in dark-adaptation. According to Stewart, who gave 150 mg daily for 7 or 14 days, the effect was sometimes seen in subjects resistant to vitamin A therapy, while in other subjects it was superimposed on a partial improvement produced by vitamin A. It is not stated whether these subjects were deficient in vitamin C as shown, for example, by "saturation" tests. In the present work no such effect of vitamin C has been observed in any subject. Six subjects with poor dark adaptation were given 500 mg vitamin C daily for 10 days. In none of these was any improvement noted whereas all subsequently became normal with vitamin A. Five subjects with normal curves in the upper part of the normal variability curve also showed no improvement with this dose.

In another subject with severe night-blindness the excretion of vitamin C was followed during dosing. He was found to be decidedly "unsaturated," requiring 8 days' dosing (total 4000 mg vitamin C) before the urinary excretion rose significantly. At the end of this time the dark-adaptation curve had not altered. Further dosing for 14 days with 100 mg daily was also without effect. The subject was then given a total of 900,000 I U of vitamin A over a period of 14 days, at the end of which his dark-adaptation curve was normal. Further investigation of the effect of vitamin C is needed.

DISCUSSION

It is not to be expected that vitamin A is the only factor affecting dark-adaptation. In a process so complicated, and involving not only the photochemical changes in the retina but the transmission of nerve impulses and the interpretation of these in the cortex, it is obvious that any link in the chain may be affected. Thus lack of oxygen and hypoglycæmia (McFarland and Forbes 1940) as well as benzedrine and alcohol all produce a change in dark-adaptation, the latter improvement, the former deterioration. As we have seen, benzedrine and alcohol produce their effect without any corresponding change in the vitamin A of the blood. The fact that,

TABLE II—EFFECT OF 20 C CM OF ALCOHOL ON DARK-ADAPTATION

Case	Final cone threshold (log μμl)			Rod cone transition time (min)			Final rod threshold (log μμl)		
	Before	After	Improvement	Before	After	Improvement	Before	After	Improvement
1	5.7	5.7	0	8	5	3	3.63	3.42	0.21
2	5.85	5.7	0.15	5¾	5¾	0	3.23	3.23	0
3	5.7	5.65	0.05	7¾	5¾	2	3.54	3.42	0.12
4	5.95	5.75	0.2	5½	4¼	1¼	3.54	3.23	0.31
5	5.7	5.7	0	7½	6¼	1¼	3.72	3.54	0.18
6	6.02	5.92	0.1	6¼	6¼	0	3.54	3.42	0.12
7	5.72	5.72	0	6¼	6¼	0	3.54	3.23	0.31
8	5.8	5.75	0.05	7½	6¼	1¼	3.72	3.54	0.18
9	5.65	5.50	0.15	7¼	6	1¼	3.42	3.32	0.1
10	5.7	5.7	0	7	5¼	1¾	3.54	3.42	0.12
11	5.7	5.7	0	5½	3¼	2¼	3.42	3.42	0
12	5.7	5.7	0	6	6	0	3.42	3.42	0
13	5.7	5.7	0	5½	5½	0	3.32	3.32	0
14a	5.55	5.55	0	8½	8½	0	3.54	3.54	0
14b	5.55	5.35	0.2	8½	7	1½	3.54	3.54	0

TABLE III—EFFECT OF 5 MG BENZEDRINE ON DARK-ADAPTATION

1	5.6	5.45	0.15	7¼	6	1¼	3.42	3.10	0.32
2	5.85	5.75	0.1	8½	6	2½	3.42	3.23	0.19
3	5.7	5.65	0.05	7½	5	2½	3.54	3.32	0.22
4	5.9	5.8	0.1	5½	4½	1	3.54	3.32	0.22
5	5.7	5.7	0	8	5¾	2¼	3.63	3.42	0.21
6	6.0	5.8	0.2	6¼	5½	¾	3.54	3.32	0.22
7	5.7	5.7	0	6	3¼	2¾	3.42	3.42	0
8	5.8	5.7	0.1	7¾	6½	1¼	3.72	3.54	0.18
9	5.7	5.7	0	5½	5½	0	3.32	3.32	0

symptoms of anæmia breathlessness, palpitation, weakness or giddiness Other common complaints are of swelling of the feet and cough Sometimes there is no complaint of ill health, and at other times the complaint may be of fever, dysentery or the passage of scanty urine The patients are usually well nourished The severe anæmia is characteristically associated with a slight blurring of the features, due to œdema of the face Frank œdema of the feet is common, and this may extend up the abdominal wall There may be a faintly icteric tinge of the conjunctiva, but this is usually associated with concurrent malaria The tongue may be sore, or moist and white and indented by the teeth Sore mouth is not more common in these cases of macrocytic anæmia than it is in the pregnant population as a whole The temperature is usually raised, pyrexia was present in 82 of the cases considered here

There is considerable breathlessness on exertion, a rapid pulse and soft blowing systolic murmurs over the præcordia Œdema was noted in 38 of the 100 cases The respiration-rate is raised in severe cases, and a constant, loose, exhausting cough may be present, accompanied by moist râles in the chest, cough was present in 24 cases of the series Enteritis may be severe and misleading, but clears up as the general condition improves The liver and spleen may be enlarged, splenic enlargement was recorded in 11 cases No sign of involvement of the nervous system was observed

Fæces and urine—The fæces were examined in 85 cases Ascaris ova were found in 17, hookworm ova in 16, *Entamœba histolytica* in 2, trichuris ova in 2 and strongyloides larvæ in 2, *E coli* was present in 7 cases and flagellates in 15 Flagellates are as a rule seen in patients who are debilitated, but there seems little reason to consider them as the cause of the enteritis which is so often present in macrocytic anæmia Albumin, pus organisms and even casts may be present in the urine Infection may have some rôle in causation, but the urine clears as the general health improves Albuminuria was present in 54 cases in the series, and micro-organisms were found in 9 of the 25 cases in which the urine was examined bacteriologically Schistosome ova were present in 2 cases

Blood picture—There is a considerable reduction in the number of red cells When the case is first seen the count is commonly about a million per c mm In several cases the count was below this figure, first blood counts done in 106 pregnancies in the 100 women in the series gave the following results

Red cells (millions)	Cases	Red cells (millions)	Cases
0 4–0 7	2	1 5–2	28
0 7–0 9	12	2–2 35	12
0 9–1 2	27	No record	3
1 2–1 5	22		

In many of these the patient recovered The colour index was over 1 in 78 cases and between 1 and 0 8 in 28 Blood films were examined on 294 occasions red cells with a diameter of over 7 5 μ were observed in 78 (26%), polychromasia in 10 (1%), cells deficient in hæmoglobin in 79 (27%), poikilocytosis in 1 (0 3%), anisocytosis was usual and in most cases macrocytes were present, normoblasts and megaloblasts can usually be found and may be numerous In one case there were 9000 white cells per c mm, with Hb 22%, 900,000 red cells per c mm and 7 normoblasts and 7 megaloblasts per 100 white cells The film in macrocytic anæmia differs from that of true pernicious anæmia in the rareness of poikilocytosis Sickling of the red cells was found in 2 of 9 cases examined for this condition Since the rate for pregnant women as a whole is 13% (Medical Research Institute, Accra), this result appears to correspond with the average The leucocytes are seldom increased, and the differential count showed no significant variation from the normal The inversion in the proportion of polymorphs and lymphocytes mentioned in the literature was observed only in one fatal case Primitive white cells were occasionally observed

The van den Bergh reaction was carried out in only 3 cases The direct reaction was negative in all 3 and the indirect positive, which conforms with the general findings in this disease

COURSE

Without treatment the condition progresses rapidly—in a few days the patient may become comatose and die On the other hand, many cases tend to be cut short by the onset of premature labour The woman may die during labour or in the first day or two of the puerperium, but if she survives this period recovery often sets in and may be as rapid as the progress of the illness in the first place In most cases labour is premature, rapid and singularly bloodless The uterine muscle does not seem to be weakened, and provided the cardiac muscle does not fail birth is swift The infant-mortality and stillbirth rates are high The puerperium tends to be febrile and sepsis added to the anæmia seriously affects the chances of survival

The history of cases treated in hospital contrasts with that of untreated cases The patient was considered to be in a critical condition if the hæmoglobin was below 20%, but even then response to treatment was usually rapid and gratifying Twenty-four hours after admission the patient may look, if anything, more bloodless than when first seen, after forty-eight hours of liver treatment, however, one can say definitely that improvement has begun, even without blood-examination Faint flushing of the conjunctivæ is a sign which makes the clinician feel satisfied about the patient for the time being Every day thereafter improvement is apparent, blood-examination a week after admission shows a gain of at least half a million in red cells, and of 5–10% in hæmoglobin The next week should show the same advance, especially if iron has been added to the liver treatment At the end of a week the œdema and cough should have almost disappeared The temperature settles down in ten days or so, and intercurrent gastro-intestinal and urinary complications usually recover as the anæmia improves At the end of the first week the patient feels much better, and in two weeks she becomes restive Probably she may be prevailed on to stay another week in hospital, a few very severe cases have remained even longer By the end of three weeks improvement is so pronounced that the patient is allowed to go, usually with instructions to continue to take liver This advice is rarely followed but in those cases where a follow-up was possible it was found that the anæmia did not return in that pregnancy Once response to treatment is definitely established labour rarely gives rise to anxiety

Of this series, 53 patients were delivered in hospital, the puerperal morbidity-rate among them was 34%, the prematurity-rate 64%, and the stillbirths and deaths of infants within the first week of life, together, 40%

A follow-up of the cases after discharge from hospital has been carried out as far as possible, but the difficulties are peculiar the people are illiterate and may be unable to give their correct names or addresses As far as can be judged these women recover their normal health some time after discharge from hospital, and relapse has not been observed during the same pregnancy Recurrence of anæmia is common, however, in subsequent pregnancies, 10 of the 100 patients were traced through subsequent pregnancies, and in 8 of them severe macrocytic anæmia developed in the next pregnancy, in 1 case, though the second pregnancy was apparently normal, severe anæmia developed in the third

PROGNOSIS AND MORTALITY-RATE

If the patient is untreated, the outlook is bad unless labour is early The prognosis is good under treatment, provided the patient is not in extremis when first seen and if she is not already in labour If the hæmoglobin is not less than 20% and the red cells not below 1,000,000 recovery is the rule One or two patients under my care had a much lower hæmoglobin value and recovered, but such cases cause anxiety for some time, and must be considered as critical, especially if they go into labour. The prognosis has greatly improved since liver extract suitable for parenteral administration has been available, but as might be expected, the patients are so ill that their ability to take, retain and absorb liver by mouth is uncertain and variable

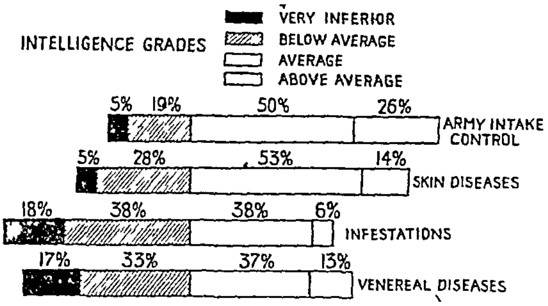
Acute anæmia appearing for the first time in the puerperium may cause anxiety Œdema is not severe and the question of sepsis has to be considered Even a low-grade infection makes the response to treatment less and venereal diseases Statistical analysis, ætiology and clinical features all justify this grouping

The percentage distributions of intelligence grades in the groups and in the control (500 consecutive recruits at a R A M C depot) are set out in table II and are compared diagrammatically in the figure

TABLE II

—	Cases	Grade (per cent)			
		(*a*)	(*b*)	(c)	(*d*)
Army intake control—	500	5	19	50	26
Skin diseases	306	5	28	53	14
Infestations	497	18	38	38	6
Venereal diseases	199	17	33	37	13

It will be seen that " very inferior " intelligence occurs more than three times as frequently in both the infestation and venereal groups as in the control group, while in the skin group it occurs with no greater frequency than in the control Furthermore, all three groups of patients under consideration show a preponderance of subnormal intelligence, least decided in the skin group, and so great in the infestation group that actually as much as 56% fall into the subnormal intelligence grades Mellanby's (1941) recent emphasis on the personal-contact factor in the spread of scabies lends particular interest to the close similarity in the intelligence distributions of the infestation and venereal groups, especially in view of their widely different pathogeneses



Distribution of intelligence grades

An investigation of the intelligence distribution of the individual diseases which form the groups in this paper is in progress

SUMMARY

The intelligence of patients attending a military dermatological clinic has been investigated For the purpose of comparison cases were divided into 3 groups venereal diseases, infestations and other skin diseases

A high proportion of men with " very inferior " intelligence was found in the infestation and venereal-disease groups All three groups showed a higher proportion of subnormal intelligence than the control and among infested patients the proportion of subnormal intelligence amounted to 56%

I wish to thank Lieut Colonel P J Dwyer for giving facilities for this investigation and Prof M Greenwood for his statistical advice

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OSLER MEMORIAL IN PHILADELPHIA—The " Old Post House " at Philadelphia General Hospital has been opened as a memorial to Osler because it was here that he taught and practised pathology when professor of clinical medicine in the University of Pennsylvania The house, which had been relegated to the position of the hospital paint shop, has been restored through the generosity of Messrs John Wyeth and Brother, so that it resembles as nearly as possible what it was in Osler's time, and in it hangs the painting by Dean Cornwell, also the gift of Messrs Wyeth, which shows Osler in characteristic attitude addressing a group of residents

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MACROCYTIC ANÆMIA
IN PREGNANT WOMEN ON THE GOLD COAST*

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THIS paper is based on a study of 100 cases of macrocytic anæmia selected from the records of the Maternity Hospital, Accra, in the ten years (1928–38) after the hospital was opened , 38 of the cases were under my care The cases constituted about 1% of the total in-patients, but since only severe and definite cases are included this figure does not represent the full incidence of the disease I have included cases complicated by malaria and hookworm and some cases with concurrent urinary infection In all these the anæmia was so profound that I had no hesitation in considering them to be primarily cases of macrocytic anæmia of pregnancy

CLINICAL HISTORY

Detection of anæmia among the dark-skinned by inspection alone is difficult, and slight cases tend to escape notice The prevalence of anæmia in 481 unselected cases attending the maternity hospitals in Accra and Kumasi is shown in the table Macrocytic anæmia, in my 38 cases, appeared to develop rapidly , the duration of symptoms was seldom more than a fortnight In one or two cases admitted to hospital on account of other conditions, severe macrocytic anæmia was observed to develop within a few days

A primipara of 32 weeks maturity, complained of general pains and headache , the hæmoglobin on admission was 55% six days later it had dropped to 38%, and the red cell count was 1,360,000 per c mm

Age-incidence cannot be given, because the patients do not know their ages , 64 were primiparæ and 36 multiparæ , thus in the Gold Coast multiparity is not an important factor in ætiology The stage at which the anæmia developed, in the 106 pregnancies of these 100 women was as follows

Maturity in weeks	Cases	Maturity in weeks	Cases
Under 20	3	31–35	26
20–25	18	36–40	13
26–30	40	Unknown	6

Thus 29 cases occurred in women of less than twenty-eight weeks' maturity, showing that the disease was not uncommon prior to the last trimester period

Concurrent infections —The history of yaws was positive in 18 and negative in 79 cases , 3 were unrecorded , but since the history depended entirely on the statements of the patients these figures are not necessarily—or even probably—correct The Wassermann reaction was investigated in 53 and was found to be strongly positive in 11 and positive or faintly positive in 7 This does not differ significantly from the positive-Wassermann rate of the population as a whole, which is about 32% (Medical Research Institute, Accra)

Malarial parasites were present in 29 cases The incidence of hookworm and urinary infections is noted later

These observations may be compared with the figures obtained in the routine laboratory examination of in-patients in the Accra maternity hospital shown below

Malaria

Blood examinations 6925
Malarial parasites present in 27%

Wassermann Reaction

Examinations	5335	Positive Wassermann rate 32 5%

Fæces

Examinations	1372	Ascaris ova present in 17%

Ankylostome ova present in 16%
Tænia ova present in 1 case

SIGNS AND SYMPTOMS

When the patient is first seen anæmia is usually well advanced and she is complaining of one or more of the

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* Abstract of a thesis presented for degree of M D University of Edinburgh, October, 1939

SERUM CALCIUM AND INORGANIC PHOSPHORUS IN PARATHYROID TETANY

THEIR BEARING ON TREATMENT

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AMONG the measures recommended in the treatment of parathyroid tetany by raising the serum calcium are the administration of parathyroid hormone thyroid, calcium salts vitamin D dihydrotachysterol (A T 10) lactose the production of an acidosis, and diets with a high calcium to phosphorus ratio

Parathyroid hormone —It is now clear that the chief function of the parathyroids is the mobilisation of calcium from the bones into the blood-stream Removal of the parathyroids causes calcium to leave the blood, probably to be precipitated in the bones, for as was first shown by Greenwald and Gross (1925) the sudden fall in the serum calcium in tetany is accompanied by a lowering in the calcium excretion. The abstraction of the active principle of the parathyroid glands by Hanson (1923) and Collip (1925) led at once to its employment in the treatment of hypoparathyroidism Albright and others (1929) showed that injection of parathyroid hormone [illegible] any brought about an abrupt increase in the urinary excretion of phosphorus followed by a fall in the blood phosphorus (unless the serum calcium rose above 15 mg per 100 c.cm. when the urinary excretion of phosphorus fell and blood phosphorus rose) and a gradual increase in the urinary excretion of calcium with a gradual but large rise in serum calcium. Several workers have been warned against the employment of parathyroid hormone as a routine measure in the treatment of tetany on the grounds of the danger of overdosage, of loss of effectiveness or of decalcification of the bones if used over long periods, as well as expense

Thyroid —Kunde Oslund Kern (1928, 1931) found that the [illegible] of thyroparathyroidectomised dogs could be temporarily controlled by thyroid feeding After this Aub and others ([illegible]) stated that the administration of thyroid or thyroxin to cases of hypoparathyroidism resulted in a well marked elevation of the serum calcium, and their findings have been [illegible] by Hunter (1930), Shelling (1935) and Means (1937)

Calcium salts —The administration of calcium salts intravenously, intramuscularly or by mouth still remains the chief therapeutic measure in parathyroid tetany When a prompt response is desired calcium is given intravenously as the chloride or gluconate in 10% solutions in doses of 10 c cm Salvesen, Hastings and McIntosh (1924), Smith and Stern[illegible] (1932), and Shelling (1935) have found that the maximum concentration of serum calcium (as much as 100% [illegible]) is reached at the end of the injection, thereafter there is a rapid fall to the previous level in 2–4 hours Calcium gluconate alone can be injected intramuscularly without causing severe inflammatory reactions There is a choice of many salts to be given by mouth but the chloride, lactate and carbonate are most commonly employed, the first because of its solubility and acidotic qualities which promote absorption, the second because of its palatability and the last because of its high calcium content

Vitamin D and dihydrotachysterol (*A T* 10) —Since Holtz (1933) introduced dihydrotachysterol—or A T 10 (antitetanic preparation 10) as it is sometimes called—into the therapy of tetany a vast literature has accumulated on its value According to McLean (1941) the effects of vitamin D and A T 10 are similar if given in comparable doses and there is no reason "to attribute a higher degree of specificity or a lesser likelihood of toxicity to dihydrotachysterol than to vitamin D" One milligramme of calciferol is equivalent to 40,000 international units of vitamin D and this is equal to 0 1 c cm of A.T 10 Much confusion has arisen over the value of vitamin D in the treatment of parathyroid tetany There are two well-defined dosage ranges, the first is antirachitic (700–1000 I U per day), and the second is the dosage necessary to raise a subnormal serum calcium (50,000–200 000 I U per day) According to McLean the higher dosage of vitamin D leads to an increase in the excretion of urinary phosphorus, a fall in serum phosphate and a rise in the serum calcium, while both calcium and phosphorus are added to the blood by liberation of these minerals from the bones Hess, Benjamin and Gross (1931) Jones and Rapoport (1931), and Shelling (1931) have shown that the calcæmic effect of vitamin D in large doses can be produced without calcium feeding Vitamin D in large doses has therefore two distinct actions—it promotes absorption of calcium from the gut and it mobilises calcium and phosphorus from the bones

Lactose —Dragstedt and Peacock (1923) and Inouye (1924) stated that lactose-containing diets protected parathyroidectomised animals against tetany Greenwald and Gross (1929) found this only to be true if large amounts of calcium are also contained in the diets Thus lactose acts only by making the calcium more available

Production of an acidosis —Wilson, Stearns and Janney (1915), using hydrochloric acid and Boyd Austin and Ducey (1926) and Greenwald (1929), using ammonium chloride, studied the effect of acidosis on parathyroid tetany The severity and frequency of the attacks were reduced and this was accompanied by an increased excretion of phosphorus The effect on the serum calcium was variable Anderson and Lyall (1939) found that hydrochloric acid raised the serum calcium of parathyroid tetany above normal

Low phosphorus therapy —The beneficial effects of a low phosphorus, high calcium diet have been substantiated by Shelling and Goodman (1934) Ellsworth (1933), and Anderson and Lyall (1939), who found that low calcium or high phosphorus diets were conducive to tetany whereas high calcium or low phosphorus diets were ameliorative It would appear that the desirable intake of phosphorus daily is not greater than 0 5 g and with this amount of phosphorus 2 g of calcium daily should be taken In discussing the nature of a low phosphorus diet, Shelling has stated it means eating less meat, glands, nuts, milk, cheese and yolk of eggs, and more fruit, vegetables white of eggs, carbohydrate and fat Milk and cheese, which are the chief sources of calcium also have a high phosphorus content

PRESENT INQUIRY

In the present inquiry, a series of cases of postoperative parathyroid tetany (complicating subtotal thyroidectomy for relief of thyrotoxicosis) were investigated and the effect of thyroid calcium salts ammonium chloride and vitamin D (calciferol) on the blood chemistry determined By this study it was hoped to rationalise the treatment of tetany when it occurs as a complication of subtotal thyroidectomy for the relief of thyrotoxicosis In a previous paper (Robertson 1941c) attention has been drawn to transient mild postoperative attacks of tetany due to trauma or infection In such cases there is a fall in serum calcium which invariably rises within a few days or weeks to normal without any calcium or other medication The cases of parathyroid tetany in the present inquiry were all chronic ones ranging from 3½ to 11 years in duration Fluctuations due to changes in the activity of the parathyroids or accessory parathyroid tissue could therefore be reasonably excluded

The chemical methods employed have already been described (Robertson 1941a) except for the measurement of the alkali reserve (Van Slyke 1917) In table I are given details of the seven cases investigated Of these, two (cases 1 and 7) were unable to continue the investigations after thyroid feeding owing to evacuation problems No form of therapy had been received by any patient for at least 1½ years The calcium and phosphorus intakes were calculated from an average of 7–10 daily dietary surveys The gastric analyses were normal and all cases secreted free hydrochloric acid after gruel

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DR. RUSSELL MACROCYTIC ANÆMIA (*continued*)

[illegible] patients with low hæmoglobin values in the expectation that by so doing severe anæmia may be successfully prevented

I thank the Director of Medical Services of the Gold Coast for permission to publish this paper

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satisfactory, and some of these cases tend to become aplastic in type

There were only 5 deaths among the 100 cases treated in hospital This figure is low considering that the anæmia was often severe

TREATMENT

Treatment was by rest in bed, full diet and raw liver or liver extract by mouth or by injection If the patient could take it, ½ lb of raw liver was given daily, finely minced, with salt and pepper, and eaten with orange juice The patients preferred it to Marmite, and there was some evidence that liver was more quickly beneficial In India marmite is the sheet anchor of therapy It was used also in this series, but only in small doses, which probably had little effect Campolon injections were used in all severe case from the middle of 1935 The dose at first was 2 c cm injected into the buttock every second day for 5–7 injections Later it was found that this was often inadequate, and that 4 c cm daily was needed to get a satisfactory result, As the macrocytic anæmia responds to treatment, the underlying and concurrent hypochromic anæmia is unmasked, and a useful response to iron takes place Iron therapy was usually started as soon as the initial response to liver therapy was well established—that is, in five to seven days Iron was given as one of the scale preparations in doses of gr 30 thrice daily, or in conjunction with arsenic

Blood-transfusion has seldom been necessary According to Balfour (1927) when response is unsatisfactory a small transfusion, intravenously or intramuscularly, will give the necessary stimulus towards recovery In the case of a strongly positive Wassermann reaction, it is as well to give a course of neoarsphenamine

Induction of labour is seldom required In a few cases which respond well at first and then remain stationary with hæmoglobin and red cells still at very low figures, it may be desirable to induce labour in the interest of the mother, but the measure is not devoid of risk because of the danger of sepsis developing in the puerperium

In cases discharged from hospital before delivery it has been impossible to insist on continuance of treatment or even to keep track of the patients Those who could be followed up seem to have gone through labour safely even without further treatment The danger of the recurrence of anæmia in future pregnancies can probably be reduced by antenatal supervision and by early treatment of cases showing a low hæmoglobin level

ÆTIOLOGY

According to recent literature macrocytic anæmia is regarded as a deficiency disease due to lack of the hæmopoietic factor necessary to normal blood-formation This lack may be due to several factors of which the three most important are

1 Temporary lack of intrinsic factor in the gastric secretion or to temporary failure of power of assimilation (Strauss and Castle 1932, 1933, Vaughan 1938)

2 Lack of extrinsic factor or of vitamin B_2 in the diet

3 A predisposing iron deficiency anæmia, believed by some writers to be always present before macrocytic anæmia can develop, and due mainly to unsatisfactory diet (Larrabee 1925, Strauss and Castle 1935)

I believe that all of these factors may have some bearing on the prevalence of this form of anæmia in the Gold Coast The sick in the tropics are often afflicted with two, three or four different pathological conditions, and since in any form of ill health the gastric secretion is seriously concerned it is not unreasonable to presume lack of power of assimilation and perhaps temporary lack of intrinsic factor The diet of the people on the Gold Coast is demonstrably poor in vitamin B_2 or extrinsic factor, so that even in health there may be little margin Wills (1939) holds that all cases of anæmia in pregnant women associated with less than 90% of hæmoglobin should be treated If this is taken as the standard, the amount and degree of anæmia on the Gold Coast as shown in the table is grave indeed

Another factor may be the presence of liver disease and its influence on the ability of the body to store or to utilise hæmopoietic substance Goldhamer, Isaacs and Sturges (1934) demonstrated that the normal liver stores hæmopoietic substance, but that if diseased it fails to do so or is unable to release it Clark (1936) reported that disease of the liver appears to be more frequent in Nigeria, where dietetic conditions are similar to those on the Gold Coast, than it is at home He held, as a result of rat experiment, that this is largely due to the poor class of carbohydrates, especially cassava and cocoa-yam, which are largely consumed He considered these roots to be dangerous cyanogenic substances in the absence of a sufficient supply of good-class protein, in some circumstances maize may act in the same way Fairley and his colleagues (1938) found that malaria caused liver damage in Macedonia, and malaria is prevalent on the Gold Coast

BLOOD FINDINGS IN TWO GROUPS OF 481 UNSELECTED PREGNANT WOMEN WITH NO DEFINITE SYMPTOMS OF ANÆMIA

Group I 100 women attending hospital at Kumasi
Group II 381 women attending hospital at Accra

Red cells (millions)	Cases (group I*)	Hb (Sahli) %	Cases (group I)	Cases (group II†)
Over 5	3	Over 80	5	14 (4%)
4–5	37	7–80	33	77 (20%)
3–4	53	60–70	53	172 (45%)
2–3	7	50–60	8	108 (28%)
		Under 50	1	10 (3%)

* Colour index unity or over in 23, malarial parasites present in 23 † Malarial parasites present in 94

Factors predisposing to macrocytic anæmia thus appear to be various, but the most important are, I believe, the three first mentioned

To what extent tropical macrocytic anæmia of pregnancy and macrocytic nutritional anæmia in the non pregnant are the same disease has not been finally agreed Balfour (1927) reported cases which appeared to be identical except that pregnancy did not coexist Fairley and his colleagues (1938) suggested that "nutritional" rather than "tropical" macrocytic anæmia was a more suitable term when reporting cases occurring in Macedonia Davidson and Fullerton (1939) refer to *nutritional macrocytic anæmia* and to *macrocytic anæmia of pregnancy* under different headings

My own experience of macrocytic anæmia among non-pregnant women in the Gold Coast is too limited to be of value, but in the cases occurring in pregnancy the problem appears to be essentially one of nutritional defect From observation of the disease and of the prompt relief which follows the administration of liver or liver extract, I consider that macrocytic anæmia is not a disease of pregnancy but a disease associated with pregnancy Pregnancy is the most common and prolonged strain to which young women are subjected, add to this an unsatisfactory diet with the disorder of gastric secretion which is common in pregnancy and the stage is set for breakdown in the blood-forming system In the absence of pregnancy the breakdown would probably not occur, or at least not occur until a more advanced age

SUMMARY

Severe macrocytic anæmia is not uncommon among pregnant women on the Gold Coast, 100 severe cases are analysed

In both treated and untreated cases there is a tendency to premature labour with stillbirth or death of the infant in the first week of life When untreated the maternal mortality is high, but if the anæmia is not too far advanced recovery may be rapid after delivery If anæmia is severe, death rapidly supervenes

Macrocytic anæmia of pregnancy quickly responds to treatment with liver or liver extract, preferably administered by injection The fatality in the present series was only 5% Severe anæmia often recurs in subsequent pregnancies

The more important predisposing factors are unsatisfactory diet, intercurrent disease, especially malaria, and hypochromic anæmia

Many Gold Coast women are anæmic during pregnancy Prevention of this depends largely on improvement in the general standard of living In the meantime the obstetrician must be alert to detect and treat all

Continued at foot of opposite page

Vitamin D (calciferol).—The results are given in table V. In every instance calciferol administration was followed by a rise in the serum calcium. The elevation of the serum calcium was highly significant ($t = 12.7$ and $P < 0.001$) and was present in the postabsorptive state. This rise in the serum calcium occurred in the absence of any orally ingested calcium other than that provided in the diet. No significant changes occurred in the serum inorganic phosphorus ($t = 0.8$, $P = 0.4$).

REGENERATION OF PARATHYROID TISSUE

In a previous paper, Robertson (1941b) attention was drawn to mild forms of parathyroid disturbance, where in the absence of the clinical manifestations of tetany the serum calcium fell. Without any form of calcium therapy within a few weeks the serum calcium rose. Likely causes of this fall in the serum calcium were said to be trauma to the parathyroid glands through manipulation during the operation and disturbance of their blood-supply through œdema, blood-clot or infection. When destruction of the parathyroid glands is present and tetany appears, steps must be taken to increase the serum calcium. Many workers have raised the question of the presence of accessory and regenerative parathyroid tissue in the body which might function during tetany. When therapy designed to raise the serum calcium is being given it is not easy to determine with certainty the part, if any, played by regenerative or accessory parathyroid tissue. In table III of this paper it was shown that, in the postabsorptive state, calcium given by mouth did not elevate the serum calcium. It follows therefore that if any elevation of serum calcium occurs in the postabsorptive state either regeneration of or accessory parathyroid tissue is present.

In table VI, observations on twelve cases of parathyroid tetany are set out. Two cases had no treatment, nine were given calcium lactate by mouth, and one was given a single injection of calcium intravenously. In the postabsorptive state none of these forms of calcium therapy could explain an elevated serum calcium. In every instance there was a rise in the serum calcium above the level during tetany. The mean values of 6.8 mg. per 100 c.cm. and 8.9 mg. were found to have a highly significant difference ($t = 5.95$, $P < 0.001$). It seems that following tetany there is regeneration of or accessory parathyroid tissue. It must be pointed out however that despite the presence of this accessory parathyroid tissue the serum calcium still falls far short of normal. There is a very significant difference between the serum-calcium levels of the so-called chronic tetany with a mean of 8.9 mg. per 100 c.cm. and of the normals published previously (Robertson 1941a) with a mean of 10.39 mg. ($t = 3.32$, $P < 0.01$).

TABLE V—POSTABSORPTIVE STUDY—SERUM CALCIUM, INORGANIC PHOSPHORUS AND ALKALI RESERVE AFTER INGESTION OF 3 G. OF AMMONIUM CHLORIDE DAILY FOR TWO WEEKS. LEVELS OF CALCIUM AND INORGANIC PHOSPHORUS AFTER THE DAILY INGESTION OF 2.5 MG. OF CALCIFEROL (100 000 I.U. VITAMIN D) FOR TWO WEEKS WITHOUT CALCIUM ADDITIONAL TO DIET

Case	After ammonium chloride						After calciferol			
	Serum calcium		Serum phosphorus		Alkali reserve		Serum calcium		Serum phosphorus	
	B	A	B	A	B	A	B	A	B	A
	mg. per 100 c.cm.				c.cm. CO₂ %		mg. per 100 c.cm.			
1	8.3	8.3	3.3	3.9	67	63	8.3	9.7	3.9	4.3
2	9.3	9.3	4.1	4.4	68	64	9.3	10.1	4.4	4.2
3	7.1	7.8	5.9	5.6	61	61	7.8	8.9	5.6	5.2
4	5.8	6.3	4.6	5.6	68	62	6.3	8.4	5.6	4.8
5	9	9.2	3.6	3.8	56	56	9.2	9.6	3.8	4
Mean	8.33	8.18	4.3	4.66	64	61	8.18	9.34	4.66	4.5

DISCUSSION

Thyrotoxicosis is associated with an excessive calcium excretion, which may lead to an osteoporosis and a normal calcium absorption. The calcium excretion falls to normal with the cure of the thyrotoxicosis. In parathyroid tetany a diminished secretion of parathyroid hormone causes the serum calcium to fall and thus is associated with a diminished calcium excretion and a normal absorption. Treatment of parathyroid tetany aims at raising the low serum calcium and this should be achieved by some mechanism similar in nature to that of parathyroid hormone which controls the release of calcium from the skeleton to the blood-stream. The raising of the serum calcium in tetany by large doses of calcium salts appears to be wrong in principle.

TABLE VI—SPONTANEOUS REGENERATION OF PARATHYROID TISSUE: SERUM-CALCIUM ANALYSES IN POSTABSORPTIVE STATE.

Case	Serum calcium, during tetany	Follow up observations		Treatment if any
		Since attack of tetany	Serum calcium	
	mg. per 100 c.cm.	months	mg. per 100 c.cm.	
1	7.8	6	9	Oral calcium lactate
6	8.4	40	9.1	
2	7.5	62	9	1 injection of 10 c.cm. Calcium Sandoz intravenously.
8	5.8	30	9	Oral calcium lactate
3	8.6	2	10.4	
9	7.7	1	9.6	None
4	6.3	7	7.5	Oral calcium lactate
10	7.5	1	8	
7	5.9	12	9	
5	5.4	9	8	
11	5.5	22	7.7	
12	8.7	3	10.2	None
Mean	6.8		8.9	—

When however parathyroid tetany complicates subtotal thyroidectomy for the relief of thyrotoxicosis the treatment should take into account two factors. First, a demineralised skeleton in need of calcium, and a serum calcium requiring elevation. Large doses of calcium meets the first demand, but the second is not so simple. The disadvantages of injections of parathyroid hormone have already been referred to; thyroid feeding has been shown to lower still further the diminished serum calcium; the action of calcium salts is only transitory; therapeutic doses of ammonium chloride while producing a mild acidosis were found not to raise the serum calcium. The administration of a low phosphorus diet has been clearly shown by Shelling and Goodman (1934) and Anderson and Lyall (1939) among others to be very efficacious in raising the diminished serum calcium of tetany. But food restrictions in war-time make it very difficult if not impossible to procure a low phosphorus diet, including as it does fruit, vegetables, white of eggs, carbohydrates and fats. Further a low phosphorus diet is combined with a high calcium intake of at least 2 g. daily. While this intake of calcium can do no harm to subjects with normally functioning parathyroids, in tetany with damaged parathyroids and a diminished calcium excretion it would lead to an unnecessary storage of calcium. Some observations reported in this paper confirm (Himsworth and Maizels's findings in 1940) that vitamin D (calciferol) can raise the reduced serum calcium of parathyroid tetany. When given in adequate doses of 100 000 I.U. daily it raised the serum calcium despite a low calcium and high phosphorus content of the diet (i.e., case 1 in tables I and V). In view of the nature of the disturbed calcium metabolism in cured thyrotoxicosis and parathyroid tetany when these diseases occur in the same patient a suggested line of treatment would be as follows:

1. Large doses of calcium, such as 7 g. of the carbonate or 22.5 g. of the lactate daily should be given for about a year postoperatively to correct the demineralisation resulting from the thyrotoxicosis.

2. The calcium intake should then be reduced to normal requirements (0.7–1 g. daily) and calcæmic doses of vitamin D given (60,000–200,000 I.U. daily according to McLean (1941). The action of vitamin D in such doses resembles that of parathyroid hormone in supplying calcium to the blood-stream from the bones. The serum calcium can be determined from time to time, thus ensuring that no hypercalcæmia results.

In determining the effect of various therapeutic agents on the serum-calcium level in parathyroid tetany account must be taken of regeneration of or the presence of

TABLE I—SUMMARY OF CASES OF PARATHYROID TETANY INVESTIGATED

Case	Age	Since attack of tetany	Since any calcium medication	Daily intake: Calcium	Daily intake: Phosphorus	Maximum secretion of free HCl *	Milk daily
	Years			g		(c cm n/10 NaOH	oz
1	25	3¼	1¼	0 96	1 08	27	16
2	51	5½	5¼	0 36	0 92	45	5
3	38	4	3	0 5	0 8	30	7
4	17	3¼	2	1 2	1 3	24	24
5	31	11	6	1 16	1 36	18	30
6	30	3½	2	1	1 1	10	22
7	44	5¼	2	0 84	1 02	16	12

* By fractional test-meal using gruel (Beaumont, G E and Dodds, E C Recent Advances in Medicine, London, 1941)

Thyroid feeding —The results are given in table II In every instance except one, thyroid administration was followed by a fall in serum calcium The two mean values, 8 51 mg per 100 c cm before and 8 01 mg after thyroid, were found to have a highly significant difference (t = 4 1 P = 0 001), in spite of the small number of cases The value of t was calculated from the individual pair differences

Employing the same statistical methods no significant difference was found in serum inorganic phosphorus before and after thyroid feeding (t = 0 6 and P = 0 5)

In every instance thyroid administration was accompanied by a rise in the serum phosphatase, the mean value rising from 4 77 units to 6 16 This difference was found to be highly significant (t = 4 1, P = 001) If the serum phosphatases of parathyroid tetany are compared with the normals previously published by Robertson (1941a) the two mean values of 4 77 units and 7 795 units are found to have a highly significant difference (t = 3 16 P < 0 01) The two mean values of 6 16 units for parathyroid tetany after thyroid feeding and 7 795 units for normals show no significant difference (t = 1 26 P = 0 2) These investigations indicate that thyroid administration lowers the serum calcium of parathyroid tetany, findings opposed to current belief The serum phosphatase is diminished in parathyroid tetany and thyroid feeding raises it to normal

Calcium salts —In table III are the findings after the daily ingestion of the equivalent of 3 g of calcium for two weeks The analyses were carried out in the postabsorptive state and the phosphate, lactate or chloride were employed No significant difference could be detected in the level of the postabsorptive serum calcium before and after the daily administration for two weeks of these calcium salts in equivalent doses For phosphate (t = 0 92 P = 0 4), for lactate (t = 1 28, P = 0 3) and for chloride (t = 2 11, P > 0 05), the values of t being calculated from the individual pair differences No significant alteration in the serum phosphorus was found to take place after these various calcium administrations

It is well established now (Bauer and Ropes 192 Greenberg and Gunther 1932, Freeman Kant and I 1935) that in normal people the serum-calcium respon to ingested calcium reaches its maximum at the end two hours Preliminary observations showed that cas of parathyroid tetany responded in a similar manne the maximum concentration of serum calcium bei reached at the second hour In table IV are given t variations in the serum calcium and inorganic phospho before and two hours after the ingestion of various solub and insoluble calcium salts The absorption of an inso uble calcium salt will depend on its solution by the fr hydrochloric acid of the stomach All the cases invest gated had a normal secretion of free hydrochloric acid Examination of the results statistically, the value of being calculated from the individual pair differences show that there is no significant difference in the serum calcium before and after calcium phosphate (t = 1 5 and P = 0 1), but that the ingestion of calcium lacta and carbonate produced an elevation of the serum calcium which was highly significant (for lactate t = 5 2 and P << 0 001, and for carbonate t = 4 93 and P < 0 001) The serum inorganic phosphorus was no affected by the ingestion of any of the calcium salts I seems, therefore, *that the efficacy of a calcium salt* i raising the serum calcium does not depend on its solu bility (assuming a normal gastric secretion of free hydro chloric acid) but on its acid radicle

TABLE II—EFFECT OF THYROID FEEDING ON SERUM CALCIU INORGANIC PHOSPHORUS AND PHOSPHATASE

Case	Before thyroid: Calcium	Before thyroid: Inorganic phosphorus	Before thyroid: Phosphatase *	Before thyroid: B M R †	After thyroid: Calcium	After thyroid: Inorganic phosphorus	After thyroid: Phosphatase *	After thyroid: B M R †
	(mg per 100 c cm)				(mg per 100 c cm)			
1	8 2	3 6	5 4	− 16	7 2	3 8	7 7	+
2	9	4 0	5 5	+ 6	9 0	4 3	6 4	+ 1
3	9 9	4 3	4	− 22	9 5	4 1	5 1	+ 11
4	8 2	5 7	5 2	− 5	7 9	5 4	8	+ 21
5	6 2	5 5	5 2	− 10	5 6	5 7	6 3	+ 9
6	9 1	4 2	4 3	+ 2	8 4	3 9	4 4	+ 2
7	9	4 5	3 8	− 31	8 5	4 1	5 2	− 7
Mean	8 51	4 54	4 77	− 11	8 01	4 47	6 16	+ 10

* Units of King and Armstrong † Standard of Aub and Dubo

Ammonium chloride —The results are given in table V Three grammes of ammonium chloride were given daily and if it is assumed that complete conversion into ure and hydrochloric acid occurred this would be equivalen to 2 05 g of hydrochloric acid or 560 c cm of a N/1 solution There were no significant alterations in th serum calcium (t = 1 005 , P > 0 3) and serum inorgani phosphorus (t = 0 73 , P = 0 5) as a result of ammonium chloride feeding in doses of 3 g daily, despite significan changes in the alkali reserve (t = 2 44 , P < 0 05)

TABLE III—SERUM CALCIUM AND INORGANIC PHOSPHORUS IN THE POSTABSORPTIVE STATE, AFTER INGESTION OF VARIOUS CALCIUM SALTS IN DOSES EQUIVALENT TO 3 G OF CALCIUM (7 5 G PHOSPHATE, 8 25 G CHLORIDE OR 22 5 G LACTATE) DAILY FOR TWO WEEKS

Case	Wt (kg)	Daily dosage Calcium (mg/kg)	Serum calcium: Phosphate B	Serum calcium: Phosphate A	Serum calcium: Lactate B	Serum calcium: Lactate A	Serum calcium: Chloride B	Serum calcium: Chloride A	Serum phosphorus: Phosphate B	Serum phosphorus: Phosphate A	Serum phosphorus: Lactate B	Serum phosphorus: Lactate A	Serum phosphorus: Chloride B	Serum phosphorus: Chloride A
			(mg per 100 c cm)											
2	46	65 2	9	8 7	9 6	9	8 8	9 7	3 9	4	4 5	4 3	3 7	4 2
3	48	62 5	9 5	9 3	9 3	8 7	9	9	4 4	3 7	4	4 4	4	4 3
4	54	55 6	8 2	7 9	8 3	7 1	7 9	8 3	5 7	6 4	6	5 9	6	5 6
5	48	62 5	6 2	6 8	7 8	8 3	7	8	5 5	4 9	5	5 2	4 5	4 6
6	47	63 8	9 6	8 9	9	9	9	9	4 2	3 8	4	3 6	4	4
Mean			8 50	8 32	8 8	8 42	8 34	8 8	4 74	4 56	4 7	4 68	4 44	4 54

TABLE IV—SERUM CALCIUM AND INORGANIC PHOSPHORUS 2 HOURS AFTER INGESTION OF SOLUBLE AND INSOLUBLE CALCIUM SALTS IN DOSES EQUIVALENT TO 2 G OF CALCIUM (5 G PHOSPHATE, 15 G LACTATE OR 5 G CARBONATES)

Dosage of calcium (mg /kg)	Calcium phosphate: Serum calcium B	Calcium phosphate: Serum calcium A	Calcium phosphate: Serum phosphorus B	Calcium phosphate: Serum phosphorus A	Calcium lactate: Serum calcium B	Calcium lactate: Serum calcium A	Calcium lactate: Serum phosphorus B	Calcium lactate: Serum phosphorus A	Calcium carbonat: Serum calcium B	Calcium carbonat: Serum calcium A	Calcium carbonat: Serum phosphorus B	Calcium carbonat: Serum phosphorus A
	(mg per 100 c cm)											
43 5	9	9 2	4 3	4 3	9 6	10 7	4 5	4 8	9 3	9 8	4 2	4 1
41 7	8 7	8 9	4 4	4 3	9 3	10 2	4	4 3	9 1	9 4	4 2	4
37	8	8 7	5 9	6 7	8 3	10 1	6	6	8 9	9 8	5 2	5
42	8 3	8	5 2	5 2	7 8	8 8	5	5 1	8 4	9 1	4 8	4 4
43	9	9 6	4	4 3	8 9	9 5	3 9	3 9	9 6	10	4	3 6
	8 6	8 88	4 76	4 96	8 78	9 86	4 68	4 82	9 06	9 62	4 48	4 3

B = before A = after

Vitamin D (calciferol) —The results are given in table In every instance calciferol administration was followed by a rise in the serum calcium The elevation of the serum calcium was highly significant (t = 12 7 and P <<< 0 001) and was present in the postabsorptive phase This rise in the serum calcium occurred in the absence of any orally ingested calcium other than that provided in the diet No significant changes occurred in the serum inorganic phosphorus (t = 0 8 , P = 0 4)

REGENERATION OF PARATHYROID TISSUE

In a previous paper, Robertson (1941b) attention was drawn to mild forms of parathyroid disturbance, where in the absence of the clinical manifestations of tetany the serum calcium fell Without any form of calcium therapy, within a few weeks the serum calcium rose Likely causes of this fall in the serum calcium were said to be trauma to the parathyroid glands through manipulation during the operation and disturbance of their blood supply through œdema, blood-clot or infection When destruction of the parathyroid glands is present and tetany appears, steps must be taken to increase the serum calcium Many workers have raised the question of the presence of accessory and regenerative parathyroid tissue in the body which might function during tetany When therapy designed to raise the serum calcium is being given, it is not easy to determine with certainty the part, if any, played by regenerative or accessory parathyroid tissue In table III of this paper it was shown that, in the postabsorptive state, calcium given by mouth did not elevate the serum calcium It follows therefore that, if any elevation of serum calcium occurs in the postabsorptive state, either regeneration of or accessory parathyroid tissue is present

In table VI, observations on twelve cases of parathyroid tetany are set out Two cases had no treatment, nine were given calcium lactate by mouth, and one was given a single injection of calcium intravenously In the postabsorptive state none of these forms of calcium therapy could explain an elevated serum calcium In every instance there was a rise in the serum calcium above the level during tetany The mean values of 6 8 mg per 100 c cm and 8 9 mg were found to have a highly significant difference (t = 5 95 , P << 0 001) It seems that following tetany there is regeneration of or accessory parathyroid tissue It must be pointed out, however, that despite the presence of this accessory parathyroid tissue the serum calcium still falls far short of normal There is a very significant difference between the serum-calcium levels of the so-called chronic tetany, with a mean of 8 0 mg per 100 c cm , and of the normals published previously (Robertson 1941a) with a mean of 10 30 mg (t = 3 32 , P < 0 01)

TABLE V—POSTABSORPTIVE STUDY—SERUM CALCIUM, INORGANIC PHOSPHORUS AND ALKALI RESERVE AFTER INGESTION OF 3 G OF AMMONIUM CHLORIDE DAILY FOR TWO WEEKS LEVELS OF CALCIUM AND INORGANIC PHOSPHORUS AFTER THE DAILY INGESTION OF 2 5 MG OF CALCIFEROL (100 000 I U VITAMIN D) FOR TWO WEEKS WITHOUT CALCIUM ADDITIONAL TO DIET

Case	After ammonium chloride						After calciferol			
	Serum calcium		Serum phosphorus		Alkali reserve		Serum calcium		Serum phosphorus	
	B	A	B	A	B	A	B	A	B	A
	mg per 100 c cm				c cm CO₂%		mg per 100 c cm			
[illegible]	8 3	8 3	3 3	3 9	67	63	8 3	9 7	3 9	4 3
[illegible]	9 3	9 3	4 1	4 4	68	64	9 3	10 1	4 4	4 2
4	7 1	7 8	5 9	5 6	61	61	7 8	8 0	5 6	5 2
[illegible]	8 8	6 3	4 6	5 6	68	62	6 3	8 4	5 6	4 8
6	9	9 2	3 6	3 8	56	56	9 2	9 6	3 8	4
Mean	8 55	8 18	4 3	4 66	64	61	8 18	9 31	4 66	4 5

DISCUSSION

Thyrotoxicosis is associated with an excessive calcium excretion, which may lead to an osteoporosis, and a normal calcium absorption The calcium excretion falls to normal with the cure of the thyrotoxicosis In parathyroid tetany a diminished secretion of parathyroid hormone causes the serum calcium to fall and this is associated with a diminished calcium excretion and a normal absorption Treatment of parathyroid tetany aims at raising the low serum calcium and this should be achieved by some mechanism similar in nature to that of parathyroid hormone which controls the release of calcium from the skeleton to the blood-stream The raising of the serum calcium in tetany by large doses of calcium salts appears to be wrong in principle

TABLE VI—SPONTANEOUS REGENERATION OF PARATHYROID TISSUE SERUM CALCIUM ANALYSES IN POSTABSORPTIVE STATE

Case	Serum calcium during tetany	Follow up observations		Treatment if any
		Since attack of tetany	Serum calcium	
	mg per 100 c cm	months	mg per 100 c cm	
1	7 8	6	9	Oral calcium lactate
6	8 4	10	9 1	
2	7 5	62	9	1 injection of 10 c cm Calcium Sandoz intravenously
8	5 8	10	9	Oral calcium lactate
3	8 6	2	10 4	
9	7 7	1	9 6	None
4	6 3	7	7 5	Oral calcium lactate
10	7 5	1	8	
7	5 9	12	9	
5	4 4	9	8	
11	4 5	22	7 7	
12	8 7	3	10 2	None
Mean	6 8		8 9	—

When however parathyroid tetany complicates subtotal thyroidectomy for the relief of thyrotoxicosis the treatment should take into account two factors First, a demineralised skeleton in need of calcium, and a serum calcium requiring elevation Large doses of calcium meets the first demand, but the second is not so simple The disadvantages of injections of parathyroid hormone have already been referred to , thyroid feeding has been shown to lower still further the diminished serum calcium , the action of calcium salts is only transitory , therapeutic doses of ammonium chloride while producing a mild acidosis were found not to raise the serum calcium The administration of a low phosphorus diet has been clearly shown by Shelling and Goodman (1934) and Anderson and Lyall (1939), among others, to be very efficacious in raising the diminished serum calcium of tetany But food restrictions in war time make it very difficult if not impossible to procure a low phosphorus diet, including as it does fruit, vegetables, white of eggs, carbohydrates and fats Further, a low phosphorus diet is combined with a high calcium intake of at least 2 g daily While this intake of calcium can do no harm to subjects with normally functioning parathyroids, in tetany with damaged parathyroids and a diminished calcium excretion it would lead to an unnecessary storage of calcium Some observations reported in this paper confirm (Himsworth and Maizels's findings in 1940) that vitamin D (calciferol) can raise the reduced serum calcium of parathyroid tetany When given in adequate doses of 100,000 I U daily it raised the serum calcium despite a low calcium and high phosphorus content of the diet (i e case 1 in tables I and V) In view of the nature of the disturbed calcium metabolism in cured thyrotoxicosis and parathyroid tetany, when these diseases occur in the same patient a suggested line of treatment would be as follows

1 Large doses of calcium, such as 7 g of the carbonate or 22 5 g of the lactate daily, should be given for about a year postoperatively to correct the demineralisation resulting from the thyrotoxicosis

2 The calcium intake should then be reduced to normal requirements (0 7–1 g daily) and calcæmic doses of vitamin D given (60,000–200,000 I U daily according to McLean (1941) The action of vitamin D in such doses resembles that of parathyroid hormone in supplying calcium to the blood stream from the bones The serum calcium can be determined from time to time, thus ensuring that no hypercalcæmia results

In determining the effect of various therapeutic agents on the serum-calcium level in parathyroid tetany account must be taken of regeneration of, or the presence of

TABLE I—SUMMARY OF CASES OF PARATHYROID TETANY INVESTIGATED

Case	Age	Since attack of tetany	Since any calcium medication	Daily intake: Calcium	Daily intake: Phosphorus	Maximum secretion of free HCl *	Milk daily
	Years			g		(c cm n/10 NaOH)	oz
1	25	3½	1½	0 96	1 08	27	16
2	51	5½	5½	0 36	0 92	45	5
3	38	4	3	0 5	0 8	30	7
4	17	3½	2	1 2	1 3	24	24
5	31	11	6	1 16	1 36	18	30
6	30	5½	2	1	1 1	10	22
7	44	5½	2	0 84	1 02	16	12

* By fractional test-meal using gruel (Beaumont G E and Dodds, E C Recent Advances in Medicine, London, 1941)

Thyroid feeding—The results are given in table II In every instance except one thyroid administration was followed by a fall in serum calcium The two mean values, 8 51 mg per 100 c cm before and 8 01 mg after thyroid, were found to have a highly significant difference (t = 4 1 P = 0 001) in spite of the small number of cases The value of t was calculated from the individual pair differences

Employing the same statistical methods no significant difference was found in serum inorganic phosphorus before and after thyroid feeding (t = 0 6 and P = 0 5)

In every instance thyroid administration was accompanied by a rise in the serum phosphatase, the mean value rising from 4 77 units to 6 16 This difference was found to be highly significant (t = 4 1, P = 001) If the serum phosphatases of parathyroid tetany are compared with the normals previously published by Robertson (1941a) the two mean values of 4 77 units and 7 795 units are found to have a highly significant difference (t = 3 16, P < 0 01) The two mean values of 6 16 units for parathyroid tetany after thyroid feeding and 7 795 units for normals show no significant difference (t = 1 26 P = 0 2) These investigations indicate that thyroid administration lowers the serum calcium of parathyroid tetany, findings opposed to current belief The serum phosphatase is diminished in parathyroid tetany and thyroid feeding raises it to normal

Calcium salts—In table III are the findings after the daily ingestion of the equivalent of 3 g of calcium for two weeks The analyses were carried out in the postabsorptive state and the phosphate, lactate or chloride were employed No significant difference could be detected in the level of the postabsorptive serum calcium before and after the daily administration for two weeks of these calcium salts in equivalent doses For phosphate (t = 0 92, P = 0 4), for lactate (t = 1 28, P = 0 3) and for chloride (t = 2 11, P > 0 05), the values of t being calculated from the individual pair differences No significant alteration in the serum phosphorus was found to take place after these various calcium administrations

It is well established now (Bauer and Ropes 19 Greenberg and Gunther 1932 Freeman Kant and I 1935) that in normal people the serum-calcium respon to ingested calcium reaches its maximum at the end two hours Preliminary observations showed that cas of parathyroid tetany responded in a similar mann the maximum concentration of serum calcium be reached at the second hour In table IV are given t variations in the serum calcium and inorganic phosphor before and two hours after the ingestion of various solub and insoluble calcium salts The absorption of an inso uble calcium salt will depend on its solution by the fr hydrochloric acid of the stomach All the cases invest gated had a normal secretion of free hydrochloric aci Examination of the results statistically, the value of being calculated from the individual pair difference show that there is no significant difference in the seru calcium before and after calcium phosphate (t = 1 5 and P = 0 1), but that the ingestion of calcium lacta and carbonate produced an elevation of the seru calcium which was highly significant (for lactate t = 5 2 and P << 0 001, and for carbonate t = 4 93 and P 0 001) The serum inorganic phosphorus was n affected by the ingestion of any of the calcium salts I seems, therefore, that the efficacy of a calcium salt raising the serum calcium does not depend on its solu bility (assuming a normal gastric secretion of free hydr chloric acid) but on its acid radicle

TABLE II—EFFECT OF THYROID FEEDING ON SERUM CALCIU INORGANIC PHOSPHORUS AND PHOSPHATASE

Case	Before thyroid: Calcium	Before thyroid: Inorganic phosphorus	Before thyroid: Phosphatase *	Before thyroid: B M R †	After thyroid: Calcium	After thyroid: Inorganic phosphorus	After thyroid: Phosphatase *	After thyroid: B M R †
	(mg per 100 c cm)				(mg per 100 c cm)			
1	8 2	3 6	5 4	− 16	7 2	3 8	7 7	+
2	9	4 0	5 5	+ 6	9 0	4 3	6 4	+ 1
3	9 9	4 3	4	− 22	9 5	4 1	5 1	+ 11
4	8 2	5 7	5 2	− 5	7 9	5 4	8	+ 21
5	6 2	5 5	5 2	− 10	5 6	5 7	6 3	+
6	9 1	4 2	4 3	+ 2	8 4	3 9	4 4	+ 23
7	9	4 5	3 8	− 31	8 5	4 1	5 2	− 7
Mean	8 51	4 54	4 77	− 11	8 01	4 47	6 16	+ 10

* Units of King and Armstrong † Standard of Aub and Dubo

Ammonium chloride—The results are given in table V Three grammes of ammonium chloride were given daily and if it is assumed that complete conversion into urea and hydrochloric acid occurred this would be equivalent to 2 05 g of hydrochloric acid or 560 c cm of a N/10 solution There were no significant alterations in the serum calcium (t = 1 005, P > 0 3) and serum inorganic phosphorus (t = 0 73, P = 0 5) as a result of ammonium chloride feeding in doses of 3 g daily, despite significant changes in the alkali reserve (t = 2 44, P < 0 05)

TABLE III—SERUM CALCIUM AND INORGANIC PHOSPHORUS IN THE POSTABSORPTIVE STATE, AFTER INGESTION OF VARIOUS CALCIUM SALTS IN DOSES EQUIVALENT TO 3 G OF CALCIUM (7 5 G PHOSPHATE, 8 25 G CHLORIDE OR 22 5 G LACTATE) DAILY FOR TWO WEEKS

Case	Wt (kg)	Daily dosage Calcium (mg/kg)	Serum calcium: Phosphate B	Serum calcium: Phosphate A	Serum calcium: Lactate B	Serum calcium: Lactate A	Serum calcium: Chloride B	Serum calcium: Chloride A	Serum phosphorus: Phosphate B	Serum phosphorus: Phosphate A	Serum phosphorus: Lactate B	Serum phosphorus: Lactate A	Serum phosphorus: Chloride B	Serum phosphorus: Chloride A
			(mg per 100 c cm)											
2	46	65 2	9	8 7	9 6	9	8 8	9 7	3 9	4	4 5	4 3	3 7	4 2
3	48	62 5	9 5	9 3	9 3	8 7	9	9	4 4	3 7	4	4 4	4	4 3
4	54	55 6	8 2	7 9	8 3	7 1	7 9	8 3	5 7	6 4	6	5 9	6	5 6
5	48	62 5	6 2	6 8	7 8	8 3	7	8	5 5	4 9	5	5 2	4 5	4 6
6	47	63 8	9 6	8 9	9	9	9	9	4 2	3 8	4	3 6	4	4
Mean			8 50	8 32	8 8	8 42	8 34	8 8	4 74	4 56	4 7	4 68	4 44	4 54

TABLE IV—SERUM CALCIUM AND INORGANIC PHOSPHORUS 2 HOURS AFTER INGESTION OF SOLUBLE AND INSOLUBLE CALCIUM SALTS IN DOSES EQUIVALENT TO 2 G OF CALCIUM (5 G PHOSPHATE, 15 G LACTATE OR 5 G CARBONATES)

Dosage of calcium (mg/kg)	Calcium phosphate: Serum calcium B	Calcium phosphate: Serum calcium A	Calcium phosphate: Serum phosphorus B	Calcium phosphate: Serum phosphorus A	Calcium lactate: Serum calcium B	Calcium lactate: Serum calcium A	Calcium lactate: Serum phosphorus B	Calcium lactate: Serum phosphorus A	Calcium carbonate: Serum calcium B	Calcium carbonate: Serum calcium A	Calcium carbonate: Serum phosphorus B	Calcium carbonate: Serum phosphorus A
	(mg per 100 c cm)											
43 5	9	9 2	4 3	4 3	9 6	10 7	4 5	4 8	9 3	9 8	4 2	4 1
41 7	8 7	8 9	4 4	4 3	9 3	10 2	4	4 3	9 1	9 4	4 2	4 2
37	8	8 7	5 9	6 7	8 3	10 1	6	6	8 9	9 8	5 2	[illegible]
42	8 3	8	5 2	5 2	7 8	8 8	5	5 1	8 4	9 1	4 8	4 4
43	9	9 6	4	4 3	8 9	9 5	3 9	3 9	9 6	10	4	3 6
	8 6	8 88	4 76	4 96	8 78	9 86	4 68	4 82	9 06	9 62	4 48	4 3

B = before A = after

Vitamin D (calciferol).—The results are given in table In every instance calciferol administration was lowed by a rise in the serum calcium. The elevation the serum calcium was highly significant (t = 12.7 and $\ll$ 0.001) and was present in the postabsorptive ase. This rise in the serum calcium occurred in the sence of any orally ingested calcium other than that ovided in the diet. No significant changes occurred in e serum inorganic phosphorus (t = 0.8, P = 0.4).

REGENERATION OF PARATHYROID TISSUE

In a previous paper, Robertson (1941b) attention was wn to mild forms of parathyroid disturbance, where the absence of the clinical manifestations of tetany e serum calcium fell. Without any form of calcium erapy, within a few weeks the serum calcium rose. ely causes of this fall in the serum calcium were said b trauma to the parathyroid glands through mani- ation during the operation and disturbance of their od supply through œdema, blood-clot or infection. en destruction of the parathyroid glands is present tetany appears, steps must be taken to increase the um calcium. Many workers have raised the question the presence of accessory and regenerative parathyroid e in the body which might function during tetany. therapy designed to raise the serum calcium is given, it is not easy to determine with certainty part, if any, played by regenerative or accessory thyroid tissue. In table III of this paper it was n that, in the postabsorptive state, calcium given by th did not elevate the serum calcium. It follows efore that, if any elevation of serum calcium occurs the postabsorptive state, either regeneration of or cessory parathyroid tissue is present.

In table VI, observations on twelve cases of parathyroid tetany are set out. Two cases had no treatment, nine were given calcium lactate by mouth, and one was given a single injection of calcium intravenously. In the postabsorptive state none of these forms of calcium therapy could explain an elevated serum calcium. In every instance there was a rise in the serum calcium above the level during tetany. The mean values of 6.8 mg per 100 c cm and 8.9 mg were found to have a highly significant difference (t = 5.95, P $\ll$ 0.001). It seems that following tetany there is regeneration of or accessory parathyroid tissue. It must be pointed out, however, that despite the presence of this accessory parathyroid tissue the serum calcium still falls far short of normal. There is a very significant difference between the serum-calcium levels of the so-called chronic tetany, with a mean of 8.9 mg per 100 c cm, and of the normals published previously (Robertson 1941a) with a mean of 10.39 mg (t = 3.32, P < 0.01).

TABLE V—POSTABSORPTIVE STUDY—SERUM CALCIUM, INORGANIC PHOSPHORUS AND ALKALI RESERVE AFTER INGESTION OF 3 G OF AMMONIUM CHLORIDE DAILY FOR TWO WEEKS. LEVELS OF CALCIUM AND INORGANIC PHOSPHORUS AFTER THE DAILY INGESTION OF 2.5 MG OF CALCIFEROL (100,000 I U VITAMIN D) FOR TWO WEEKS WITHOUT CALCIUM ADDITIONAL TO DIET

Case	After ammonium chloride						After calciferol			
	Serum calcium		Serum phosphorus		Alkali reserve		Serum calcium		Serum phosphorus	
	B	A	B	A	B	A	B	A	B	A
	mg per 100 c cm				c cm CO_2 %		mg per 100 c cm			
1	8.3	8.3	3.3	3.9	67	63	8.3	9.7	3.9	4.3
3	9.3	9.3	4.1	4.4	68	64	9.3	10.1	4.4	4.2
4	7.1	7.8	5.9	5.6	61	61	7.8	8.9	5.6	5.2
5	8.8	6.3	4.6	5.6	68	62	6.3	8.4	5.6	4.8
[illegible]	9	9.2	3.6	3.8	56	56	9.2	9.6	3.8	4
Mean	8.55	8.18	4.5	4.66	64	61	8.18	9.34	4.66	4.5

DISCUSSION

Thyrotoxicosis is associated with an excessive calcium excretion, which may lead to an osteoporosis, and a normal calcium absorption. The calcium excretion falls to normal with the cure of the thyrotoxicosis. In parathyroid tetany a diminished secretion of parathyroid hormone causes the serum calcium to fall and this is associated with a diminished calcium excretion and a normal absorption. Treatment of parathyroid tetany aims at raising the low serum calcium and this should be achieved by some mechanism similar in nature to that of parathyroid hormone which controls the release of calcium from the skeleton to the blood-stream. The raising of the serum calcium in tetany by large doses of calcium salts appears to be wrong in principle.

TABLE VI—SPONTANEOUS REGENERATION OF PARATHYROID TISSUE. SERUM CALCIUM ANALYSES IN POSTABSORPTIVE STATE

Case	Serum calcium during tetany	Follow up observations		Treatment if any
		Since attack of tetany	Serum calcium	
	mg per 100 c cm	months	mg per 100 c cm	
1	7.8	6	9	Oral calcium lactate
6	8.4	40	9.1	
2	7.5	62	9	1 injection of 10 c cm Calcium Sandoz intravenously
8	5.8	30	9	Oral calcium lactate
3	8.6	2	10.4	
9	7.7	1	9.6	None
4	6.3	7	7.5	Oral calcium lactate
10	7.5	1	8	
7	5.9	12	9	
5	3.4	9	8	
11	4.5	22	7.7	
12	8.7	5	10.2	None
Mean	6.8		8.9	—

When however parathyroid tetany complicates subtotal thyroidectomy for the relief of thyrotoxicosis the treatment should take into account two factors. First, a demineralised skeleton in need of calcium and a serum calcium requiring elevation. Large doses of calcium meets the first demand, but the second is not so simple. The disadvantages of injections of parathyroid hormone have already been referred to; thyroid feeding has been shown to lower still further the diminished serum calcium; the action of calcium salts is only transitory; therapeutic doses of ammonium chloride while producing a mild acidosis were found not to raise the serum calcium. The administration of a low phosphorus diet has been clearly shown by Shelling and Goodman (1934) and Anderson and Lyall (1939), among others, to be very efficacious in raising the diminished serum calcium of tetany. But food restrictions in war-time make it very difficult if not impossible to procure a low phosphorus diet, including as it does fruit, vegetables, white of eggs, carbohydrates and fats. Further, a low phosphorus diet is combined with a high calcium intake of at least 2 g daily. While this intake of calcium can do no harm to subjects with normally functioning parathyroids, in tetany with damaged parathyroids and a diminished calcium excretion it would lead to an unnecessary storage of calcium. Some observations reported in this paper confirm (Himsworth and Maizels's findings in 1940) that vitamin D (calciferol) can raise the reduced serum calcium of parathyroid tetany. When given in adequate doses of 100,000 I U daily it raised the serum calcium despite a low calcium and high phosphorus content of the diet (i e case 1 in tables I and V). In view of the nature of the disturbed calcium metabolism in cured thyrotoxicosis and parathyroid tetany, when these diseases occur in the same patient a suggested line of treatment would be as follows:

1. Large doses of calcium, such as 7 g of the carbonate or 22.5 g of the lactate daily, should be given for about a year postoperatively to correct the demineralisation resulting from the thyrotoxicosis.

2. The calcium intake should then be reduced to normal requirements (0.7–1 g daily) and calcæmic doses of vitamin D given (60,000–200,000 I U daily according to McLean (1941). The action of vitamin D in such doses resembles that of parathyroid hormone in supplying calcium to the blood stream from the bones. The serum calcium can be determined from time to time, thus ensuring that no hypercalcæmia results.

In determining the effect of various therapeutic agents on the serum-calcium level in parathyroid tetany account must be taken of regeneration of, or the presence of accessory, parathyroid tissue These factors appear to come into play during the year after the attack of tetany For comparative studies the blood for calcium estimation should be withdrawn at standard times in relation to food and medicines

SUMMARY

A series of seven cases of parathyroid tetany of 3½–11 years' duration have been investigated

Thyroid feeding depressed the serum calcium and had no effect on the serum inorganic phosphorus The serum phosphatase was diminished in tetany and thyroid feeding raised it to normal

The ingestion of 3 g of calcium daily, as the lactate, chloride or phosphate for two weeks produced no significant changes in the serum calcium or inorganic phosphorus

Significant elevations of the serum calcium were found *two hours after the ingestion of calcium lactate and* carbonate Calcium phosphate produced no significant rise in the serum-calcium level The ability to raise a depressed serum calcium appears to depend not on the solubility of the calcium ingested but on its acid radicle

Ammonium chloride in doses of 3 g daily for two weeks produced a mild acidosis, but was without effect on the serum calcium or inorganic phosphorus

Vitamin D (calciferol) in doses of 100 000 international units daily for two weeks produced very significant elevations in the serum calcium and was without effect on the inorganic phosphorus

After an attack of parathyroid tetany parathyroid tissue seems to regenerate Despite this regeneration or the presence of accessory parathyroid tissue the serum calcium still falls far short of normal

The treatment of parathyroid tetany when it complicates the cure of thyrotoxicosis should include the ingestion of large doses of calcium salts only until the decalcification of thyrotoxicosis has been corrected Thereafter the treatment should aim at imitating the action of parathyroid hormone Vitamin D (calciferol) in adequate or calcæmic doses had such a therapeutic effect

I am grateful to Prof E C Dodds for his criticism of this paper, Mr A L Bacharach of Messrs Glaxo Laboratories for generous supplies of calciferol and for help on statistics, Mr S H White and his staff of the Pharmaceutical Department, Middlesex Hospital, for much helpful advice, and the honorary staff of the Middlesex Hospital for permission to investigate their cases

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ASSOCIATION OF SCIENTIFIC WORKERS —This society is holding a conference on science and the war effort at the Caxton Hall, Westminster, on Jan 10 and 11 Further information may be had from the conference secretaries of the association, 30, Bedford Row, London, W C 1

RESECTION OF HEAD OF PANCREAS AN DUODENUM FOR CARCINOMA

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THE first successful resection of the duodenum and portion of the pancreas for carcinoma involving the ampulla of Vater and adjacent pancreatic head was reported by Whipple, Parsons and Mullins (1935) Later, Whipple (1938) collected and reported on 11 cases in which duodenectomy and partial pancreatectomy had been performed for malignant growths localised to the lower reaches of the common bile-duct or to the head of the pancreas and of these 6 survived operation

The operations were, in many essential respects, similar two stage procedures At the first operation, biliary obstruction was overcome by anastomosing the gall bladder to the stomach or to a loop of proximal jejunum, after which a posterior gastrojejunostomy was performed The first operation was completed by ligating the supraduodenal portion of the common bile duct and by tying the gastro duodenal artery in continuity in order to diminish the blood supply to the carcinomatous area After an interval of 2-3 weeks, by which time it was hoped that the patient would show an all round improvement following an intensive course of treatment, the second operation was carried out This consisted in thoroughly mobilising the duodenum and the head of the pancreas by Kocher's method, transecting the antrum of the stomach close to the pyloric ring or dividing the beginning of the duodenum between crushing clamps, after which the distal part of the third portion of the duodenum was divided between enterotomes, and a generous wedge-shaped area of the head of the pancreas, or maybe the entire head, up to or including its attenuated neck, was cut away together with the attached and now liberated U shaped duodenum After this wide resection the proximal and distal duodenal stumps embraced by the *enterotomes* were oversewn with silk and securely invaginated with purse string sutures The duct of Wirsung was, as a rule, picked up and ligatured, the oozing cut surface of the pancreas oversewn with a continuous locking stitch and then finally sealed off with an omental graft The operative field was drained with a strip of corrugated rubber, a Penrose tube, or a piece of guttered plastic glass In some of the cases the abdominal incision was closed with a series of through and through interrupted sutures of stainless alloy steel wire to guard against the possibility of dehiscence of the wound or post operative eventration

Orr (1941) gives a detailed and tabulated account of all the cases which have been reported to date Of the 15 patients subjected to these two-stage radical excisions, 5 (33 3%) died as a result of the operation, while of the remaining 10 patients, 3 later succumbed to metastatic implants in the liver, 2 from stenosis of the stoma which had been fashioned between the gall-bladder and the stomach or between the gall-bladder and a loop of proximal jejunum, and 1 from bile peritonitis Only 4 were alive at the time of his publication These figures are so disheartening that one may well ask if such heroic measures as partial pancreatectomy and duodenectomy for carcinoma are, in fact justifiable On the other hand, it is well to remember that many of the tumours of the head of the pancreas and of the ampulla of Vater are localised and resectable even at the time of the patient's death, that 60% show no evidence of metastases at operation or at autopsy, that the majority are lethargic in growth and are comparatively benign in character, and that in the present state of our knowledge radical resection offers the only hope of cure

In my opinion, success in this difficult field of visceral surgery is not likely to be achieved in the future unless cases of obstructive jaundice are submitted to inquiry by operation more promptly than obtains at the present time, and until the technical details of the two stage procedure, as so accurately described by Whipple (1938) Brunschwig (1937), Illingworth (1939), Moreland and Freeman (1941), and Ransom (1938) are thoroughly mastered by abdominal surgeons Illingworth (1939) was the first British surgeon to publish a case of resection of the duodenum and head of the pancreas by this two stage method His patient after putting up a splendid fight died from bile peritonitis on the 43rd post-operative day

The following is an account of a case of carcinoma of the ampulla of Vater, in which during the performance of a straightforward cholecystectomy for cholesterosis and gall stones a small cancer of the terminal part of the common bile-duct unfortunately escaped detection, but 6 months later it was possible to restore the patient to health by the radical two-stage procedure

CASE-HISTORY

A married woman, aged 53 was admitted to the Southend General Hospital on May 10, 1940, complaining of flatulent dyspepsia and attacks of bilious vomiting She stated that for some 2–3 months she had suffered from wind and a feeling of distension after meals and that there would be a dull aching pain in the pit of the stomach or below the right rib, which at times passed through the centre of the back There was no history of jaundice or attacks of biliary colic, although about ten days before admission she had had what she described as a bilious attack for 2 days, during which time she vomited large amounts of frothy, yellow stained fluid Her bowels worked regularly and the motions were dark brown in colour There were no symptoms referable to the urinary or genital tract She was a sallow thin patient in good condition heart and lungs clear some tenderness in the region of the gall-bladder which, however, was not palpable No mass could be detected in the abdomen Rectal and vaginal examinations were negative A complete blood investigation showed a slight degree of secondary anæmia No abnormal constituent could be detected in the urine A Graham dye test supported the diagnosis of chronic cholecystitis associated with gall stones A barium meal X-ray examination was not carried out, nor were specimens of the stools tested for occult blood

First operation cholecystectomy—On May 22 the abdomen was explored through a right subcostal muscle splitting incision The stomach was normal, there was no evidence of duodenal ulcer, the gall bladder appeared normal but contained three small stones After displaying the three ducts, a retrograde cholecystectomy was undertaken As the biliary passages appeared healthy and contained no calculus, they were not probed nor was the head of the pancreas or the second portion of the duodenum examined The abdominal incision was approximated in the usual manner and a rubber drain was led down to the stump of the cystic duct The excised gall bladder was slit open and examined It was a typical strawberry gall bladder containing three cholesterol stones Postoperative convalescence was stormy and in spite of gastric aspiration with a Ryle's tube the patient had several bouts of intractable vomiting She rapidly became dehydrated and emaciated in spite of intravenous infusions and other supportive measures including blood transfusions A barium meal X-ray examination was attempted but this failed in its object as the patient collapsed during the screening Shortly after this she improved slowly, the vomiting ceased altogether, she gained in weight, and was eventually discharged to a convalescent home on June 16

She was readmitted to the General Hospital on Dec 6, 1940, nearly 6 months later According to the case sheet, three weeks after leaving hospital she had had another attack of abdominal pain and this was followed by vomiting The attacks became recurrent, 12 days being the longest free period In the attacks she got gradually increasing distension of the upper abdomen, accompanied by colicky pain, then she would vomit large quantities of bitter fluid She had recognized food taken on the previous day in the vomited material She said she had lost 1½ st in weight in 4 months and that she was steadily going downhill She was pale, thin and weary, heart and lungs clear, blood pressure 110/70 mm Hg Abdomen scar sound, but much epigastric distension and gurgling and splashing sounds elicited on palpation No mass felt Nothing abnormal discovered in the pelvis Blood examination showed a fairly severe microcytic anæmia The urine was free of bile, but contained a trace of albumin Barium meal X-ray examination stomach and duodenum distended, with an appearance suggesting either a filling defect due to neoplasm in the second part of duodenum, or an obstruction due to bands

Second operation gastrojejunostomy and duodenotomy—On Dec 8 the abdomen was opened through a long right upper transrectus muscle splitting incision It was at once evident that satisfactory exploration was impossible until the bloated stomach, which occupied the entire upper abdomen, was deflated The anæsthetist was accordingly instructed to pass a small Ryle's tube through the nostril into the stomach, and when this was done the viscus immediately collapsed The first and second parts of the duodenum were much distended and the muscular coats hypertrophied On invaginating the anterior wall of the second portion of the duodenum opposite the *papilla* of Vater, a circular ulcer with a diameter of approximately 1 in and with hard everted rolled over edges could be felt projecting into the lumen of the gut The tumour mass could be traced to the adjacent portion of the head of the pancreas, which was of metallic hardness and inflexible The whole tumour could, however, be pulled upwards and moved freely from side to side, and did not appear to be anchored to the vulnerable inferior vena cava The anterior wall of the second portion of the duodenum was incised for 2 in, and after retracting the edges of the gut with Allis forceps and sucking out the contents of the duodenum with a suction tube a good view of the interior of the duodenum with its contained cancerous ulcer could be obtained The duodenotomy incision was then closed with a three tier suture and a posterior gastrojejunostomy with a vertical stoma was fashioned without the aid of clamps No enlarged lymph nodes could be felt in the region of the growth, and the liver surface was smooth and even The common bile duct was moderately distended, and I was tempted to complete the first stage of the operation by anastomosing the choledochus to the small intestine However, after the gastro jejunostomy the patient was in poor condition, so the abdominal incision was closed expeditiously with a series of interrupted floss silk sutures The gastroduodenal artery was not ligated in continuity nor was a fragment of the tumour removed for microscopic investigation The patient had an uneventful convalescence after the first stage operation and was able to take fluids and semi-fluid nourishment without restraint, but towards the end of the second postoperative week the conjunctivæ became noticeably tinted with bile and the motions were putty coloured

Third operation excision of duodenum and head of pancreas, choledochojejunostomy and entero anastomosis—On Dec 28 the previous vertical epigastric incision was reopened and the silk sutures were removed The pylorus and the first, second and third parts of the duodenum were liberally freed and mobilised The portal vein was exposed and a number of tributaries were found running into it from the first and second parts of the duodenum Some of these veins were very large and thin-walled Each was ligatured in two places with fine silk, and then divided The pyloric antrum was transected between clamps and the proximal end of the stomach invaginated and buttressed with adjacent omentum The common bile duct, which was about the size of my middle finger, was cut across low down between hæmostats, and the duodenum and the growth were freed from the right side and pulled over to the left (medially) together with the head of the pancreas The neck of the pancreas was then divided between hæmostats, and the remaining stump was oversewn and covered with an omental graft The third part of the duodenum towards the duodenojejunal flexure was severed between the crushing forceps, and the distal end invaginated with a silk purse string stitch The growth, the duodenum and the head of the pancreas were then removed intact A loop of proximal jejunum some 18 in below the previous gastrojejunostomy was brought up over the transverse colon to the cut end of the common bile duct and an end-to side anastomosis was performed, two layers of continuous sutures of fine silk being used After this a small side to side anastomosis between the ascending and descending limbs of jejunum was made to deflect the intestinal contents away from the biliary passages

The operative field was drained with a large piece of corrugated rubber and the abdominal incision drawn together with interrupted sutures of floss silk and deknatel The ducts of the pancreas were not specifically seen after the neck of the gland was transected, but were merely oversewn with a running mattress suture and protected with a pad of omentum

Postoperative progress—It took the patient about 6 weeks to recover from this operation The abdominal wound became infected and there was considerable discharge of thin purulent fluid through the lower portion of the incision After extraction of the silk sutures the wound slowly healed, leaving a raised keloid scar The jaundice subsided in the third postoperative week The stools were pale brown and semi-fluid for about 17 days, but after that they were well-formed, dark brown and inoffensive. There was no diarrhœa. The patient was given an alkaline mixture containing iron and arsenic 3 times a day, pancreatic extracts, and a semi-solid diet rich in fats sugars and the essential vitamins. She slowly gained in weight, and was discharged from hospital on Feb 6 1941. She was re-examined on June 31 when she was well had gained a stone, and was doing her own cooking. On Aug 6 the surgical registrar saw her and stated that she was looking well. The stools were formed, she was taking pancreatic extract and having only one bowel action a day with the aid of paraffin.

Pathologist's report—The specimen consists of the pyloric end of the stomach, the first, second and about half of the third portion of the duodenum, and the whole head of the pancreas a portion of the neck of the gland and the lower portion of the common bile-duct. There is a circular malignant ulcer with a diameter of approximately ¾ in occupying the second part of the duodenum and involving the papilla the ampulla of Vater and the adjacent head of the pancreas. A probe can be passed through the common duct and then through the centre of the base of the malignant crater. The carcinomatous process appears to have begun either in the ampulla of Vater or in the papilla itself. On microscopical examination, the growth was a columnar-celled tubular carcinoma, exact site of origin doubtful. Only a small area of pancreas was involved in the malignant process.

SUMMARY

The first successful resection of the duodenum and of the whole or a portion of the head of the pancreas including the neck, for carcinoma involving the lower reaches of the common bile-duct and adjacent creatic head was reported in 1935.

Since then only 15 patients have been subjected two-stage radical excisions. These consisted of a liminary cholecysto-enterostomy or choledocho ente tomy combined with gastrojejunostomy and follo some two weeks later by a wide resection of the duoden and the head of the pancreas.

Of these 15 patients 5 died as a result of the operati while of the remaining 10 patients, 3 later died f metastases in the liver, 2 from stenosis of the stoma which had been fashioned between the gall-bladder and the stomach or between the gall-bladder and a loop of proximal jejunum, and 1 from bile peritonitis. Only 4 are alive today.

Only 1 case of successful resection of the duodenum and a portion of the pancreas involving the ampulla of Vater for carcinoma has been reported in Britain. This patient died on the 43rd postoperative day from general peritonitis.

An account is here given of the radical treatment of cancer of the head of the pancreas and of the ampulla of Vater by the two-stage procedure and a case report is presented. The patient enjoyed fairly good health for nine months, but died from implants in the liver eleven months after the last operation.

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Reviews of Books

Conditioned Reflexes and Psychiatry

Vol II[1] IVAN PETROVITCH PAVLOV, late director of the physiological laboratories of the Institute of Experimental Medicine, Leningrad. Translated and edited by W HORSLEY GANTT, M D. London Lawrence and Wishart. Pp 199. 8s 6*d*

FEW psychiatrists have appreciated the zest and thoroughness with which Pavlov applied himself to the study of their problems in the last eight years of his life. His physiological method was valid for this field too, he believed and he set himself to apply the lessons learned by animal experiment to the abnormal behaviour of human beings, so variously interpreted by psychologists. The scattered lectures and articles in which his arguments and conclusions were advanced are now brought together, whether they can help the clinician to do his work better or can stimulate fruitful research is still a doubtful question, but the brilliance and honesty of the attempt are beyond dispute. No-one would guess from internal evidence that these were the writings of a man who had been unacquainted with clinical psychiatry until he applied himself to it at the beginning of his ninth decade. In 1930 he spoke of the need to promote "the natural and unavoidable approximation and final fusion of psychology with physiology, the subjective with the objective. The most common example of this blending obviously exists in mental diseases" He therefore made it his business to see a great many psychiatric cases, but he did not make vain pretensions, thus in 1934 he wrote "I am no clinician—I have been and remain a physiologist—and, of course, at present, so late in life, would have neither the time nor the possibility to become one" Clinical psychiatrists will none the less learn from his suggestions. The book follows on the "Lectures on Conditioned Reflexes," and the two volumes contain all Pavlov's published lectures from 1903 until his death. The translation has been admirably done by Dr Horsley Gantt whose years of study and friendship with Pavlov qualify him for the task. Dr Gantt has written, as an introduction, a critical appreciation and biographical sketch of Pavlov's closing years which is vivid and just.

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[1] Volume I which has been out of print, is now also available (Price 12s 6*d*

Ophthalmic Nursing

(3rd ed) MAURICE H WHITING, M B Camb F R C S. London J and A Churchill. Pp 157. 6*s*

THE new edition of this popular book should be specially useful in training nurses without previous experience of ophthalmic work. The early chapters on anatomy and physiology are concise but sufficient, except perhaps that a fuller description of the orbit would help to clarify the relations of the eye and the nose. The second half of the book gives sound advice on the nursing of operative and non-operative cases, and on theatre technique, but there are one or two omissions, for example, the actual technique for obtaining a conjunctival culture is not explained, and the nurse is not told how and when to sterilise ocular drops and lotions. The upkeep and care of special instruments such as the tonometer, perimeter, slit-lamp and Edridge Green lantern should be included, since these are maintained by the outpatient nurse, and a description of the ring or Haab giant magnet would add to the interest of the book. More emphasis might have been laid on the importance of knowing the type of injury commonly associated with an intraocular foreign body, and a busy staff nurse would welcome a more convenient way of examining the eyes of an obstreperous child than the one described. The section on the value of sulphonamides might mention their curative value in hypopyon ulcer. Gas injuries of the eye based on experience in the last war are well described, but it is a pity that nothing is said of injuries caused by incendiary and explosive bombs in this one.

A Textbook of Physiology

(7th ed) W D ZOETHOUT, Ph D, and W W TUTTLE, Ph D. London Henry Kimpton. Pp 743. 22*s* 6*d*

THIS American book has deservedly run through many editions, it is a complete elementary review of physiology and takes in such aspects of general and chemical physiology and histology as are necessary. It has been kept well up to date, and the illustrations, a mixture of the new and the rather old-fashioned, are instructive. The chapters are introduced by a list of cross references to related topics, the derivation of new terms is indicated, and at the end are a glossary of technical terms and a list of prefixes and suffixes. The work fully meets the needs of those studying physiology up to a standard somewhat lower than that required of medical students, but the balance of the book is so good that it would serve admirably as a jumping off place for independent folk who like to cull their knowledge from various sources.

THE LANCET

LONDON SATURDAY DECEMBER 27, 1941

WHEN DOC MEETS DOC

"It isn't the prescription that I give," said a great physician, "but the pat on the shoulder with which I give it"

"There is one thing at which the G P is supreme, and that is psychology"

"That eyewash, suggestion, or what you will that does the ordinary patient a power of good"

Thus among ourselves do we describe, in varying terms, that aptitude for handling the sick man s mind which TROTTER included among the attainments of the good doctor As we grow older we tend to play upon it, we have said the same thing so often and still have to say it again, and say it as though it were entirely new and the product of the most recent research One will sit down slowly in his chair looking at the window while he glances at the patient to see that his mind is tuned in to the oracle and will blurt it out or slowly roll it over his tongue according to his judgment of the patient s mentality Another will wash his hands and begin as he picks up the towel, finally bringing out his most impressive sentence as he puts it down again with a little jerk As we pocket our fee we may think what an old scoundrel we have been, but one day being tired or pressed for time, we omit some part of our technique and fail to get our advice across So the by-play is an essential adjunct to the advice This is with the ordinary patient, but what when the patient is a doctor? All must then go by the board The doctor knows the tricks of his neighbour's trade, he has too often seen that flick of the towel and may even have copied it himself Then it is apt to be "Well, old man, you might try such and such, though I don't suppose it really does any good," or "By all means have some radiotherapy, though as you know it has no specific action on the tissues"—plain, unadulterated science with no art to back it up

Should this be so? The doctor is as human as anyone else, with fears and anxieties of which the layman knows nothing and which are more difficult to allay The successful doctors' doctor must use another and a more tedious technique This is likely to include a great expenditure of time, a repetition of examination, a lengthy critical discussion in an undertone, and a complete absence of all those trivialities which some call humbug—the very characteristics, in fact, which do not attract the ordinary patient Every teaching hospital carries on its staff one man who knows this technique to perfection, but knows no other Such a man has but little practice, though doctors flock to him when wives and children s lives are at stake Many a doctor owes the life of his wife or firstborn to him and yet has never been able to send him a paying patient He is fortunate if he has private means, for man cannot live on gratitude and presentation silverware alone

This relationship of doctor to doctor may be fraught with risk A frightened junior may ask his senior about some lesion at that time slight but with grave potentialities Thus a young surgeon pricked his thumb when doing an acute streptococcal mastoid Next day an ominous red line had reached his wrist, and he said casually to his chief Look at this, would you lie up with it?'—and his chief as casually replied 'I shouldn't" He did not realise that that young man was frightened for his life, but was more afraid to show it, and this was his way of asking his chief to be his doctor A junior at two hospitals asked two seniors to wash out his antrum from time to time, and each did so thinking the other was in charge of the case and that he was merely doing a bit of handicraft to help An acute pan-sinusitis supervened with septicæmia No tragedy came of these cases, but there have been others—not always on the surgical side and not always in hospital—where a young doctor s life has been cut short because he has had no real medical attention at all The moral is this Refuse to discuss a doctor s ailment with him unless you are being asked to treat him But if you are, don't let him share the responsibility, treat him as you would any other patient And when you yourself are ailing choose your doctor as decisively as you choose your solicitor, and put yourself as unreservedly in his hands

HEAD INJURIES

JUDGING by the amount being written about them there is a growing realisation of the importance of head injuries, so that these cases may no longer be stuck away in the corner of a hospital ward as something of a nuisance and left to run their course The total number of head injuries resulting from air-raids has been nothing like as large as was expected, but SHEPHERD found 14% of such injuries in a series of 245 air-raid casualties reported on another page, a heavier incidence than in any other regional group, and the increase in road accidents brought about by war-time motoring has accounted for many more cases Much can be done in the way of prevention Protective headgear for the fighting man went out of fashion with the transition from hand-to-hand combat to the lead and steel missile, but the reappearance of the steel helmet in the last war undoubtedly saved many casualties In less serious pursuits, American footballers have for long worn a padded leather helmet to lessen the incidence of concussion in that robust game, and from the speedway and dirt-track we learned the virtues of the crash helmet, especially for motor-cyclists CAIRNS's studies in this war are a cogent argument for insisting that all motor-cyclists should adopt this simple and efficient protection Industrialists have been slow to learn these lessons but MILLER[1] reports that the incidence of head injuries among the South African miners has been greatly reduced by the adoption of the "hard hat," and the fashion will doubtless spread among other classes engaged in dangerous occupations The appalling number of road accidents demands, even in these times, a more vigorous and persistent propaganda campaign for safer use of the roads by motorist, cyclist and pedestrian alike

Most recent writers emphasise the importance of proper treatment of the scalp wound Too often these wounds suppurate, with grave or even fatal complications Adequate excision and thorough cleansing are first principles, but the possibility must be borne in mind that an apparently trivial scalp wound hides a penetrating wound of the skull or brain for which something more is required, and a good case can be made for X-ray examination in every case not obviously a simple laceration A problem as yet unsolved is the correct treatment of traumatic cerebrospinal rhinorrhœa, usually resulting from a fracture through the frontal or ethmoidal air sinuses O'CONNELL[2] considers that immediate closure of the fistula is not necessary, and the natural barrier formed by the scar is at least as good protection against infection from the air sinuses as is an artificial closure reinforced with a fascial graft Others have had the unhappy experience of meningitis arising in the early days after the injury, perhaps while spontaneous closure is being hopefully awaited, and in some of these cases chemotherapy will not save the patient's life There are cases, too of a fistula apparently closing spontaneously, only to leak again some weeks or months later, and a fulminating meningitis may be fatal before treatment can be instituted Because of these risks some maintain that early closure of the fistula is preferable to the uncertainty of spontaneous healing No single person's experience is yet large enough to justify definite pronouncement, but if the centres dealing with large numbers of head injuries are keeping records and following these patients the answer should be forthcoming in a few years The treatment of compound fractures of the vault is more generally agreed on but the same cannot be said about what should happen to a foreign body lodged at some depth in the brain There seems no doubt that unless the search can be made by someone accustomed to the technique it is better not made at all Even in the hands of specialists more harm and disability may result from removing a foreign body than from leaving it where it is Individual cases will have to be dealt with on their merits, with the balance weighted in favour of conservatism

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[1] Miller, L E *Sth Afr med J* 1941, 15, 331

Not enough has yet been said about rehabilitation There are special centres for dealing with head injuries and their sequels in the military population, but the problem in these cases is often complex and not strictly applicable to civil life There is a need for similar centres for civilian injuries, and the insurance companies might find it to their advantage to make a start in this direction The present machinery of litigation and compensation often perpetuates the invalidism from these as from other injuries, and a rehabilitation centre should be able to give decisions which would shorten the period of invalidism Apart from such institutional treatment we need to get away from the rule-of-thumb treatment of concussion—some cases need only three days in bed, while others may require three weeks or longer, depending on the individual's reaction to the injury The lay public needs to be weaned from the idea that a person who has had a fractured skull is necessarily maimed, mentally or physically With this belief would go the darkened room and the dark glasses, and the whole panoply of a mental illness If the patient recovers from the injury without gross cerebral damage he should be expected to make a fairly complete mental and physical recovery Anything short of that in the great majority of cases would imply faulty management in the early stages of convalescence

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[2] O'Connell, J L A *Lancet*, Dec 13, 1941, p 719

REFRACTORY ANÆMIA

WHEN the hæmopoietic property of liver ext and the proper use of iron salts were firmly establ it seemed as if treatment of the primary blood orders would henceforth be simple and satisfac From the first it was recognised that leukæmia the classical aplastic anæmia had to be excluded a that certain hæmolytic anæmias required spec treatment , but these were a minority The pathol gist's report showing an anæmia with a high colou index was thus the signal for liver extracts and favourable prognosis Mostly this optimistic foreca was fulfilled, but sometimes the response was di appointing—liver extracts were changed, iron w given, in the end blood-transfusion was usually need and the outlook was gloomy These unfortuna patients were in such striking contrast to those wh responded normally to treatment that they were soo noticed and reports of " pernicious anæmia refracto to liver treatment " began to appear In 19 ISRAELS and WILKINSON[1] showed that there was fact a group of patients in whom the clinical featur blood-picture, and histological changes in the bon marrow closely resembled pernicious anæmia but wh in varying degrees of completeness, failed to respon to liver extracts of tested potency , a notable p was that achlorhydria, so typical of true pernici anæmia, was not present This group was name achrestic anæmia and later[2] it was reported th sternal-marrow biopsies studied by the dry-sme technique were also of the pernicious anæmia ty with megaloblastic hyperplasia Other writers hav reported patients in whom a normoblastic hyperplas of the marrow was found and who similarly failed respond to treatment , this anæmia was sometim called " pseudoaplastic "

The same problem forced itself on the attention workers at the Rockefeller Institute in New York an in 1939 C P RHOADS[3] summarised the conclusion reached After all anæmias which could be attribute to cancer, Hodgkin's disease, nephritis, cirrhosis the liver or leukæmia had been rigidly excluded, the remained a group of primary anæmias whose cour did not respond to any of the standard treatments these were intensively studied and a full report ha recently been given by BOMFORD and RHOADS[4] o 66 such cases The natural history was carefull noted , the histology of the bone-marrow was studie by sternal biopsy and at autopsy , fractional gastr analyses were made , changes in the urobilinoge excretion were used to estimate liver function porphyrin excretion was studied and the copro porphyrin isomers were isolated in 6 cases , the excre tion of glucuronates was used as a measure of " detox fying capacity " , some other tests were applied a well Yet the picture presented by all this detail confused, if not chaotic A not very successfu attempt has been made to classify the cases accordin to the histological changes in the marrow It possible that use of the dry-smear sternal-punctur technique, adopted by several hæmatologists wit encouraging results, might have made this classifica tion more precise , but it is clear that pathologica changes in the bone-marrow are only part of the story Discussion of the relative value of all this evidence must still be left to the expert, but it is useful to see what impressions have been gathered about the ætiology of these cases and what practical experience has taught about their management

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[1] Israels M C G and Wilkinson, J F *Quart J Med* 1936, 5, 6
[2] *Ibid*, 1940 9, 163
[3] Rhoads, C P Symposium on the blood and blood formin organs University of Wisconsin, Madison 1939, p 31
[4] Bomford, R R and Rhoads *Quart J Med* 1941, 10, 175 and 23

Rhoads is struck by the resemblance between the refractory anæmias and those anæmias whose course is also independent of treatment, which are known to be due to exposure to potentially hæmotoxic aromatic hydrocarbons, and included in the reported series are 34 cases of refractory anæmia in which the patient had been exposed to benzol paraphenylenediamine (a hair-dye), analgesics like pyramidon and phenacetin, and some other similar substances He also recalled that somewhat similar anæmias had been experimentally produced in animals by substances like indol and œstrin Only a few of the people exposed to these hæmotoxins develop refractory anæmia and it is therefore necessary to postulate a conditioning factor or state Dietary deficiencies or endocrine disturbances could only be detected in a minority of cases but evidence of liver disturbance or failure of the biochemical mechanisms for detoxicating aromatic hydrocarbons was observed more frequently, an increased rate of hæmolysis was also noted Bomford and Rhoads suggest as a working hypothesis of the ætiology of refractory anæmia a conditioned susceptibility to aromatic hydrocarbons to which the patient has been externally exposed or which are being produced in the body itself in the course of normal metabolism, this susceptibility is associated with a disturbance of liver function and detoxicating mechanisms and with the circulation of hæmolytic substances which not only affect the red blood cells but also their precursors in the bone-marrow This theory is still too tentative to be applied to treatment which consequently remains empirical and unsatisfactory Removal from exposure to toxic substances is an obvious measure and should include the abandonment of all sedative drugs containing aromatic hydrocarbons The diet should be adequate in all respects and supplementing the diet with vitamin-B complex is especially recommended Bunding[5] in a recent German report also supports this measure If sternal puncture shows a megaloblastic marrow it is useful to follow Israels and Wilkinson's recommendation to give liver extract—the more refined forms should be avoided When all this is done the mainstay of treatment is blood-transfusion, which should be repeated as needed since a fair proportion of patients eventually show remissions which may be prolonged and occasionally permanent Careful cross-matching is essential since the severely anæmic patients are particularly liable to post-transfusion reactions Bomford and Rhoads believe that transfusions should be used sparingly and are not in favour of raising the hæmoglobin to 70 or 80%—a procedure which has its supporters[6] especially by the method of giving concentrated red cells[7] Transfusions should be continued however bad the outlook may seem As it may be necessary to sustain one of these patients with other people's blood for months or even years, the outlook is indeed grim both for patient and doctor, and it is not easy to decide how long it is proper to wait for signs of remission

Here then are a group of patients whose blood-picture may resemble treatable anæmias but who in practice prove refractory to the known hæmopoietic drugs Their ætiology is still speculative and their treatment empirical The doctor can at present do little more than note their occurrence and resolve to be cautious in prognosis until the effect of treatment becomes clear No patient should however be diagnosed as primary refractory anæmia until a thorough survey of the known causes of anæmia has been made

HIGH FLYING

A group of Boston workers[1] have again emphasised the difficulties in flying at over 32 000 ft even when oxygen is supplied Oxygen constituting as it does a fifth of the atmosphere exerts at sea-level a pressure of 152 mm Hg, being a fifth of the total atmospheric pressure of 760 mm Although its absorption into the blood depends on its pressure, it is normally absorbed at a pressure nearer 100 than 152 mm Hg This is first because the high water-vapour content of the alveoli cuts down the space available for the remaining atmospheric gases and reduces their total pressure from 760 to about 710 mm Hg and secondly because whereas in air oxygen would account for 142 of the 710 mm, so much of it has been exchanged in the lungs for carbon dioxide that the remainder exerts little more than 100 mm pressure Up to a point, diminished entry of oxygen into the blood causes no symptoms the acute discomfort of breath-holding is due entirely to the rising alveolar pressure of carbon dioxide, to which the body is extremely sensitive At low atmospheric pressure if pulmonary ventilation remained unchanged two physical conditions would control the gaseous exchange in the alveoli alveolar air would still be saturated with water vapour which exerting the same pressure as before would account for a greater proportion of the total pressure, and the residual pressure would be divided between carbon dioxide, oxygen and nitrogen in the usual alveolar proportions, each of their pressures being reduced In practice the sensitivity of the body to CO_2 intervenes The diminished alveolar pressure of this gas allows it to escape more readily from the blood so reducing the urge to breathe that CO_2 accumulates in the alveoli at the expense of oxygen In rapid ascents this may lead to the insidious and disastrous results of anoxia In ascents occupying days acclimatisation occurs the control of breathing being switched from the CO_2-sensitive to an oxygen-deficiency-sensitive mechanism This ensures sufficient hyperpnœa to keep the alveolar oxygen pressure as high as it will go, though CO_2 is of course, lost, and alkali is excreted in the urine to keep the pH of the blood constant The obvious way to avert anoxia in rapid ascents is to replace the nitrogen of the inspired air with oxygen, so that no matter how much room is taken up in the lungs by retained CO_2, sufficient oxygen is also present to exert an adequate pressure on the blood At 19 000 ft when the atmospheric pressure has gone down to 360 mm Hg nearly half the air breathed must consist of oxygen if the pressure of this gas in the alveoli is to reach the normal 100 mm Hg It has been suggested that even if this is achieved—so that there should be no stimulus to, or reason for, over breathing—there is excessive elimination of CO_2 This is not confirmed by Butler and his colleagues, who working with decompression chambers find that if the alveolar oxygen pressure is kept normal the CO_2 pressure also remains normal and there is no increase in the alkalinity of the urine They did find however that rapid reductions of atmospheric pressure to 250 mm Hg or less might give rise to symptoms resembling those of anoxia, though they were not due to this They attributed these symptoms to liberation of nitrogen or water-vapour bubbles in the tissues—to the same kind of thing, in fact, as occurs in the rapid decompression of divers

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[5] Bunding A *Dtsch med Wschr* May 30, 1941, p 591

[6] Scott R B *Quart J Med* 1939, 8 127

[7] MacQuaide, D H G and Mollison P L *Brit med J* 1940 2 555

[1] Butler A M, Wilson J L, Smith, C A and Farber, S *New Engl J Med* 1941, 225 255

At over 32,000 ft purely physical considerations begin to determine the limit of performance Total atmospheric pressure is now only about 200 mm Hg, of which only 152 mm are available in the lungs after deducting water-vapour pressure Thus even if pure oxygen is breathed the maintenance of a normal CO_2 pressure of 40 mm Hg leaves just sufficient pressure of oxygen to saturate the blood Above this height, pressure of oxygen inexorably diminishes, though at 40,000 ft it is theoretically still sufficient to allow an 88% saturation of the blood But animals exposed to such pressures of pure oxygen die, and Armstrong[2] regarded 30,000 feet as the practical limit of safety Butler and his colleagues point out another hazard when the nitrogen of the air is replaced by oxygen even at low pressure—that of fire, but in civil aviation the deciding factor in altitude is more likely to be the well-known effect of differences in pressure between the atmosphere and the middle ear It seems that the multiple difficulties associated with very high flight can be overcome satisfactorily only by closed-cabin aircraft in which the atmospheric pressure is something like normal

Meanwhile attention must be paid to favourable idiosyncrasies which may account for some aviators having a resistance to altitude slightly above the average On the basis of the remarkable survival of thyroidectomised rats at a barometric pressure sufficiently low to kill all normal rats, Barach, Eckman and Molomut[3] suggest that a low metabolic rate may be an advantage It is doubtful if they would have obtained such favourable results if they had reduced the temperature as well as the pressure of their exposure chamber so as to imitate more closely the conditions met in flying Their less sensational finding[4] that twenty cigarettes bind an average of 5 7% of the total O_2-combining power of blood to CO may in practice prove more important, and we await with interest their projected experiments in which these findings are to be correlated with the actual demand of the tissues for oxygen

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[2] Armstrong H G Principles and Practice of Aviation Medicine, London, 1939

[3] Barach, A L Eckman, M and Molomut, N *Amer J med Sci* 1941, 202 336

[4] See also Hartridge, H *J Physiol* 1920 54 152

The directors of the Cooperative Wholesale Society Ltd ask us to state that all national wheatmeal made by their mills is produced strictly in accordance with the specification laid down by the Medical Research Council The average fibre content of their product, as revealed by analysis over a long period, is less than 0 8%

Annotations

THE PROPER SCHOOL MEAL

Anyone disheartened with the slow rate of progress applied nutritional science in this country will be encouraged by the latest circular (No 1571) of the Board of Education which sets out not only the principles upon which the provision of school meals should be based but also the types and quantities of foods which are necessary The first principle is that in planning a midday meal for school-children it is essential to consider the probable defects of their home diet This is almost certainly lacking in first class protein, fat, calcium, iron and the vitamins, and the board aim at making good these deficiencies, at any rate in part For a dinner to provide about 1000 calories they recommend 20–25 g of first class protein, 30 g of fat and suitable amounts of vitamins and minerals The second principle is that the nutritive value and not the low cost of the meal should be the first consideration and the board deplore that there "still are some instances where the authorised *allowances of food have not been bought in full owing to a* well-meant but mistaken effort to keep the price of the school dinner very low or even to make a profit for sports funds " Economy, they insist, should be studied "not by reducing the quantity or the quality of the food and staving off hunger with liquids such as soup, but by avoiding waste, by skilled buying and by good cooking The board might well borrow a leaf from the bulletin of the Children's Nutrition Council and add "by studying child likes and dislikes, by working within their ambit, and by subtly training the child to eat unwanted but nutritious foods "[1] The low table wastage at Christ's Hospital[2]—less than 1% compared with the average 10%—was achieved by these methods A third principle is that no child should go without a nutritious midday meal because his parents cannot contribute to the cost "If it is found that some of the parents cannot pay the full cost of the food the remedy is not to give a poorer meal, but to adjust the income scales so as to provide for meals on part payment, as well as for free meals "

And lastly there is the principle that cost of supervision and preparation of the meals must not be scamped, for the provision of "balanced meals" needs intelligence and training, and so costs more "A skilled organising and catering staff is therefore essential and there is no true economy in offering wages too low to attract competent cooks and helpers" We prefer to ask for dietitians (or nutritionists as Americans call them)—though as yet we have trained far too few in this country to meet the demand—for there will be difficulty in interpreting the board's wishes from the lists given as a guide to the quantities of the main foods to be used Taking the full range of foods and using the quantity of dried milk allowed, the diet works out at 17 g of first class protein 400 mg of calcium, 4 3 mg of iron, 900 I.U (and possibly more) of vitamin A, 20+I U of vitamin D, 0 6 mg of vitamin B_1 and 19 mg of vitamin C per meal This is a satisfactory diet, though the iron is low But if liquid milk is used instead of dried milk in cooking it appears as though the first class protein and the calcium will be considerably lower, because the liquid milk allowed is by no means equal to the alternative amount of dried milk Again it is notoriously difficult to persuade children to eat carrots, cabbage and green vegetables, and it is a temptation to the cook to omit them from the diet and give the children those things which they will eat Moreover, unless the cook is dietetically minded the menus will tend to become more and more what she herself likes to eat There must therefore be a skilled dietetic supervision of the menus and of the children's likes and islikes and attempts should be made, as in Aberdeen,[1] to induce them to eat unaccustomed but protective foods. The board have recognised that children must be proportionately better fed than adults, but to put this principle into practice they will need dietitians as well as books.

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[1] War Time Bulletin October and November, 1941

[2] Friend, G E The Schoolboy, London 1935

ALLERGIC EPILEPSY

EPILEPSY, with its recurring fits, is an obvious candidate for the allergic pigeonhole, and the papers that have been written about the wisdom of this course would themselves fill a good few pigeonholes. A study of these papers induces something of the state of bewilderment produced by a search for truth about current events in war-time. A valiant attack on the subject has recently been made by D. C. Dewar,[3] though one would hardly expect that the patients he investigated—chronic idiopathic epileptics in a mental hospital—would provide the most promising field. Strong prima facie evidence of a connexion between epilepsy and allergy was afforded by his finding that two-thirds of these patients (four times the proportion in a control group) gave either a personal or a family history of allergy, but he does not specify what conditions constitute allergy. To intradermal skin tests he found that 58% of his epileptics, as against 4% of controls, were positive, many of the former showing multiple sensitivity. Offending foods having been eliminated from their diet, twelve epileptics were treated by specific desensitisation. The intramuscular route was adopted and in half the cases an attempt made to control dosage and avoid the risk of oversensitisation, and consequent increase of fits, by repeated eosinophil counts. Sensitivity tests made at the conclusion of the course of injections and again three months later showed that desensitisation had been achieved in most of the cases. A year later Dewar found that there had been a definite reduction, in one case a most dramatic reduction, in fit incidence in seven of the twelve patients, and the decrease in fits as well as mental improvement, can be fairly well correlated with the degree of desensitisation. The value of the paper is greatly enhanced by full details of the techniques employed. The treatment of epilepsy as an allergic manifestation is of necessity a painstaking and laborious process, and brilliant results are likely to remain exceptional. Anyone who wishes to try it out should make a detailed study of this paper before he starts.

PHYSICAL TYPE IN PNEUMOCONIOSIS

PEOPLE who are exposed to apparently equal risks from pneumoconiosis-producing dusts do not, of course, all succumb to those hazards. One differentiating factor between the affected and the unaffected might lie in constitutional type and indeed this view has not only been put forward but to some extent acted on in selecting entrants to the mining industry. The belief is that by excluding certain anthropometric types the incidence of pneumoconiosis, or of pneumoconiosis complicated by tuberculosis, could be reduced. Statistical data have so far been lacking and Aslett, Hart, Martin and Russell[4] give but little encouragement to the hypothesis. Their material is derived from part of the wide survey which has been made in South Wales under the direction of the industrial pulmonary diseases committee of the Medical Research Council. Measurements of 540 workers at an anthracite colliery were available and could be divided into groups of unaffected workers and those with pneumoconiosis of varying degrees. They comprise standing and sitting heights, weight, circumference, anteroposterior diameter, lateral diameter and length of the chest, and radiological measurements. From these various indices have been calculated as well, and comparison is made between the normals and the cases of reticulation, nodulation and major consolidation. The general result of this careful study is that there is little difference in bodily make-up between the affected and the unaffected. For instance the average height differs negligibly so that there is no reason to think that the normals tend to be the "short and tubby" pyknics and the affected the "tall and thin" asthenics. While one or two of the indices—e.g., height/chest lateral diameter—suggest a slight association between type and reaction to the environment there is clearly no differentiation sufficiently well marked to permit the identification of the future pneumoconiotic case. To avoid recruiting those particularly susceptible to the dust hazard—if they really exist—is, it goes without saying, most desirable. There is, unfortunately, no evidence here that such guidance can be usefully based on bodily measurements.

PARALYSED PAPER

PAPER is badly needed for munitions of war but most of us would rather do without a meal than give up a book or a packet of letters. It must be done, and done now as our own contribution to the cause. And there is an added reason for a profession which has its own books and journals. The medical journals are feeling the pinch of paper shortage and if this shortage becomes worse progress in medicine and particularly the dissemination of new knowledge will be held up by difficulty in getting new work published. Doctors themselves can do much to avert this threat for we are among the larger users of paper and run lawyers a bad second as hoarders of it. Most of the compound celluloses from which our paper is made come from abroad and are not likely to be plentiful while war lasts, but fortunately paper like currency, can circulate, and our aim must be to keep it circulating. The textbooks of our student days now of historical interest only, the ledgers of thirty years ago the incomplete and unbound sets of journals which we could not consult even if we would these with the old letters and out-of-date receipts which every literate household possesses must go to the salvage authorities. A Sunday afternoon of selective rummaging will mean less dust in the home, more room in the attic and new facts for old.

NOT SO STERILE WATER

MOST hospital bacteriologists are familiar with the non-purulent spinal fluid which on receipt at the laboratory yields a small gram-negative bacillus or other indeterminate organism. They have usually suspected these organisms to be contaminants from the so called sterile water or saline in which the spinal needle is placed after boiling or with which it is rinsed after sterilisation in an antiseptic fluid. They will therefore be grateful to Professor and Mrs Wilson Smith for showing by systematic investigation of 223 specimens of cerebrospinal fluid and 11 samples of "sterile water" used for rinsing the spinal needles that two-fifths of the spinal fluids were contaminated and that more than a third of the contaminants probably came from the sterile water. Besides the gram-negative water bacillus, which grows best in peptone water at room-temperature, *Staphylococcus albus*, coliform bacilli, diphtheroids, non-hæmolytic streptococci and other organisms were encountered, suggesting that spinal puncture is often carried out without regard to the ordinary rules of asepsis. The resulting contamination is irritating enough to the bacteriologist and may even lead the unwary astray, but the matter becomes much more serious when the same laxity of technique is used in the injection of spinal anæsthetics. Barrie[1] has reported 11 cases of meningitis with one death among 96 consecutive patients operated on under spinal anæsthesia in one theatre. The meningeal infection which was seldom severe, was characterised by the abrupt onset of headache 7–10 days after operation, usually associated with drowsiness, irritability, photophobia

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[3] J. ment. Sci. 1941, 87, 608.

[4] J. Hyg. Camb. 1941, 41, 169.

[1] Barrie, H. J. *Lancet*, 1941, 1, 242.

phapyridine was started In most cases the drug given by mouth though in a few instances when the nt was desperately ill, was vomiting or was so ly distended that all administration by mouth had be discontinued the sodium salt was given intra-ously The daily dosage used was approximately 1½ per lb body-weight, divided into six doses at 4 hour rvals As a general rule half the 24 hour dose was n as the initial dose The drug was given as a powder pended in water, and the average total dose was gr 75 drug was continued as a rule for about 48 hours r the temperature had returned to normal For group of 89 infants of whom half received sulphapyri-t, it was found that in those treated by chemo rapy the temperature subsided more quickly, reaching mal on an average by the fourth day as compared h the seventh day among the controls The length of pital stay, the total duration of illness and the dence of extension of the pneumonia were all favour r influenced in those treated with sulphapyridine, ough, this group included the most seriously ill nts For the larger series of 200 treated infants the ity rate was 10% Thus a reduction to less than a d of what it used to be has been achieved in infants e the introduction of sulphapyridine, and in addition course of disease has been shortened and the incidence spread and complications—notably empyema—atly decreased Reactions to the drug are less uent among infants than among adults Vomiting remarkably rare considering the ease with which vomit, and this means that good sized doses can be given Other methods of treatment have naturally not been neglected The use of oxygen and prompt measures to deal with abdominal distension (parenteral fluids, rectal tube and continuous gastric aspiration) have been employed as hitherto Specific antipneumococcal serum has been used in some instances when indicated by typing No exactly comparable series has been published in the British Isles but it is note worthy that the fatality rate from bronchopneumonia reported[7] by C J McSweeney of Dublin was reduced in the under 5 group from 30% in 1938 to 10% in 1939, the first sulphapyridine year—the same figure as was achieved in Chicago

NIGHT-BLINDNESS

THE Finns are now said to be getting very short of food, and for some time the authorities there have been anxious about the shortage of sources of vitamin A and carotene The other Scandinavian countries and no doubt the Finns as well, are normally large consumers of dairy produce and eat few vegetables so that they rely almost entirely on animal fats for their vitamin A Nylund[8] made a study of night blindness in Finland in October and November, 1940, with a view to determining whether there had been any increase in vitamin-A deficiency since the war began He compared his findings in 31 students with those in 82 students examined two years earlier Of the 82 seen in 1938 79% showed normal adaptation, 9% were night blind and 12% were borderline, in the 1940 group only 48% had normal adaptation, 29% were night blind and 23% borderline He also compared his findings in 40 pregnant and nursing women (in whom the vitamin-A requirements are known to be high) with those in a similar series tested in 1938 Here again there was a falling off in dark adaptation—from normal adaptation in 95% and night-blindness in 5% the standard had fallen by 1940 to normal adaptation in 65% and night blindness in 25%, with 10% on the borderline Rationing of dairy products began two months before the 1940 tests were made, the daily amounts allowed being butter 25 g (⅞ oz), cream containing 10% fat 50 g (1¾ oz) and milk 200 g (7 oz) The average daily diet at that time was estimated as containing liver 3 g ($\frac{1}{10}$ oz), meat 150 g (5¼ oz), carrots and other vegetables 5 g (⅙ oz) On this basis the average daily intake was assessed at 1055–1280 I U of vitamin A, plus 455–1585 μg of carotene This was certainly insufficient, and Nylund urged an increased consumption of carrots, beans and spinach, with extra liver once a week Pregnant and nursing women had been allowed larger rations, receiving daily 40 g (1⅖ oz) of butter, 50 g (1¾ oz) of cream and 600 g (21 oz) of milk Their average daily diet thus contained 1870–2230 I U of vitamin A and 750–1960 μg of carotene Night blindness did not develop on this diet and it was found that dark-adaptation was fully normal if a minimum of 2000 I U of the vitamin was supplied daily

Other workers have put vitamin-A requirements higher, and it is usual now to express these in terms of body-weight A distinction must be made also between the optimum daily intake and the minimum required to prevent dietary night-blindness in otherwise normal people Thus for an adult man the optimum is considered by Booher[9] to be 40–60 I U per kg body-weight daily, or 3000–4000 I U for a man of 150 lb, the minimum protective intake for a man is 20–30 I U per kg daily, or 1500–2000 I U More accurate work is required, however before any definite figure can be universally accepted The vitamin-A needs of the newborn child are thought to be covered by the vitamin-A content of colostrum and breast milk, provided the intake of the mother is adequate The most reliable estimate of the daily requirement of pregnant and lactating women is 5000–6000 I U

Two retinal mechanisms are concerned in dark-adaptation During the first 7 minutes the photopic mechanism of the cones is engaged Subsequently the scotopic adaptation of the rods comes into play and continues slowly for several hours More than 95% of dark-adaptation, however, is complete after 30–40 min in darkness Vitamin A is an essential constituent of visual purple, which is found only in the rods but it appears also to be essential for the complete dark-adaptation of the cones In many cases of experimentally induced night blindness impairment of dark-adaptation begins on the first day of the vitamin-A deficient diet and may be significant within a week In these cases it has often been shown that vitamin-A brings about a rapid improvement, followed by a more gradual process of complete recovery, so that normal dark-adaptation may take longer to regain than to lose It has been suggested that recovery may be hastened by adding riboflavin and ascorbic acid to the diet, in addition to a supplement of vitamin A To obtain the most prompt and complete recovery, massive doses (100,000–300,000 I U daily) have been recommended by some workers, others have obtained the same result with doses as low as 10,000 I U

MR PERCY FLEMMING, consulting ophthalmic surgeon to University College Hospital, died at his home at Upper Basildon, on Dec 19, at the age of 78

AN editorial board has been set up under the chairmanship of the President of the Board of Education to direct the compilation of a medical history of the war The Fighting Services, the Ministry of Health the Department of Health for Scotland, the Medical Research Council and the War Cabinet secretariat, will be represented and Sir ARTHUR MACNALTY has been appointed editor-in-chief

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MEDICAL HONOURS —The military cross has been awarded to Captain Leonard Bapty, M B Aberd, R A M C, and the R N V R officers decoration to Surgeon Commander D C Wilson, F R C P E and neck rigidity The cerebrospinal fluid, examined in 6 cases, showed evidence of a mild purulent meningitis It seems pertinent to ask whether the severe headache which may follow spinal anæsthesia is not sometimes due to meninges infected in this way In the induction of spinal anæsthesia, the anæsthetist should wear sterile gloves, the skin of the patient s back should be covered with a visible antiseptic like iodine and the spinal needle should either be boiled and put in a dry sterile container or be previously sterilised in an autoclave or hot air oven in an appropriate closed container Boiled water or saline used repeatedly from a Winchester or other large bottle for rinsing or immersing sterile instruments and needles is very liable to become infected as Bigger and Nelson[2] have shown, and this practice, all too common in hospitals, cannot be too strongly deprecated Indeed, the need for a bacteriological control of hospital methods becomes ever more apparent

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[7] *Lancet* 1940 2 3

[8] Nylund C E *Nord Med* March 1, 1941, p 609

[9] Booher L E *J Amer med Ass* 1938, 110, 1920

TRAUMATIC ARTERIAL SPASM

THE local constriction of a vessel wall in response to trauma is a well-recognised phenomenon, apparent even in the injection of varicose veins Operations on arteries are impeded by this spasm, and it has long been known that constriction of the severed ends may be sufficient to arrest hæmorrhage in severe arterial damage Nevertheless the importance of a local vasoconstrictor reflex in jeopardising the vitality of a limb which has been injured is not very well recognised Last year Griffiths[3] cited traumatic arterial spasm as the cause of Volkmann's ischæmic contracture, and recently Cohen[4] has brought together clinical reports of a variety of cases illustrating effects produced by spasm of the intact vessel as a result of injury, and the type of treatment that can be applied with hope of success He shows that simple exposure of the artery at the site of injury may be sufficient to arrest the spasm, though there is as yet no explanation of this remarkable fact In his first case the injury was caused by a splinter of glass or of a bomb—it was not known which did the damage—passing through the arm just below the elbow-joint The radial and ulnar pulses were absent, though they were easily palpable on the opposite side There was a musculospiral nerve palsy At operation six hours after admission it was found that the missile had just skirted the joint capsule, the nerve was contused but intact, and the biceps tendon was almost completely severed The brachial artery was not pulsating, and was surrounded by a network of soft clot For a distance of about 2 cm proximal to the origin of the radial artery a fine blue stippling indicated bruising A tourniquet was applied, the artery was freed from the clot and from a fine areolar tissue and pulsation returned as the tourniquet was released The pulse after operation remained normal and the limb recovered

Apart from penetrating wounds, other types of trauma which may be associated with arterial spasm are the application of a tourniquet (especially dangerous on the arm), fracture of a bone in the neighbourhood of a large vessel, application of plaster of paris to a limb, and skeletal traction to the lower leg on a Bohler's frame with the knee flexed In this method of traction the knee forms the fixed point from which the traction acts, and the popliteal artery may be injured Cohen gives examples of all these types of injury in which ischæmia resulted in the loss of the limb He quotes Trueta's experience of the danger of tourniquets in the Spanish war Towards the end of the war the Spanish surgeons used them only as very temporary expedients Recognition of the danger of arterial spasm in fractures near large vessels should make the surgeon wary of applying closed plaster in the early stages It is probable that, with badly contused limbs, it is better to method of slinging in a Thomas splint with care not to compress at the flexures E impaired circulation will then be obtained in time surgeon to operate with success, and plaster applied after the first two or three days have elapsed the danger of ischæmia is over If ischæmia sequelæ may be gangrene of the limb nec amputation, gas gangrene infection of the d and deoxygenated tissues, with danger to the life, or Volkmann's ischæmic contracture of the muscle ending in gross deformity and disability It is n enough to relieve the cause of the trauma—to remove plaster or tourniquet or to release traction The surgeo must bear in mind that the spasm may continue, an if it does he must explore until he finds the spastic arte He should examine it gently and look for evidence damage, careful exposure and lavage with warm sal may cause it to dilate but if these measures fail he ca try the effect of intravenous injection of papaverine If there is a localised trauma, such as a hæmatoma, may be wise to follow the practice of Leriche[5] an excise a few centimetres of the damaged vessel Lerich was concerned to restore the collateral circulation, [illegible] theory being that the reflex starting in the wall of [illegible] main vessel, caused vasoconstriction in the collate This point is not mentioned by Cohen, but it de serious attention because the hope of restorin collateral circulation is almost the only consider which would persuade a surgeon to undertake [illegible] local arteriectomy

Other methods, short of operation, which have be used successfully in treating ischæmia are paravertebra injections of procaine and spinal anæsthesia For the upper limb, Cohen suggests that brachial plexus block anæsthesia is worthy of trial Papaverine might also be tried without exploration, though it is probably more useful when the exposed vessel remains obstinately contracted Exploration to have the best chance of success, must be carried out early—within six hours, in Cohen's opinion Pain may not be serious it seems to arise from continued ischæmia of the muscles and not directly in the spastic vessel In most cases it is as well not to suture the wound Closure of the damaged tissues may lead to compression, and in any case adds a little to the risk of gas gangrene

SULPHONAMIDES AND INFANTILE PNEUMONIA

THE mortality from pneumonia in childhood has always been greatest in infancy and the experience recorded by J Greengard W B Raycraft and W G Motel[6] in the children's division of Cook County Hospital of the effect of the sulphonamides on this mortality is therefore welcome In 1937 and 1938, before chemotherapy was used, the fatality rates were 32% and 31% The infants, all under 1 year, were drawn from essentially the same group and were treated by the same medical personnel and with the same therapeutic measures other than specific chemotherapy as the 1940 series which is now reported It was originally planned to give specific chemotherapy to alternate infants but it was found after this procedure had been continued for some months that "the natural human reactions" on the part of house physicians led to the use of the sulphonamides for the most seriously ill infants This method was therefore discontinued after half a series of 89 infants had received sulphapyridine, and a group of 200 infants were all treated with this drug Bacteriological control was effected in every case by taking a laryngeal swab through a Flagg direct laryngoscope The commonest types of pneumococci were type XIV in 36 cases, type XIX in 31 cases, type VI in 25 cases, and type VII in 18 cases As soon as a specimen of sputum had been obtained sulphapyridine was started. In most cases the drug was given by mouth though in a few instances when the patient was desperately ill, was vomiting or was so badly distended that all administration by mouth had to be discontinued the sodium salt was given intravenously. The daily dosage used was approximately 1½ per lb body-weight divided into six doses at 4 hour intervals. As a general rule half the 24 hour dose was given as the initial dose. The drug was given as a powder suspended in water and the average total dose was gr 75. The drug was continued as a rule for about 48 hours after the temperature had returned to normal. For the group of 89 infants of whom half received sulphapyridine, it was found that in those treated by chemotherapy the temperature subsided more quickly reaching normal on an average by the fourth day as compared with the seventh day among the controls. The length of hospital stay the total duration of illness and the incidence of extension of the pneumonia were all favourably influenced in those treated with sulphapyridine although this group included the most seriously ill infants. For the larger series of 200 treated infants the fatality rate was 10%. Thus a reduction to less than a third of what it used to be has been achieved in infants since the introduction of sulphapyridine, and in addition the course of disease has been shortened and the incidence of spread and complications—notably empyema—greatly decreased. Reactions to the drug are less frequent among infants than among adults. Vomiting is remarkably rare considering the ease with which infants vomit, and this means that good-sized doses can be given. Other methods of treatment have naturally not been neglected. The use of oxygen and prompt measures to deal with abdominal distension (parenteral fluids rectal tube and continuous gastric aspiration) have been employed as hitherto. Specific antipneumococcal serum has been used in some instances when indicated by typing. No exactly comparable work has been published in the British Isles but it is noteworthy that the fatality-rate from bronchopneumonia reported[7] by C J McSweeney of Dublin was reduced in the under-5 group from 30% in 1938 to 10% in 1939, the first sulphapyridine year—the same figure as was achieved in Chicago.

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[2] Bigger, J W and Nelson J H *J Path Bact* 1941, 53, 189, see *Lancet*, Nov 29, 1941 p 673
[3] Griffiths, D L *Brit J Surg* 1940, 28 239
[4] Cohen, S M *Guy s Hosp Rep* 1940–41, 90, 201
[5] Leriche R and Worquin, M G *Lancet* 1940, 2, 296
[6] *Amer J Dis Child* 1941, 62 730

NIGHT-BLINDNESS

The Finns are now said to be getting very short of food and for some time the authorities there have been anxious about the shortage of sources of vitamin A and carotene. The other Scandinavian countries and no doubt the Finns as well, are normally large consumers of dairy produce and eat few vegetables so that they rely almost entirely on animal fats for their vitamin A. Nylund[8] made a study of night-blindness in Finland in October and November, 1940 with a view to determining whether there had been any increase in vitamin-A deficiency since the war began. He compared his findings in 31 students with those in 82 students examined two years earlier. Of the 82 seen in 1938 79% showed normal adaptation, 9% were night-blind and 12% were borderline, in the 1940 group only 48% had normal adaptation, 29% were night-blind and 23% borderline. He also compared his findings in 40 pregnant and nursing women (in whom the vitamin-A requirements are known to be high) with those in a similar series tested in 1938. Here again there was a falling off in dark-adaptation—from normal adaptation in 95% and night-blindness in 5% the standard had fallen by 1940 to normal adaptation in 65% and night blindness in 25%, with 10% on the borderline. Rationing of dairy products began two months before the 1940 tests were made, the daily amounts allowed being butter 25 g (⅞ oz), cream containing 10% fat 50 g (1¾ oz) and milk 200 g (7 oz). The average daily diet at that time was estimated as containing liver 3 g (1/10 oz), meat 150 g (5¼ oz) carrots and other vegetables 5 g (⅙ oz). On this basis the average daily intake was assessed at 1055–1280 I U of vitamin A plus 455–1585 μg of carotene. This was certainly insufficient and Nylund urged an increased consumption of carrots beans and spinach with extra liver once a week. Pregnant and nursing women had been allowed larger rations receiving daily 40 g (1⅖ oz) of butter 50 g (1¾ oz) of cream and 600 g (21 oz) of milk. Their average daily diet thus contained 1870–2230 I U of vitamin A and 750–1960 μg of carotene. Night-blindness did not develop on this diet and it was found that dark-adaptation was fully normal if a minimum of 2000 I U of the vitamin was supplied daily.

Other workers have put vitamin-A requirements higher and it is usual now to express these in terms of body-weight. A distinction must be made also between the optimum daily intake and the minimum required to prevent dietary night-blindness in otherwise normal people. Thus for an adult man the optimum is considered by Booher[9] to be 40–60 I U per kg body-weight daily, or 3000–4000 I U for a man of 150 lb. the minimum protective intake for a man is 20–30 I U per kg daily, or 1500–2000 I U. More accurate work is required, however before any definite figure can be universally accepted. The vitamin-A needs of the newborn child are thought to be covered by the vitamin-A content of colostrum and breast milk provided the intake of the mother is adequate. The most reliable estimate of the daily requirement of pregnant and lactating women is 5000–6000 I U.

Two retinal mechanisms are concerned in dark-adaptation. During the first 7 minutes the photopic mechanism of the cones is engaged. Subsequently the scotopic adaptation of the rods comes into play and continues slowly for several hours. More than 95% of dark-adaptation however is complete after 30–40 min in darkness. Vitamin A is an essential constituent of visual purple which is found only in the rods but it appears also to be essential for the complete dark-adaptation of the cones. In many cases of experimentally induced night blindness impairment of dark-adaptation begins on the first day of the vitamin-A-deficient diet and may be significant within a week. In these cases it has often been shown that vitamin-A brings about a rapid improvement followed by a more gradual process of complete recovery so that normal dark-adaptation may take longer to regain than to lose. It has been suggested that recovery may be hastened by adding riboflavin and ascorbic acid to the diet in addition to a supplement of vitamin A. To obtain the most prompt and complete recovery massive doses (100 000–300 000 I U daily) have been recommended by some workers, others have obtained the same result with doses as low as 10,000 I U.

Mr Percy Flemming consulting ophthalmic surgeon to University College Hospital died at his home at Upper Basildon on Dec 19 at the age of 78.

An editorial board has been set up under the chairmanship of the President of the Board of Education to direct the compilation of a medical history of the war. The Fighting Services the Ministry of Health the Department of Health for Scotland, the Medical Research Council and the War Cabinet secretariat will be represented and Sir Arthur MacNalty has been appointed editor-in-chief.

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[7] *Lancet* 1940 2 3

[8] Nylund C E *Nord Med* March 1 1941, p 659

[9] Booher, L E *J Amer med Ass* 1938 110, 1920

Medical Honours.—The military cross has been awarded to Captain Leonard Bapty, M B Aberd R A M C, and the R N V R officers decoration to Surgeon Commander D C Wilson F R C P E

itten We might then at last get a textbook which as readable and it could be kept constantly up to date y replacing obsolete information with new leaves This extbook—or rather the series of them to cover all the ecial subjects—should be sent free to all members of he medical profession including students and the upplements would also be free Though this would be n added burden on the public purse it would be in a ood cause An organisation for disseminating informa-on on the latest methods of treating air-raid casualties lready exists The E M S sends round circulars on fficial methods of treatment and is even collecting nformation on some subjects An extension of this rinciple to the whole of medical practice could hardly e thought objectionable

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Let us then demand facilities for the proper organisa-ion of research for assuring the research worker a reasonable living for leading him to the problems which most urgently require solution for preventing him from ngaging on redundant work for providing him with an dequate resume of all that is known about his chosen subject and, most important of all for getting the knowledge as quickly as possible to those whose job it is to use it We need an organisation which as H G Wells puts it accumulates sorts keeps in order and renders available everything that is known '

PALESTINE

MORTALITY AND SICKNESS AMONG INFANTS

THE infant mortality in the past ten years has been analysed in the July issue of *Hadassah* the bulletin of the Jerusalem University Hospital The deaths have been grouped according to the various races found in Palestine and it is encouraging to find that the rate has fallen in all sections of the community Thus over the period 1931–40 the rate has fallen from 186 per 1000 to 147 among Arabs from 133 to 107 among Christians and from 81 to 59 among Jews The infant death-rate is highest between April and September the Palestinian summer months Among Arab infants the summer rate is double that in winter and among Jews half as much again as the winter rate The commonest recorded causes of death are congenital debility diarrhœa and enteritis and bronchopneumonia Bograchow of the children s department at Tel Aviv in an account of his experience with infantile diarrhœa during 1938–40 says that on the whole the disease affects older infants in Palestine than it does in Europe because almost all Jewish mothers breast-feed their infants who are thus safeguarded against infection carried by cow s or goat's milk Nevertheless the social status of the family and the nutrition of the infant are important in ætiology and prognosis Thus infantile diarrhœa is very common among the poorer Jewish families Nutritional disorders are also common and often associated with qualitative or quantitative hunger He mentions a toxic form of infantile dysentery with a fatality of 100%

POISONOUS BITES AND STINGS

J Seide of Jerusalem writing in *Harefuah*, reviews the poisonous fauna of Palestine These include the jelly fish, *Rhizostoma pulmo* and *Aurelio aurita* and the sea anemone stings from which give rise to toxic skin eruptions The bite of the centipede *Scolopendra cingulata* causes pain and swelling but is otherwise harmless Spiders of the genus *latrodectus* are highly poisonous and a sting from one may endanger life in a child *Tarantula albofasciata* is less poisonous There are six different species of scorpion in Palestine all of them poisonous The commonest is the yellow *Buthus quinquestriatus* which gives an extremely painful sting causing local inflammation and sometimes constitutional disturbance though Seide had never seen a death from such a sting Bees wasps and hornets sting like their kin elsewhere and bites from ants are negligible Several species of poisonous fish cause trouble to fishermen, including species of scorpæna and trachinus The venomous snakes found are mostly vipers the oriental form of the Levant viper being the most common in inhabited parts of the country ; its bite may cause death and prognosis depends chiefly on the promptness with which antitoxin can be given Of 23 cases treated in hospital 3 were fatal Bites from *Vipera lebetina* are discussed more fully by Lefkovitz in a separate paper These are becoming commonest during the hotter months The victim develops local and general signs among which circulatory disturbances are prominent indeed vasomotor instability often persists for years after the bite At the time of the injury œdema and hæmorrhages are common Experiments on frogs suggest that the toxin attacks the vascular endothelium causing progressive engorgement of the peripheral vessels ; the condition spreads from the region of the bite The patient develops hypotension low temperature and myocardial failure with collapse, and may die from circulatory failure Treatment at present recommended is ligation of the affected limb and injection of serum

PRECAUTIONS AGAINST MALARIA

Malaria is increasing in some of the northern districts The health department of the Jewish agency and the university appointed a committee of inquiry under the chairmanship of Professor Mar which reported some months ago (*Hadassah* March 1941) The committee advised that the tents and huts of the colonists should be provided with mosquito-nets and that specially constructed doors should be supplied to the huts These recommendations are being carried out and the colonists are being instructed in keeping their irrigation canals clean and free from plants so as to discourage the breeding of the larvæ

MILK FOR INVALIDS

UNDER the Ministry of Food s milk-supply scheme priority-supplies of liquid milk are allowed to certain invalids against a certificate given by a medical practitioner The conditions qualifying for these special supplies are now specified in a list drawn up by the ministry's medical advisers and made public on Dec 11, as follows

Active tuberculosis of all types ,
Silicosis
Affection of the mouth, throat or gullet or organic nervous disorder causing interference with swallowing
Gastric, duodenal or anastomotic ulcer
Illness characterised by high and prolonged fever ,
Post operative conditions after major operations ,
Active workers, including domestic workers during an illness which temporarily incapacitates them for work
Sick children not attending school
Dyspepsia due to conditions other than ulceration of the stomach or duodenum ,
Colitis , Diabetes mellitus ,
Thyrotoxicosis Nephritis
Hyperemesis gravidarum , chorea of pregnancy , acute yellow atrophy occurring during pregnancy , albuminuria of pregnancy , eclampsia , which are of sufficient severity to entail total confinement to bed

These diseases and illnesses are the only conditions for which special supplies of milk to invalids may be authorised by a medical practitioner The quantity of milk allowed is at the discretion of the doctor subject to a scale prescribed by the Ministry of Food

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FOUR observations in Dr A T W Powell's school report for WALTHAMSTOW call for comment decline in corneal ulcer , decline in organic heart disease decline in chronic otitis media , and increase in dental caries These changes are common throughout the country In 22 847 inspections and reinspections only one case of corneal ulcer was detected yet formerly this disease was often found in school-children It increased in incidence in the last war but since then it has decreased almost to vanishing point probably because of improved nutrition The decline in chronic otitis is mostly due to greater attention to the treatment of the acute phase of the disease but also in part to the lowered severity of scarlet fever and measles The decline in heart disease and child rheumatism which is noticed in all units with rheumatism clinics is none the less welcome because its causes are obscure The increase in dental caries, especially in infants may be due to greater attention, but most dentists believe it to be genuine

Special Articles

FUTURE OF MEDICAL RESEARCH

W. W. WALTHER, M.B. LOND.
DIRECTOR OF PATHOLOGY, QUEEN MARY'S HOSPITAL FOR THE EAST END

THERE is some justification for saying that we are living in the Golden Age of Medicine for at no previous time have there been so many advances in such a short space. For example the sulphonamide group of drugs alone have revolutionised the treatment of many common conditions. And yet there is still much room for improvement in the organisation which makes these discoveries possible. Research does not consist simply of working out and publishing the results of an original idea. Much time must be spent in reading through the literature of work already done on the subject, a task which may involve one in many strange languages, only to find perhaps at the end of many weeks of labour, that somebody else has already worked out the same problem but has somehow failed to get immediate recognition.

In spite of the enormous volume of research which is published little of it ever finds its way into general use, partly because much of it remains unverified and partly because it is simply not noticed. This does not sound at all like a golden age but the statement is easily supported by facts. For example, the original suggestion (based on sound observation) that the shock of burns should be treated by transfusion with a protein-containing fluid was made in the middle of last century. Yet this very practical suggestion was overlooked and only rediscovered during the last few years. Presumably nobody noticed it and it therefore failed to get verified. On the other hand some discoveries seem so much to catch the researcher's fancy that a vast and unnecessary amount of redundant work is wasted on one particular subject. An example of this is the spate of literature which followed the first few papers about prontosil and allied drugs. It has been estimated that the number of papers published on this subject is in the region of ten thousand. Now even the most confirmed sceptic would hardly demand such a vast literature to convince him, and many of these papers are based on such a small number of cases that by themselves they would be of little significance. And yet, until an enormous amount of work on any particular subject gets published, the general practitioner does not hear about it unless it concerns some material whose advertisements are pushed under his nose. This is because the busy doctor has little time to wade through (or income to pay for) all of the large number of medical journals which are published today. But there are plenty of would-be contributors to these journals, largely owing to the fact that besides the quest for knowledge and the desire to benefit humanity there is a need to attain personal recognition. A few publications are a great recommendation for a job, with the result that, as Miller[1] says, "We find it necessary to digest an ever-increasing number of half-baked adventures in medical research." Often enough, in the haste occasioned by the desire to be first in the field, the work is scamped. Sometimes this may also be due to lack of facilities to carry out some important detail of the work. General practitioners have few facilities for accurate work or for producing a number of results sufficient to be statistically significant. In this way a large potential army of keen men is immediately robbed of its keenness. Or, if an effort is made, it lacks numerical weight. Yet under skilled guidance individual efforts can often be turned to good account. There is no dearth of subjects for research, but we lack an organisation which can apportion the work to the best advantage. Although many people no doubt prefer to choose their own subject, it is probable that under a competent authority most would be prepared to work at some set problem either singly or as members of a team.

Many believe that research is insufficiently endowed, and point out that the money available is usually only sufficient to support a newly qualified man, without domestic commitments, on a whole-time basis. Now there is no special virtue in whole-time research work, though one may be forced to devote one's whole time to order to do one's own reading. Neither is it certain the newly qualified man, however keen, is the best for research. Admittedly, the ideas are often sup by the head of a department while the actual wor carried out by assistants, but this does not cover should not cover the whole field of research.

The criticism of modern research thus falls three heads—inadequate endowment, lack of orga tion, and a failure to get results embodied in practice reasonable space of time. It is unlikely that the pr endowment of research will increase in the future, and best way out of the difficulty seems to be the devel ment of a part-time arrangement whereby any body paid by the state (and the number now is greater t ever before and likely to be greater still) should b allowed sufficient spare time to do research if the faciliti exist for it. In certain circumstances a definite pri might be offered for the solving of some particul problem. The prize of £10,000 offered by a daily news paper encouraged research into television, with the resul that, before the war, England led the world in this field and has since led it again in radiolocation.

A CENTRAL BUREAU

For the proper organisation of research some respon sible controlling body would have to be set up. This body would be equipped with an adequate library and permanent staff whose duties would include the prepara tion of abstracts of all that is known on particular subjects in any language, so that the intending researcher is saved the trouble of reading a vast amount of lite in order perhaps to clear up one small point. In ad they should be capable of giving up-to-the mi information on any medical subject to any medi practitioner who asks for it, day or night. This loo a formidable task, but, with an efficient card-index an cross-referencing system, a trained staff would soon fin no difficulty in giving rapid answers to questions. Th cost of maintaining such a library would be great, but would be well worth it. H. G. Wells, in his "Shape Things to Come" had such a scheme for the card indexin of all knowledge—the "Memory of Mankind," wit headquarters in Barcelona. All research work, bot current and projected, would have to be registered wit the bureau, which would then be able to prevent anyon from engaging on redundant work. It could als apportion the work to the best advantage, and organis the appropriate team for the rapid solution of speci problems and for the verification of important observa tions in the shortest possible time. Another importan function would be the organisation of teams of gener practitioners, with the use of laboratory facilities, t carry out research on minor ailments which do not usuall find their way to hospital beds. All this could only b done by an official body with wide powers which enjoye the confidence of the whole medical profession. Such body should, of course, be organised internationally, lik the International Labour Office at Geneva, but as th post-war future is impossible to foresee a start should b made here. The tendencies of foreign research shoul be watched and all allied and friendly neutral countri asked to participate in an exchange of medical knowledg

The results obtained would be examined for contr dictions which could be dealt with immediately b repetition, they would then be submitted to statistic analysis and finally written up in collaboration with a editorial staff whose job it would be to compress th material into as small a space as would be consistent wit clarity. An accurate abstract would be prepared at th same time. Important results might well be published full in a separate international journal of researc simultaneously produced in those countries whic participated, and the abstracts would appear in th regular journals.

The rapid dissemination of results important t practitioners would be the last and most important dut of the bureau. As has already been pointed out, owin to the multiplicity of journals, results may never reac the people who would most benefit by them. To correc this results embodying new methods might be circularise to practitioners in the form of a loose-leaf supplement t a standard textbook, the production of which would b one of the first jobs of the editorial and library com

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[1] Miller, N. F. J. Amer. med. Ass. 1941, 117, 905.

We might then at last get a textbook which is readable and it could be kept constantly up to date by replacing obsolete information with new leaves. This textbook—or rather the series of them to cover all the special subjects—should be sent free to all members of the medical profession including students and the supplements would also be free. Though this would be an added burden on the public purse it would be in a good cause. An organisation for disseminating information on the latest methods of treating air-raid casualties already exists. The E.M.S. sends round circulars on official methods of treatment and is even collecting information on some subjects. An extension of this principle to the whole of medical practice could hardly be thought objectionable.

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Let us then demand facilities for the proper organisation of research, for assuring the research worker a reasonable living, for leading him to the problems which most urgently require solution, for preventing him from engaging on redundant work, for providing him with an adequate resumé of all that is known about his chosen subject, and most important of all for getting the knowledge as quickly as possible to those whose job it is to use it. We need an organisation which, as H. G. Wells puts it, "accumulates, sorts, keeps in order and renders available everything that is known."

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POISONOUS BITES AND STINGS

J. Seide of Jerusalem, writing in *Harefuah*, reviews the poisonous fauna of Palestine. These include the jelly fish, *Rhizostoma pulmo* and *Aurelia aurita*, and the sea anemone, stings from which give rise to toxic skin eruptions. The bite of the centipede *Scolopendra cingulata* causes pain and swelling but is otherwise harmless. Spiders of the genus *latrodectus* are highly poisonous and a sting from one may endanger life in a child. *Tarantula albofasciata* is less poisonous. There are six different species of scorpion in Palestine, all of them poisonous. The commonest is the yellow *Buthus quinquestriatus*, which gives an extremely painful sting causing local inflammation and sometimes constitutional disturbance, though Seide had never seen a death from such a sting. Bees, wasps and hornets sting like their kin elsewhere and bites from ants are negligible. Several species of poisonous fish cause trouble to fishermen, including species of scorpæna and trachinus. The venomous snakes found are mostly vipers, the oriental form of the Levant viper being the most common in inhabited parts of the country; its bite may cause death, and prognosis depends chiefly on the promptness with which antitoxin can be given. Of 23 cases treated in hospital 3 were fatal. Bites from *Vipera lebetina* are discussed more fully by Lefkovitz in a separate paper. These are becoming commonest during the hotter months. The victim develops local and general signs among which circulatory disturbances are prominent; indeed vasomotor instability often persists for years after the bite. At the time of the injury œdema and hæmorrhages are common. Experiments on frogs suggest that the toxin attacks the vascular endothelium, causing progressive engorgement of the peripheral vessels; the condition spreads from the region of the bite. The patient develops hypotension, low temperature and myocardial failure with collapse and may die from circulatory failure. Treatment at present recommended is ligation of the affected limb and injection of serum.

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Active workers, including domestic workers, during an illness which temporarily incapacitates them for work;
Sick children not attending school;
Dyspepsia due to conditions other than ulceration of the stomach or duodenum;
Colitis; Diabetes mellitus;
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THERE is some justification for saying that we are living in the Golden Age of Medicine, for at no previous time have there been so many advances in such a short space For example, the sulphonamide group of drugs alone have revolutionised the treatment of many common conditions And yet there is still much room for improvement in the organisation which makes these discoveries possible Research does not consist simply of working out and publishing the results of an original idea Much time must be spent in reading through the literature of work already done on the subject, a task which may involve one in many strange languages, *only to find* perhaps at the end of many weeks of labour, that somebody else has already worked out the same problem but has somehow failed to get immediate recognition

In spite of the enormous volume of research which is published little of it ever finds its way into general use, partly because much of it remains unverified and partly because it is simply not noticed This does not sound at all like a golden age, but the statement is easily supported by facts For example, the original suggestion (based on sound observation) that the shock of burns should be treated by transfusion with a protein-containing fluid was made in the middle of last century Yet this very practical suggestion was overlooked and only rediscovered during the last few years Presumably nobody noticed it and it therefore failed to get verified On the other hand, some discoveries seem so much to catch the researcher's fancy that a vast and unnecessary amount of redundant work is wasted on one particular subject An example of this is the spate of literature which followed the first few *papers about prontosil and allied* drugs It has been estimated that the number of *papers* published on this subject is in the region of ten thousand Now even the most confirmed *sceptic would hardly* demand such a vast literature to convince him, and *many* of these papers are based on such a small number of cases that by themselves they would be of little significance And yet, until an enormous amount of work on any particular subject gets published, the general practitioner does not hear about it unless it concerns some material whose advertisements are pushed under his nose This is because the busy doctor has little time to wade through (or income to pay for) all of the large number of medical journals which are published today But there are *plenty of would-be* contributors to these journals, largely *owing to the fact* that besides the quest for knowledge and the desire to benefit humanity there is a need to attain personal recognition A few publications are a great *recommendation* for a job, with the result that, as Miller[1] *says,* "We find it necessary to digest an ever-increasing number of half-baked adventures in medical research" Often enough, in the haste occasioned by *the desire to be first in the field,* the work is scamped Sometimes this may also be due to lack of facilities to carry out some important detail of the work General practitioners have few facilities for accurate work or for *producing a number* of results sufficient to be statistically significant In this way a large potential army of keen men is immediately robbed of its keenness Or, if an effort is made, it lacks numerical weight Yet under skilled guidance individual efforts can often be turned to good account There is no dearth of subjects for research, but we lack an organisation which can apportion the work to the best advantage Although many people no doubt prefer to choose their own subject, it is probable that under a competent authority most would be prepared to work at some set problem either singly or as members of a team

Many believe that research is insufficiently endowed, and point out that the money available is usually only sufficient to support a newly qualified man, without domestic commitments, on a whole-time basis Now, there is no special virtue in whole-time research work, though one may be forced to devote one's whole time to order to do one's own reading Neither is it certain the newly qualified man, however keen is the best for research Admittedly, the ideas are *often su* by the head of a department while the actual w carried out by assistants, but this does not cover *should not cover the whole field of research*

The criticism of modern research thus falls three heads—inadequate endowment, lack of orga tion and a failure to get results embodied in practice reasonable space of time It is unlikely that the priv endowment of research will increase in the future, and best way out of the difficulty seems to be the deve ment of a part-time arrangement whereby anybody b paid by the state (and the number now is greater t ever before, and likely to be greater still) should allowed sufficient spare time to do research if the faciliti exist for it In certain circumstances a definite pri might be offered for the solving of some particul problem The prize of £10,000 offered by a daily news paper encouraged research into television, with the resul that, before the war, England led the world in this field and has since led it again in radiolocation

A CENTRAL BUREAU

For the proper organisation of research some respon sible controlling body would have to be set up This body would be equipped with an adequate library and a permanent staff whose duties would include the prepara tion of abstracts of all that is known on particular subjects in any language, so that the intending researcher is saved the trouble of reading a vast amount of lite[illegible] in order perhaps to clear up one small point In ad[illegible] they should be capable of giving up-to-the mi[illegible] information on any medical subject to any med[illegible] practitioner who asks for it, day or night This lo[illegible] a formidable task, but, with an efficient card-index an cross-referencing system, a trained staff would soon find no difficulty in giving rapid answers to questions The cost of maintaining such a library would be great, but it would be well worth it H G Wells, in his "Shape of Things to Come" had such a scheme for the card indexing of all knowledge—the "Memory of Mankind," with headquarters in Barcelona All research work, both current and projected, would have to be registered with the bureau, which would then be able to prevent anyone from engaging on redundant work It could also apportion the work to the best advantage, and organise the appropriate team for the rapid solution of special problems and for the verification of important observations in the shortest possible time Another important function would be the organisation of teams of general practitioners, with the use of laboratory facilities, to carry out research on minor ailments which do not usually find their way to hospital beds All this could only be done by an official body with wide powers which enjoyed *the confidence of the whole medical profession* Such a body should of course, be organised internationally, like the International Labour Office at Geneva, but as the post-war future is impossible to foresee a start should be made here The tendencies of foreign research should be watched and all allied and friendly neutral countries asked to participate in an exchange of medical knowledge

The results obtained would be examined for contradictions which could be dealt with immediately by repetition, they would then be submitted to statistical analysis and finally written up in collaboration with an editorial staff whose job it would be to compress the material into as small a space as would be consistent with clarity An accurate abstract would be prepared at the same time Important results might well be published in full in a separate international journal of research simultaneously produced in those countries which *participated, and the abstracts* would appear in the *regular journals*

The rapid dissemination of results important to practitioners would be the last and most important duty of the bureau As has already been pointed out, owing to the multiplicity of journals, results may never reach the people who would most benefit by them To correct this results embodying new methods might be circularised to practitioners in the form of a loose-leaf supplement to a standard textbook, the production of which would be one of the first jobs of the editorial and library comittee We might then at last get a textbook which as readable and it could be kept constantly up to date y replacing obsolete information with new leaves This extbook—or rather the series of them to cover all the pecial subjects—should be sent free to all members of he medical profession including students and the upplements would also be free Though this would be n added burden on the public purse it would be in a ood cause An organisation for disseminating informaion on the latest methods of treating air-raid casualties lready exists The E M S sends round circulars on fficial methods of treatment and is even collecting nformation on some subjects An extension of this rinciple to the whole of medical practice could hardly e thought objectionable

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[1] Miller, N F *J Amer med Ass* 1941, 117, 905

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Let us then demand facilities for the proper organisation of research for assuring the research worker a reasonable living for leading him to the problems which most urgently require solution, for preventing him from engaging on redundant work, for providing him with an adequate résume of all that is known about his chosen subject, and, most important of all, for getting the knowledge as quickly as possible to those whose job it is to use it We need an organisation which as H G Wells puts it ' accumulates sorts keeps in order and renders available everything that is known "

PALESTINE

MORTALITY AND SICKNESS AMONG INFANTS

THE infant mortality in the past ten years has been analysed in the July issue of *Hadassah*, the bulletin of the Jerusalem University Hospital The deaths have been grouped according to the various races found in Palestine, and it is encouraging to find that the rate has fallen in all sections of the community Thus over the period 1931–40 the rate has fallen from 186 per 1000 to 147 among Arabs from 133 to 107 among Christians, and from 81 to 59 among Jews The infant death-rate is highest between April and September, the Palestinian summer months Among Arab infants the summer rate is double that in winter and among Jews half as much again as the winter rate The commonest recorded causes of death are congenital debility, diarrhœa and enteritis, and bronchopneumonia Bograchow, of the children's department at Tel Aviv in an account of his experience with infantile diarrhœa during 1938–40, says that on the whole the disease affects older infants in Palestine than it does in Europe because almost all Jewish mothers breast-feed their infants, who are thus safeguarded against infection carried by cow's or goat's milk Nevertheless the social status of the family and the nutrition of the infant are important in ætiology and prognosis Thus infantile diarrhœa is very common among the poorer Jewish families Nutritional disorders are also common, and often associated with qualitative or quantitative hunger He mentions a toxic form of infantile dysentery with a fatality of 100%

POISONOUS BITES AND STINGS

J Seide of Jerusalem, writing in *Harefuah*, reviews the poisonous fauna of Palestine These include the jelly fish, *Rhizostoma pulmo* and *Aurelio aurita* and the sea anemone, stings from which give rise to toxic skin eruptions The bite of the centipede *Scolopendra cingulata* causes pain and swelling but is otherwise harmless Spiders of the genus *latrodectus* are highly poisonous and a sting from one may endanger life in a child *Tarantula albofasciata* is less poisonous There are six different species of scorpion in Palestine, all of them poisonous The commonest is the yellow *Buthus quinquestriatus*, which gives an extremely painful sting causing local inflammation and sometimes constitutional disturbance, though Seide had never seen a death from such a sting Bees, wasps and hornets sting like their kin elsewhere, and bites from ants are negligible Several species of poisonous fish cause trouble to fishermen, including species of scorpæna and trachinus The venomous snakes found are mostly vipers, the oriental form of the Levant viper being the most common in inhabited parts of the country, its bite may cause death, and prognosis depends chiefly on the promptness with which antitoxin can be given Of 23 cases treated in hospital 3 were fatal Bites from *Vipera lebetina* are discussed more fully by Lefkovitz in a separate paper These are becoming commonest during the hotter months The victim develops local and general signs, among which circulatory disturbances are prominent, indeed vasomotor instability often persists for years after the bite At the time of the injury œdema and hæmorrhages are common Experiments on frogs suggest that the toxin attacks the vascular endothelium, causing progressive engorgement of the peripheral vessels, the condition spreads from the region of the bite The patient develops hypotension, low temperature and myocardial failure with collapse, and may die from circulatory failure Treatment at present recommended is ligation of the affected limb and injection of serum

PRECAUTIONS AGAINST MALARIA

Malaria is increasing in some of the northern districts The health department of the Jewish agency and the university appointed a committee of inquiry under the chairmanship of Professor Mar, which reported some months ago (*Hadassah*, March 1941) The committee advised that the tents and huts of the colonists should be provided with mosquito-nets, and that specially constructed doors should be supplied to the huts These recommendations are being carried out and the colonists are being instructed in keeping their irrigation canals clean and free from plants so as to discourage the breeding of the larvæ

MILK FOR INVALIDS

UNDER the Ministry of Food's milk-supply scheme priority-supplies of liquid milk are allowed to certain invalids against a certificate given by a medical practitioner The conditions qualifying for these special supplies are now specified in a list, drawn up by the ministry's medical advisers and made public on Dec 11, as follows

Active tuberculosis of all types,
Silicosis,
Affection of the mouth, throat or gullet or organic nervous disorder causing interference with swallowing,
Gastric, duodenal or anastomotic ulcer,
Illness characterised by high and prolonged fever,
Post operative conditions after major operations,
Active workers, including domestic workers, during an illness which temporarily incapacitates them for work,
Sick children not attending school,
Dyspepsia due to conditions other than ulceration of the stomach or duodenum,
Colitis, Diabetes mellitus,
Thyrotoxicosis, Nephritis,
Hyperemesis gravidarum, chorea of pregnancy, acute yellow atrophy occurring during pregnancy, albuminuria of pregnancy, eclampsia, which are of sufficient severity to entail total confinement to bed

These diseases and illnesses are the only conditions for which special supplies of milk to invalids may be authorised by a medical practitioner The quantity of milk allowed is at the discretion of the doctor, subject to a scale prescribed by the Ministry of Food

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FOUR observations in Dr A T W Powell's school report for WALTHAMSTOW call for comment decline in corneal ulcer, decline in organic heart disease, decline in chronic otitis media and increase in dental caries These changes are common throughout the country In 22,847 inspections and reinspections only one case of corneal ulcer was detected, yet formerly this disease was often found in school-children It increased in incidence in the last war, but since then it has decreased almost to vanishing point, probably because of improved nutrition The decline in chronic otitis is mostly due to greater attention to the treatment of the acute phase of the disease but also in part to the lowered severity of scarlet fever and measles The decline in heart disease and child rheumatism, which is noticed in all units with rheumatism clinics, is none the less welcome because its causes are obscure The increase in dental caries, especially in infants may be due to greater attention, but most dentists believe it to be genuine

’t know officially what they make in that building they always start up that motor with its funny little phut-phut exhaust just as I come round this Yes Jerry did have a crack at it one day, he hit the sea and bent those rocks a bit They lly hit the sea round these parts ")

Now for the final straight the skipper has sighted us is starting up the engine as a hint that we should ke some show of running because of course I am just minute late—it always ends that way At first the pper didn t take to me at all kindly said he was shed if he'd wait for me or any other dashed doctor somehow he always does wait (' Look at those k flowers I don't know what they re called but you'll d an amazing variety of flowers leading a fairly comfortable existence among the crevices of the rocks, even n to the water's edge I can't imagine how they do because this breakwater is fiendish in all winter ather often in spring sometimes in summer and it be deadly in autumn Only a week ago it was so gh that not a single boat could put off—the wind stles through the telegraph wires flings the sea across e breakwater roars into one's eardrums freezing them agonising deafness and threatens all the time to dash on to the rocks below ")

"Good morning skipper ' "Mornin Sir, let 'er go k.' We take shelter in the wheel house "What's I hear about a new doctor Sir? terrible it is why we just get to know one when they sends us another there perhaps he'll get up betimes in the morning I shan t be so behindhand with my work all day ' s a pity that the skipper will no longer be able to start working day with this masterly exaggeration

To any Englishman this twenty-minute journey across enormous harbour would be fascinating to a man d to reaching his daily work by bus tram or tube it is holiday Today it is true, the harbour is almost empty, one day the traveller will see H M S well he see various units of the Royal Navy he will see rchantmen of all shapes and sizes and nationalities wlers and drifters seaplanes prizes that once flew swastika or were built in Genoa or Naples and he will ce many other things that are best left unwritten "No I've never disgraced myself on this boat, though there are occasions when it is hard work for two men to swing the wheel and hold it, especially outside the boom in one of these sou'westers that blow up so suddenly hereabouts And I could tell you a story about the sergeant-major of the Battery that we are about to visit, but perhaps it would be fairer to let you wait for that one until, in a sudden confidence, he tells you the sorry tale himself.") The fort, from being a rounded blob in the early-morning haze now begins to take shape and to stand out black and defiant against the horizon Seagulls wheel and circle, alight and take wing in a continuous poem of movement, their skirling pierces the sea-born silence ' Well here we are, good-bye, skipper, I shan't be seeing you again because we'll return in the *Ladybird* " "Mornin' Sir best of luck to you "

The party waiting to go ashore for day leave always present something of a problem It is not easy to make a correct and dignified return to their grinning salutes when one is concentrating on a perilous scramble up a slippery ladder And now for our second breakfast "Hello, doc, are you back again already? Oh well it's your last day, thank heavens, so I suppose we must be grateful for small mercies! " I wonder how long it will be before they have such a cheerful greeting for my successor now being treated with meticulous politeness A matter of a few days only, I expect, the traditional reserve of the Englishman is soon dissolved in these friendly surroundings As we leave the main door of the fort after our cups of tea I automatically clutch at my cap There is always a breeze lurking round the corner waiting to toss one's headgear to the waiting waves After it had twice caught me out, and I had proved that the cap S D, does not stand up to immersion in sea-water I resolved it would never happen again or if it did that at least it would not cost me so dear I have learned to appreciate the troops' "fore-and-aft "

* * *

Great work has been done by the Ministry of Health in the provision of amenities at rest centres where homeless people may be drafted after a severe raiding incident Arrangements are made for the primary comforts of shelter, a cup of hot tea, blankets to encourage sleep food for the hungry and medical and nursing care for the sick Loyal workers of all kinds have been earmarked—W V S school nurses health visitors, district nurses, Civil Nursing Reserve public-assistance officers public-health medical officers and so on The storage cupboards at the centres are a feast for rationed eyes, with their shelves of tinned and bottled goodies that have long since departed from the shop window One thinks of the dark cloud and its silver lining and turns sadly away with the sublinguals working at top pressure Going round some of the centres recently it struck me how much was being attended to in the material sense how little in the spiritual If I thought we are compounded of body and soul where does the soul side come in during the drab hours? Of course there are the encouraging word the cheery smile, the friendly pat on the shoulder But these things are individual and do not necessarily affect the mass and the morale of the mass is on all counts very important In addition to all the voluntary helpers the ministry should see that a gleeful soul with a piano-accordion is on the centre staff—one who can play "Roll Out the Barrel" and sing "Begone, Dull Care" As musician he might be more than any other, entitled to wear the mystic letters 'A R P'.

Parliament

QUESTION TIME

Students and National Service

Mr E BEVIN, minister of labour and national service informed Sir ERNEST GRAHAM LITTLE that the lowering of the age of call-up to include men born in 1923 would not affect the arrangements made for students following specified scientific or technical courses Other male students at the universities who were in the 1923 age-class might apply to the university joint recruiting boards and if they received a favourable recommendation they might after enlistment into one of the fighting services be placed to the reserve and subject to the exigencies of the service complete one year at the university while receiving training in the senior training corps or the air training squadron These arrangements would not extend to students who had already completed three terms at the university At present it was not intended to call up women under the age of 20 The arrangements for women students over 20 were being considered

Central Medical War Committee

In answer to a question Mr E BROWN the minister of health, stated that the services committee which the Central Medical War Committee has authorised to deal with questions affecting the recruitment of individual medical practitioners to H.M Forces and other cognate matters, has met 17 times in the 12 months ended Nov 30 last The attendances were as follows

	Attendances			Attendances	
Members	Actual	Possible	*Members*	Actual	Possible
*Sir Alfred Webb-Johnson	9	12	Dr G Lilico	16	17
Sir Girling Ball	15	17	Dr Peter Macdonald	15	17
Dr J A Brown	11	12	Dr J C Matthews	13	13
Dr A E Clark-Kennedy	—	5	Dr C Newman	8	12
Dr. H Guy Dain	—	5	Prof R M F Picken	12	17
Dr R O Eades	11	12	Col A H Proctor	12	17
Sir Francis Fremantle	15	17	Prof W Fletcher Shaw	—	5
Dr F Gray	12	12	Mr H S Souttar	12	17
Dr D G Greenfield	6	17	Sir Charles Wilson	2	5
Dr E A Gregg	11	17	Dr S A Winstanley	7	12

* Chairman until succeeded by Sir Girling Ball

	Attendance			Attendance	
Observers	Actual	Possible	*Observers*	Actual	Possible
Admiralty	10	17	Ministry of Health	17	17
War Office	10	17	Ministry of Pensions	10	10
Air Ministry	9	17			

Industrial Health Research Board

Replying to Mr F MESSER Sir JOHN ANDERSON the lord president of the council, said The Secretary of the Industrial Health Research Board is Sir David Munro who is sixty three years of age He is at present giving part of his time to the Ministry of Supply as chief medical adviser but in view of that a senior member of the board's investigating staff

In England Now

A Running Commentary by Peripatetic Correspondents

THE little I know about Japanese mental processes, so different from ours, inclines me to believe that their communiques will be even less reliable as a source of news, but more indicative as to intentions, than the German ones The Hun mind starts off with the raw material truth halves it doubles it, twists it or suppresses it according to need but at any rate starts with it as a basis, a relic of a code of morals that bound and helped to evolve the European world The Jap uses truth like steam to be harnessed to man's use if required to be replaced by pure invention, like some of those landings, if a trap demands My mind goes back to a time when I nosed about on the outskirts of their ports, Nagasaki, Yokohama Kobe , got the same feeling as I do with dogs and birds at home—that here are minds working in different ways to mine—and played at putting myself in their place I remember the points where I *seemed to come in contact with them the "soil sense"* and my sympathy with the jinrikisha man who hoarded his daily urine in a tin to bring back to his little terraced garden , their sense of beauty, the single flower with a background, which seemed to me to be a reflection of the stamped beauty of the inland sea , the infinite patience and delight of the growers of dwarfed trees , the public hot baths and their sensual skin pleasure of cleanliness , the small boat men, their love of the sea and the tides, and their fear of it Those seemed to be the tiny points of contact , far away I sensed a religious nationalism which was as foreign to me as our moral system with its emphasis on sex is to them There is a certain satanic humour in the *facts that in this war with Japan—a real war between* sub-species—she should be allied to those who make a fairy story of race purity and world domination and fighting against those whose industrialism has been at the same time the source of her strength and her poison

* * *

As a relief from the world war Mr A P Herbert's word warriors will find a happy hunting ground in the recent B M A report on Industrial Health in Factories A few points can even be scored off the title itself because health, unlike peace, is apparently divisible, the implication being that in addition to "industrial" health other types of health are to be found in factories The word "industrial" keeps cropping up like King Charles's head Thus "an industrial medical officer is appointed to a factory" , it is not possible to appoint a doctor to a factory, he must be an "industrial medical officer" even before he has had any experience of factory life Again, a new specialty called "traumatology" is to be fostered and attention is called to the scarcity of trained "traumatologists" in the country It appears that the ordinary doctor has had no training in treating injuries In due course we shall undoubtedly get subdivisions of the new specialty, such as cephalotraumatologists, thoracotraumatologists and even digitotraumatologists One can already visualise the necessity for a new society to be called the Association of Philotraumatologists Then there is a crying need for doctors constantly to attend postgraduate lectures (for after all there is nothing like a continual state of postgraduateness for keeping doctors out of mischief) so that they may understand more fully the fact—as yet imperfectly recognised—that when somebody is whacked with a rubber truncheon a solution of continuity might arise anywhere in that body's body, depending on the part whacked and the nature of the earth's crust on to which the whackee might fall *No-one but a skilled traumatologist of some* years' experience in Birmingham would be entitled to repair the breach A mobile air-borne team of traumatologists should be kept champing on the air-screw so that they might dash off to Land's End or John o' Groats at the slightest provocation, and particular care must obviously be taken to include in the team relays of digitotraumatologists because cut fingers are so common, don't you know ! Wounds will no longer be sewn up with surgical needles and catgut or silk, but with traumatological aiguilles and tautological byssofils

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I'm imprisoned *hopelessly deep* down in a dungeon , how did the old saw go? "Down in a deep dark ditch lay an old cow " No, that doesn't seem to fit, anyway it's deep and it's dark, and there seems to escape , my tongue is swollen, I can't even whisper, alone shout for help How can I get at that man keeps yelling in my ear, "Come on Sir come on Suddenly the shouting swells to a terrific volume of very close to my ear I seem to be climbing through roof but the prison suddenly resolves into the r that my blankets have got twisted round me I m tl and the camp bed is too small for an expansive so nightmare "Oh, all right George, I can hear you n yes, I'll get up , yes, thank you George, I know the t cold , I never hear when you call me first w that, only five more minutes ? O K , George, I m up you needn't worry any more "

My batman and I have, between us, accomplished most difficult job in the day—getting me out of I always intend to have half an hour at least for was and dressing, but as often as not it ends by being certina-ed into five minutes With the mists of sleep clinging to my eyes I stumble into breakfast , usuall *solitary meal (the M O always has to get up before* body else), but this morning I find another man, the M O replete with breakfast, impatient to be off "W Durrant I see you've taken to heart the tip I gave last night about getting up early enough to eat a d breakfast " "Don't worry, there's still some food l I switch on the wireless, *explaining that as soon as* announcer has mentioned how many raiders were England during the night it is time for me to get g I can tell from the look on Durrant's face that I am ing my breath, and that he will always be on his wa before the announcer gets near the microphone persist manfully in giving him *all the petty details o daily task, helping him metaphorically over many s* that seemed difficult to me at first because as I tell I was the first doctor appointed to do regular round this chain of forts

Crossing the parade ground we glance back at windows now beginning to fill as the shavers *thrust t* white-lathered faces out for that first breath of morn air, and I tell Durrant about a photograph that I l forward to procuring from the Nazis when we ve bea them Three mornings in succession, at the same ti they came over and snapped me just as I was crossing parade ground I should like to know what I look l from 30,000 feet Barely controlling his self-righte ness at noting that the sun is not yet above the houset Durrant is a little abashed when I point out that ne all the essential services of life have already finished t morning round the postman has been, the baker' gone, we had fresh milk with our breakfast the ne papers only just miss us "And anyway," I remind l "this is nothing to the winter , why it's pitch-dark t when you set out to catch the boat "

Every morning (although I never have time to to do it) I almost catch my breath as I burst through mouth of a little alley on to a pathway in full sight of sea The path trots down some steps and joins a roa curve round a tiny bay leading us along to a small where the boat waits each morning It takes minutes to walk round that little bay, never dull or there has always been the excitement of trying to to the boat in time, as well as the exciting beauty of t inlet, with the harbour on the far side of the breakwa an ever-changing pool of ships and far away the o sea There have been still, frozen winter mornings w the "bowl of night" has lingered mirrored in the wate mornings when the sun has only winked a solemn above the horizon's edge disliked the *prospect* sought slumber *again* under black blankets of clo mornings when the sun has pointed a fiery finger acr the flat grey sea, touching one with warmth and beck ing the soul to infinite distance ("Be careful down th steps, they're very slippery in winter ") Morni when there was rain, biting in winter, flooding in spr splashing in summer, or just a film of damp uncomf able mist ("Buy an oilskin', it doesn't look v military, and it won't get you a salute from an A B it's worth more than you pay for it No I'm afr mine isn't for sale ") Days when the clouds are s creamy pillars of down, jagged snow-capped peaks grey mountains, or growling muttering, crackling bla ness shooting tongues of livid fire *across the sky* ("

don't know officially what they make in that building, as they always start up that motor with its funny little phut-phut exhaust just as I come round this corner Yes Jerry did have a crack at it one day, but he hit the sea and bent those rocks a bit They really hit the sea round these parts ")

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To any Englishman this twenty-minute journey across the enormous harbour would be fascinating to a man used to reaching his daily work by bus, tram or tube it is a holiday Today it is true the harbour is almost empty, but one day the traveller will see H M S , well he will see various units of the Royal Navy he will see merchantmen of all shapes and sizes and nationalities trawlers and drifters, seaplanes prizes that once flew the swastika or were built in Genoa or Naples and he will notice many other things that are best left unwritten

" No I've never disgraced myself on this boat, though there are occasions when it is hard work for two men to swing the wheel and hold it, especially outside the boom in one of these sou'westers that blow up so suddenly hereabouts And I could tell you a story about the sergeant-major of the Battery that we are about to visit but perhaps it would be fairer to let you wait for that one until, in a sudden confidence, he tells you the sorry tale himself ") The fort, from being a rounded blob in the early-morning haze now begins to take shape and to stand out black and defiant against the horizon Sea-gulls wheel and circle, alight and take wing in a continuous poem of movement their skirling pierces the sea-born silence ' Well here we are · good-bye skipper, I shan't be seeing you again because we'll return in the *Ladybird* " " Mornin Sir best of luck to you '

The party waiting to go ashore for day leave always present something of a problem It is not easy to make a correct and dignified return to their grinning salutes when one is concentrating on a perilous scramble up a slippery ladder And now for our second breakfast Hello doc, are you back again already? Oh well it's your last day, thank heavens so I suppose we must be grateful for small mercies! " I wonder how long it will be before they have such a cheerful greeting for my successor, now being treated with meticulous politeness A matter of a few days only I expect, the traditional reserve of the Englishman is soon dissolved in these friendly surroundings As we leave the main door of the fort after our cups of tea I automatically clutch at my cap There is always a breeze lurking round the corner waiting to toss one's headgear to the waiting waves After it had twice caught me out, and I had proved that the cap S D , does not stand up to immersion in sea-water I resolved it would never happen again or if it did that at least it would not cost me so dear I have learned to appreciate the troops " fore-and-aft "

* * *

Great work has been done by the Ministry of Health in the provision of amenities at rest centres where homeless people may be drafted after a severe raiding incident Arrangements are made for the primary comforts of shelter, a cup of hot tea blankets to encourage sleep food for the hungry and medical and nursing care for the sick Loyal workers of all kinds have been earmarked—W V S school nurses health visitors, district nurses, Civil Nursing Reserve public-assistance officers, public-health medical officers and so on The storage cupboards at the centres are a feast for rationed eyes, with their shelves of tinned and bottled goodies that have long since departed from the shop window One thinks of the dark cloud and its silver lining and turns sadly away with the sublinguals working at top pressure Going round some of the centres recently it struck me how much was being attended to in the material sense how little in the spiritual If I thought we are compounded of body and soul where does the soul side come in during the drab hours? Of course there are the encouraging word the cheery smile, the friendly pat on the shoulder But these things are individual and do not necessarily affect the mass and the morale of the mass is on all counts very important In addition to all the voluntary helpers the ministry should see that a gleeful soul with a piano-accordion is on the centre staff—one who can play " Roll Out the Barrel " and sing " Begone Dull Care " As musician he might be more than any other entitled to wear the mystic letters ' A R P " .

Parliament

QUESTION TIME

Students and National Service

Mr E BEVIN, minister of labour and national service informed Sir ERNEST GRAHAM LITTLE that the lowering of the age of call up to include men born in 1923 would not affect the arrangements made for students following specified scientific or technical courses Other male students at the universities who were in the 1923 age class might apply to the university joint recruiting boards and if they received a favourable recommendation they might after enlistment into one of the fighting services be placed to the reserve and, subject to the exigencies of the service complete one year at the university while receiving training in the senior training corps or the air training squadron These arrangements would not extend to students who had already completed three terms at the university At present it was not intended to call up women under the age of 20 The arrangements for women students over 20 were being considered

Central Medical War Committee

In answer to a question Mr E BROWN the minister of health, stated that the services committee which the Central Medical War Committee has authorised to deal with questions affecting the recruitment of individual medical practitioners to H.M Forces and other cognate matters has met 17 times in the 12 months ended Nov 30 last The attendances were as follows

	Attendances			Attendances	
Members	Actual	Possible	*Members*	Actual	Possible
*Sir Alfred Webb-Johnson	9	12	Dr G Lilico	16	17
Sir Girling Ball	15	17	Dr Peter Macdonald	15	17
Dr J A Brown	11	12	Dr J C Matthews	13	13
Dr A E Clark-Kennedy	—	5	Dr C Newman	8	12
Dr H Guy Dain	—	5	Prof R M F *Picken*	12	17
Dr R O Eades	11	12	Col A H Proctor	12	17
Sir Francis Fremantle	15	17	Prof W Fletcher Shaw	—	5
Dr F Gray	12	12	Mr H S Souttar	12	17
Dr D G Greenfield	6	17	Sir Charles Wilson	2	5
Dr E A Gregg	11	17	Dr S A Winstanley	7	12

* Chairman until succeeded by Sir Girling Ball

	Attendance			Attendance	
Observers	Actual	Possible	*Observers*	Actual	Possible
Admiralty	10	17	Ministry of Health	17	17
War Office	10	17	Ministry of Pensions	10	10
Air Ministry	9	17			

Industrial Health Research Board

Replying to Mr F MESSER, Sir JOHN ANDERSON the lord president of the council said The Secretary of the Industrial Health Research Board is Sir David Munro who is sixty three years of age He is at present giving part of his time to the Ministry of Supply as chief medical adviser but in view of that a senior member of the board s investigating staff is acting as joint secretary. There are thirteen full time investigators (none medically qualified) whose names and qualifications are as follows T Bedford, D SC, E G Chambers, M A, F A Chienko, W M Dawson, B SC, E Farmer, M A, Miss Alice Heim, PH D, D E R Hughes, B SC, R Marriott, B SC, Miss May Smith, D SC, F G L Stock, C G Warner, PH D, H C Weston, M I I E, and S Wyatt, D SC

Mr MESSER Does the Minister not think that this important post ought to be a full time job, especially as it was so during the last war?—Sir J ANDERSON Normally it is a full time job, but Sir David Munro is giving much needed help in the ministry of supply, and so far as his time is not available to the board, the gap is filled by the temporary appointment of a senior member of the staff.—Mr MESSER Is the Minister aware of the grave dismay with which the public have received the report of the British Medical Association that not less than 32,000,000 weeks are lost each year by industrial workers through preventable illness?—Sir J ANDERSON The business of the board is not primarily concerned with industrial disease, but with such matters as industrial fatigue, and the like

Medical Practitioners as Combatants

Sir ERNEST GRAHAM LITTLE asked the Minister of Labour how many registered medical practitioners were at present serving as combatants in any of the fighting services; and whether, in view of the shortage of medical personnel for both civilian and military needs, he would allocate such practitioners to medical duties.—Mr BROWN replied Arrangements have been made to secure that normally a registered medical practitioner may serve in H M Forces in a medical capacity only and although I cannot give a precise figure I have reason to believe that the number serving as combatants is negligible. The matter referred to in the last part of the question appears to be for the Service ministers who agree that it is only in exceptional circumstances that a medical practitioner may be employed in a non-medical capacity

Soldiers in Medical Category C

Captain H D R MARGESSON, secretary of state for war, replying to Mr F J BELLENGER said that many soldiers of medical category C were at present performing useful service in the Army by freeing men of higher categories for more active duties, and in view of the present man power situation he could not agree to their automatic discharge. Where application was made for the release of an individual for work of national importance the soldier's medical category was taken into account

Hospital Staffs

Major G OWEN asked the Minister of Labour whether, in view of the shortage of nurses and domestic staffs in hospital, he is prepared to recognise such service as a form of national service.—Mr G TOMLINSON replied I recognise service on the nursing and domestic staffs of hospitals as one of the most important forms of national service. It is included in the short list of vital war work for women for which women registered under the Registration for Employment Order are required.—Major OWEN Is Mr Tomlinson aware that many hospitals are short of domestic staff? Is it not a corollary of this order that the Minister will now be able to direct women with experience of domestic service to these hospitals, as he is able to do into the Armed Forces?—Mr TOMLINSON, I should require notice of that question.—Sir JOSEPH LAMB Is Mr Tomlinson aware that the women who are being sent now are daily workers, who arrive at 8 o'clock and leave at 5, consequently there is no one to take charge of the early or late work?—Mr TOMLINSON Hospitals, like all other institutions and industrial organisations, are having to do the best they can with the material available.—Sir J LAMB With the best will in the world, how can they wait till 8 o'clock to give all the patients their breakfast?—Major OWEN Is Mr Tomlinson aware that there are institutions of this character which have no cook at all? The matron of one hospital, to my own knowledge, on Sunday last had not only to look after the dressing of the patients, but to cook dinners for 14 people.—Mr MESSER Before the department considers compelling anyone to work at a hospital, will Mr Tomlinson do his best to see that the remuneration of the lower paid staff is improved?—Mr TOMLINSON I will consider all the suggestions that have been made

Detained Persons and Insurance Benefits

Miss F HORSBRUGH informed Mr DAVID ADAMS that regulations would shortly be made under powers conferred by section 8 of the National Health Insurance Act 1941 by which persons detained under Regulation 18B who before detention were entitled to N H I benefits would be opportunity to safeguard their health insurance and tory pension rights by paying within a reasonable per their release contributions at a reduced rate for the their detention. The reduced rate of contribution in these circumstances made due allowance for the such persons were not in a position to obtain health benefits during their detention. Replying to a f tion, Miss HORSBRUGH said that there would be a time after these people were released before they arrear in respect of contributions

Letters to the Editor

PSYCHIATRISTS AND THE RECRUIT

SIR,—I have been much impressed recently number of patients one sees who are invalided the Forces on account of mental illness. This is ol uneconomic and wasteful in two respects. These and women have to be equipped and trained and sumably cost the country a considerable amount money for short and unsatisfactory terms of service, well as taking up hospital time and accommo before discharge. In addition many of them are who, while they have a precarious adjustment to have done and could do useful work in civilian their mental equilibrium were not disturbed by the to adjust to unfamiliar and distasteful co say nothing of combatant service. We are told these conditions are caused by an insufficient psychiatrists to advise recruiting boards, and to early and slight anxiety cases in the Forces. M the time available for treatment must necessarily taken up in diagnosis and disposal of so much un material. Is it not time that the available psychiatric *personnel of the country were more thoroughly mobilised?* There are still many qualified and experienced women psychiatrists upon whose services no national call has been made, and the institutions for the chronic mentally sick boast many highly qualified and experienced psychiatrists whose work hardly, in this national emergency makes the demand upon them which they would probably welcome

Harley Street, W 1 MARION GREAVES

FRACTURED FEMORAL NECK

SIR,—The outlook expressed by Mr Cochrane on plaster treatment of fractures of the neck of the fe must seem to some surgeons retrogressive. Surely the greatest gain that pin fixation of these fractures has brought is the diminution of the mortality-rate due to hypostatic pneumonia. A patient whose fractured femoral neck has been pinned can straightway sit up and do breathing exercises, and in a few weeks he can be up and out on crutches—instead of spending three months in bed between sandbags or splints, or having his chest and abdominal muscles badly hampered by a Whitman type of plaster spica

Mr Cochrane's note that in spite of considerable experience of these fractures he has not had a case of aseptic avascular necrosis needs some further explanation. He states that many of his cases became arthritic, and one would have thought that if the X rays of some of his arthritic cases had been examined at the critical period of 6–8 weeks after the fracture they would have shown death of the head. Failure to spot avascular necrosis at this stage, as pointed out by Watson Jones here and by Phemister in Chicago, usually results in an arthritis. They considered that unless the head of the femur is protected, during this stage of revascularisation, from the traumata of movement or the compression of weight-bearing, distortion and exfoliation of cartilage leading to arthritis must result. As Watson Jones points out in his book, fixation by pinning secures apposition with firm fixation of the fracture line and this, coupled with an absence of weight-bearing, is essential if the head is to be revascularised. May not the torsional strain, which must fall on the fracture callus when Mr Cochrane allows early movement of the knee out of his plaster spicas, be responsible for some unrecognised cases of avascular necrosis? And these cases, though union by bone is possible, usually end up as arthritics unless they are carefully treated

National Temperance Hospital N W 1 G O TIPPETT

HOSPITAL DESIGN

,—The modern hospital is a complex instrument it must be designed by those who are to work within lls The R S M discussion (*Lancet* Dec 13, p 737) timely It is impossible for an architect to design pital alone, he must have the cooperation of the cal staff This entails a great deal of thought on the of the medical men concerned and coöperation and nce on the part of the architect In one hospital, whose design I in conjunction with my medical agues was to some small degree responsible, sixteen were prepared before the final one was chosen r hospitals where this cooperation was lacking and h have left design to architects are saddled with tisfactory buildings Many instances of this could ven, but I will cite two In a medical school which recently been rebuilt, the lecture theatre cannot be d in winter The heating is by warm air blown into room and when it is turned on is so noisy that the er cannot be heard The seats are built at such an that in order to be heard by the audience at the he has to have his head permanently hyper-nded Similarly in a newly erected private block is no sound insulation between the patients' rooms tween the floors

would therefore urge strongly that the staff of any ital that contemplates rebuilding should get together ar or so beforehand and make up their minds what want, and where they want it down to the minutest ils, and not to place reliance upon an architect who estly is unable to design such a technical instru-t as the hospital has become

arley Street, W 1 DAVID LEVI

NEW METHOD OF TREATING STAMMER

R,—The view that stammering is a symptom whose must be sought in the psychological field has been hed independently by medical psychologists and ch therapists Study of its character and develop-t shows that different types of stammering represent rent stages of the same disorder In the develop-t of a stammer, the sequence of stages is the opposite hat found in normal development and evolution of ch; we are therefore justified in thinking of stam-g in terms of Hughlings Jackson's theory of dissolu-in the nervous system—the reversion (or regression) lisease to progressively more primitive types of tion The first stage of stammering is now generally rded as due to a dissociation between thought and rance This disharmony leads to the reiteration of bles, words or phrases (clonic stammer), a primitive of utterance comparable to the prelinguistic bling in the child's speech development The forces ch bring about a dissociation between thought and ch are usually but not necessarily emotional, at the t they are unconscious to the mind of the speaker, may remain so for some time Unfortunately titive speech is stigmatised by those around the merer as "bad." "slovenly" or "childish", he ures the same misconception, endeavours to improve speech and is exhorted to do so But since the nature is disorder is unrecognised, the steps he takes in order top the reiterations are erroneous and lead him into second stage of stammering, characterised chiefly by ertense articulation (tonic stammer) This hyper-city represents those primordial hypertense postures ch symbolise aggressive emotions Once more the merer can see no way out This blind-alley situa-recurs at intervals, entailing a number of character- stages, and ultimately leads to complete discourage-t and resignation

edical psychologists deal with a stammer in accord- with their views on the nature of the neuroses, ch therapists chiefly use relaxation suggestion, uasion diversion or even philosophical methods (for mple the stoic doctrine) All these methods over- the fact that stammering develops in stages If a n stammerer's symptoms symbolise landmarks in efforts to grope his way along the blind alley, treat-t should permit and encourage him to go back in his ner of speech to the point where he diverged from the t track This point is marked by reiterative (clonic) rance Unfortunately, to the stammerer and those ontact with him to speak in this babbling way means to stammer worse Actually such speech is nearer to normal speech than any mode of speaking which he may have acquired on his way through the blind alley The lack of hypertonicity in such reiterated utterances suggests to the patient the truth of this fact and he readily admits it, nevertheless the therapist's endeavours to induce him to retrace his steps to the clonic stage may meet with considerable resistance, the patient feels that the ostensibly babyish reiterated speech must increase his social difficulties However in suggesting the reversion, the therapist sanctions that infantile speech which has long been repressed, and thus acts as a symbol of the parent figures of the patient's infancy—a procedure sometimes leading to difficulties which cannot be dealt with here

The method outlined has given promising results in a series of cases, and I draw attention to it at this stage because it may prove useful in treating cases precipitated by war stress

Tavistock Clinic LEOPOLD STEIN.

VOLPAR PRODUCTS

SIR,—In a recent paper (*Human Fertility* February 1941, p 1) Dr R L Brown and Dr C J Gamble describe their technique for testing the in-vitro efficiency of commercial spermicidal products Their findings place Volpar at the head of a list of a number of such products, thus confirming the findings of Dr J R Baker This preparation was devised as a result of nearly ten years research by Dr Baker and Dr H M Carleton (whose joint book was reviewed in the *Lancet* 1936, 1, 1071) and was only then put on the market Dr Brown and Dr Gamble raise two important points that contraceptive efficiency measured by laboratory methods does not necessarily tally with clinical experience, and that volpar contains a mercurial compound which has not yet been shown to be harmless when used regularly over a long period The first point can only be settled by reports on clinical results, preferably recorded in a uniform and comparable way The Family Planning Association had hoped to publish such evidence but the war has interfered with the collection of records, information is, however, slowly accumulating and will be published in due course And with regard to the second point, no evidence of cumulative toxic action has been anywhere recorded I have myself had under observation for periods ranging from 1 month to 4½ years more than 500 patients regularly using volpar products, and in no case has there been any sign of mercurial poisoning

MARGARET HADLEY JACKSON
Member of the Medical Subcommittee
of the Family Planning Association

Crediton, Devon

CORONER'S COMMENT —The quotation in Dr Carling s letter (*Lancet*, Dec 13 p 748) should read " your duty to comment on the *number* of the staff at the hospital "

Obituary

"WELSH OF FELTON"

, Dr Robert Anthony Welsh succeeded to the practice of Dr Edward Anthony Hedley of Felton, Northumberland married Hedley's daughter, and lived for 47 years in a Jacobean house known as "Peth Foot" which had been the home of a line of country doctors, father to son, for four generations His life was as he said himself, largely occupied in going to and fro, on some days he might travel 40 miles, seeing only four or five patients, and after he gave up his horses for a steam car and then a petrol car of French make he might still have to improvise a stretcher to carry an emergency case a mile or more over heathery moor Difficult midwifery must be done single-handed and fractures were treated at home Next to the motor-car the installation of the telephone brought the greatest change into his life It is an old and inspiring story which he was induced while still in practice to tell in these columns under the heading ' The Doctor's Day "—in the depths of the country It was the life of his choice and if he had had his time over again he would still have been a country doctor Welsh was born in 1864 and qualified at Newcastle in 1891, when he retired three years ago it was only to move nearer to Newcastle, where he died on Nov 21 And his son, Dr Edward Anthony Welsh, carries on the practice

MEDICINE AND THE LAW

A Soldier dies of "Not Culpable Negligence"

UNDERSTAFFED as they may be, and preoccupied with the task of administering medical services without *properly trained personnel, the military authorities* will doubtless pay attention to the remarks of the coroner who recently investigated the death of a soldier at Llangollen Our readers can form their own conclusions from the story and can decide the steps they would take *to prevent the possibility of a similar occurrence*

Gunner Bird, R A, aged 23, was the cook at a regimental medical post Having a cold, he asked the V A D nurse at the post for some medicine She gave him a cough mixture At about 10 P M on the next night (a Saturday) he went to the dispensary again for something for his cold, he asked for something different from the medicine of the previous night, because the cough mixture had done him no good She gave him a dose of phenol, a teaspoonful in half a cup of water He said it tasted strong, she gave him a cup of hot water He said he was going to be sick He went to the sink, he was not sick but said he had "needles and pins all over" The nurse shouted for another nurse stationed at the post and the corporal in charge (who is responsible in the absence of the medical officer) was fetched The corporal telephoned for the doctor and gave Bird a solution of salt and water Having learnt what had happened, and given hurried instructions, the doctor went to his surgery to collect his bag and stomach-tube While he was there, a second telephone message came, Bird's condition was worse and the nurses could get nothing down his throat The doctor dashed to *the post by car and found Bird in a* comatose state, his symptoms were consistent with carbolic-acid poisoning The stomach-tube was tried and the doctor did what he could, but the patient soon afterwards died The medical officer in charge of the post, a major of the R A M C, had remained there till *4 o'clock on this Saturday afternoon*, he had telephoned at 9 30 P M and been told that everything was in order, he was summoned by telephone at 10 40 and went immediately to the dispensary where he found Bird dead

The inquest elicited the following evidence The nurse gave Bird the phenol because she "thought it was the same thing as she had bought from a chemist at Preston and had taken herself" She was a V A D with two years' experience in an emergency hospital, this included night duty for nine months during which she gave out medicines in accordance with doctors' prescriptions She did not know the strength of the phenol, had not seen it *given for a cold* or as a gargle, and was unaware that it was used for sterilising instruments No-one had warned her that the bottle was dangerous, the only label on it was the word "Phenol" The bottle was on the shelf, there were mixtures at one end of the shelf and liniments at the other The corporal knew that phenol was dangerous and a poison, he had not included it among the dangerous drugs which were locked away under his charge in the medical inspection room The coroner asked a medical witness whether he would expect phenol to be left out on a shelf available for nurses or anybody else to administer The witness replied in the negative but it is probably not the usual practice *to lock up the disinfectants constantly* required for sterilising instruments and dressings, with those potent drugs, dangerous in small doses, which are intended to be taken by the mouth According to the witnesses there was no general right to walk in and out of the dispensary *unless on business, and no nurse* had any authority to give medicine except under doctor's orders or on a prescription The bottle had no corrugated sides to distinguish it *as containing a poison*, though there was some corrugation on the bottom

The corporal said he had brought the bottle with him when he came to the post, he had no instructions about labelling poisons, he was not supplied with labels, but some had been obtained from an outside source He was a Nursing Orderly, class 3, trained by the R A M C He seems to have had no responsibility for this regrettable incident This was not a case of the absent-minded taking of one bottle in mistake for another, death was apparently due to a nurse not knowing that phenol is carbolic acid and is not intended to be administered to the patient by the mouth, whether for a cold or any ailment The coroner held that there had been negl but not culpable negligence of a criminal kind thought that the attention of the highest a should be drawn to what had occurred

Medical News

University of Cambridge

At recent examinations the following were successful

FINAL EXAMINATION FOR M B B CHIR

Part I Surgery, *midwifery and gynæcology* —B G C A V R Arulanandom, W E S Bain, G P Baker, G A J A V Bates, W J M Beveridge, J A Black, A Bolton, Borrie, B F Brearley, M M Brown C D Calnan N A C P W S Coghill N D Compston S M T Cornes, J W A Cr E G A Crawshaw, N F Crofts, M C Cross, G E L C R J R Cureton R E Danckwerts H G Danziger G H D R *Dobson*, K M *Duncan* P D Eeman R M Emrys R P Eskell, G E Ffrench, T N Fison, J B Foote D G R A O Franks, F S Glasson, N J Goorney J A B Gray, Green, D W H Griffiths, E J Harrison, E J Holborow, Holden, P Hugh Jones, A Hulme, W P U Jackson, Jeffrey, P G Jeffries, H W F Jones, H D Juler, T D D E R Kelsey, J M S Knott, H M Lawson A G K T Lockhart H E Lockhart Mummery A Lyell M L alister H McColl I Macdonald, C W F McKean, S J R H G McQuade, R G Mathers, L H H May R H Mear Miller, C R Naish J F Neil D A H O'Sullivan, R A C M Phillips, J S Pippard, E C Poulton, J R K P M M Pritchard, P K Renshaw, W S Rhodes, A G Ri W E Roden A J Rook, J H B M Rowlands, J G J M W Sedgwick P B Shaw, M P Sherwood, D S E G Sita, J F P Shrimshire, R D Slack, J B Stanton M G Stoker J C Swanson, R D Sweet, G E Thomas E G E Tylden, J K Wagstaff, R J Walker, J O Waterlow R Welbourn B C Welshman J C N Westwood, G W Mein, R H Wheeler, R U Whitney, D, I Williams, R I W J F R Withycombe, R B Wright, and J B Wyon

University of Dublin

On Dec 10, the following degrees were conferred at school of physic, Trinity College —

M D—Hyman Ellman, J B Fleming Kenneth Watson J Waugh, and J F Wilde

M B, B Ch, B A O—N J Anderson, Emmeline P Crow Margaret F Y Dixon J B Dunlop, J N Greene, J R Ha T L Kelly, *Ethna M MacCarthy*, A J B McFarland, A C McReynolds, Kathleen M J Morphy, Jack Morris, J A Pears L H Shiago J P Walsh, Dorothy H Webster, and C E Willi

Licence in medicine and in surgery and in obstetric science—L B Citron

University of Edinburgh

On Dec 12, the following degrees and diplomas were conferred —

M D—Fanny B Chisholm, C A Gleadhill, A M MacDonald (gold medallist), *J H Patterson, *A J Rhodes

D Sc—*C E van Rooyen

M B, Ch B—I R W Alexander, R F Antonio, B A Bainbridge, G D Bonner, William Boyd, A K Brown, L F Brown, W J J Bryden Rosemary E Buchan, William Campbell J McD Corston, John Devine, N G Douglas, N K Farley, W D Frew, E R L Gregson C J C Hinnrichs Jean Leith Anne W Maclennan Dennis Malcolm A M Plant David Pottinger, S I Pugh, Anne R McC Ross Margaret C Tait H D Thompson D R Tipping, *Frederick Viedge, A L Wallis J A Watt, and D B Wiseman

D P H—*A S Quinta, T M Small, *Helena S L Taylor

D M R—R A McKail

* In absentia

The degrees conferred by the Polish School of Medicine were given in THE LANCET of Dec 20 (p 780)

Royal College of Surgeons of Edinburgh

At a meeting of the college on Dec 16, with Mr J W Struthers, the president, in the chair, the Liston Victoria jubilee prize for the greatest benefit done to practical surgery in the preceding four years was awarded to Prof J R Learmonth for his contributions to the surgery of the autonomic nervous system, *and to Dr* Robert McWhirter *for his* contributions to the radiotherapy of malignant disease

The following were admitted to the fellowship —

H E Blake, M R C S J H Brownlee, M B Edin, L S Corner, M B Sydney, W B S Crawford, M B Belf J S Davidson M B Edin, C W A Falconer M B Edin, R D Ferris, M B Melb, J D T Jones, M B Durh, A R Leask M R C S T R Miller, M B N Z, E T Owen M B Lpool, Guy Rigby Jones M B Camb, M V Sheehan, M B N U I G M Sleggs M B Lpool C C Tweedie, M B Lpool, and P J M Wright, M B Lond

Royal Sanitary Institute

Dr J E Gordon, professor of preventive medicine and hygiene at Harvard University, who is in charge of the American Red Cross Harvard Field Hospital in this country, has been elected an honorary fellow of the institute

Honours

American Congress of Physical Therapy has awarded a key to President Franklin D Roosevelt, in appreciation long interest and support of the medical fight against le paralysis Keys have also been given to Dr William attending physical therapist at Mt Sinai hospital, York, and to Lieut-Colonel W S C Copeman, y secretary of the British Rheumatism Association, ecognition of his development of a physical therapy tion in the battle field

Times Picayune loving cup for 1940 has been presented Rudolph Matas of New Orleans "in recognition of his of unselfish service to his fellow men"

for the Day

Ministry of Health and the Board of Education have ed a joint circular (Nos 2535 and 1573 of the respective stries) advising local authorities how to speed up the vision of day nurseries and play centres for the children women taking jobs But it points out that the greatest tribution to the task of dealing with these children must me from the stay at home women of the district, who must ide between them the duty of looking after the children those at work. The names of women willing to work if ir children are cared for, and of women willing to share the care of the children should be sent to the local authori- s and, with the help of voluntary organisations, the two oups should be put in touch with each other and helped in king friendly arrangements about the children which may they wish be extended to children of school age The cular stresses that it is the duty of the welfare authority set up a central office to act as a liaison between the mothers d the volunteers No more than three children should cared for in an ordinary working class home and health itors should pay special attention to these guest children robably the women will prefer to make their own arrange ents about payment but if need be the Government are ady to offer financial help under the scheme of daily guard- ns which is being administered by the regional controllers the Ministry of Labour It is described in their leaflet D L 67 revised) Forms of application for registration a daily guardian can be obtained at the local office of the inistry In addition to whatever weekly sum the mother rranges to pay to the guardian herself the state will pay 4*s* week for each child under five cared for on four days or more, nd 2*s* a week for each child for less than four days An pplication for this payment must be signed by both mother nd guardian

Public Health

From the Annual Reports

HENDON

HERE Dr A Fairgrieve Adamson reports an increase n infantile mortality from 34 to 54, largely due to high tality from respiratory diseases, which was spread venly throughout the year and not limited to the first uarter Dr Adamson says "at no time were the helters used to their full capacity, most persons pre- erring to remain in their own houses or to use shelters of he Anderson or other types" This seems to be usual n the towns of the outer ring of the metropolis

BOOTLE

This county borough, according to Dr F T H Wood's eport, had an estimated population of 67,760 in mid-1940, a reduction of 9010 from the 1931 census In stimating civil populations, those in the services of the Crown are excluded, and since these now number several millions, all estimated civil populations are artificially lowered, and since men and women in the services are of ages at which death is exceptional all death-rates are artificially exalted In Bootle the recorded death-rate was 17 3, against 12 4 in 1939, and the birth-rate 22 5, the highest rate since 1932, against the England and Wales rate of 14 6 Infantile mortality was 80 against 65 in 1939 The increase in infant deaths was mainly due to respiratory diseases in the first quarter of the year

ILFRACOMBE

In contrast to these industrial cities Dr D C Adam tells us that Ilfracombe had a birth-rate of 9 5, a corrected death-rate of 8 4, a tuberculosis mortality of 0 59 and an le mortality of 50 There was only one maternal h but th [illegible] aternal mortality of 9 71 The estimated population was 10 160 There were 96 notifications of scarlet fever, which is high for such a small population, but there was no death from the disease The negligible fatality of scarlet fever throughout the country since the start of the war is noteworthy

STAFFORD

Dr D H Binks in his report for this borough remarks that the corrected death-rate of 11 7 was above the ten years' average "probably due to the exclusion of the young members of both sexes who are now in the Services" There is another reason for an apparent rise in the death-rate which applies to all places which have been reception areas since the beginning of the war The rate is in fact based on the mid-year population of 35,320 In the reception areas the numbers of evacuees steadily fell during the first part of 1940 when all was quiet but rose rapidly when the war spread to Britain, so the average population of the year was higher than the mid-year estimate This makes all the vital-statistic rates based on the latter artificially high Dr Binks calls attention to the effect of the war on housing in reception areas—suppression of clearances and of building, and the temporary reconditioning of houses condemned or ready for condemnation After the war the badly destroyed towns must have first claim on the building industry, but the state of the towns which have not suffered from air-raids must be kept in mind

Infectious Disease in England and Wales

WEEK ENDED DEC 6

Notifications —The following cases of infectious disease were notified during the week smallpox 0, scarlet fever, 1324, whooping-cough, 1725, diphtheria, 1103, paratyphoid, 8, typhoid 17, measles (excluding rubella) 667, pneumonia (primary or influenzal), 979, puerperal pyrexia, 178, cerebrospinal fever, 132; poliomyelitis, 14, encephalitis lethargica, 8, dysentery, 165, ophthalmia neonatorum, 83 No case of cholera, plague or typhus fever was notified during the week

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Dec 3 was 1346, including scarlet fever, 157 diphtheria 301 measles, 37, whooping cough, 477, enteritis, 52, chicken-pox, 46 erysipelas, 33, mumps, 17 poliomyelitis, 5, dysentery, 8, cerebrospinal fever, 11, puerperal sepsis, 18, enteric fevers 17, malaria, 1, other diseases (non infectious), 76, not yet diagnosed, 90

Deaths —In 126 great towns there were no deaths from scarlet fever, 1 (0) from enteric fevers, 1 (0) from measles, 6 (1) from whooping-cough, 27 (1) from diphtheria, 28 (1) from diarrhœa and enteritis under 2 years, and 29 (1) from influenza The figures in parentheses are those for London itself

Cardiff reported 1 death from an enteric fever

The number of stillbirths notified during the week was 177 (corresponding to a rate of 37 per thousand total births), including 14 in London

Births, Marriages and Deaths

BIRTHS

LIGHTWOOD —On Dec 19, at Gerrards Cross, Bucks, the wife of Dr Reginald Lightwood—a son

PARNELL —On Dec 15 in London the wife of Dr R W Parnell—a daughter

SWAIN —On Dec 14, at St Albans, the wife of Dr R H A Swain—a son

MARRIAGES

CALDWELL—DUNBAR.—On Dec 20 at Burnham Bucks, Kenneth Peter Somerville Caldwell M B to Dorothy Anderson Dunbar

KEITH—PAKEMAN —On Dec 19 in London John Stobart Keith to Evelyn May Pakeman, M B

STAFFORD CLARK—STEWART —On Dec 16 at Mundham Sussex, David Stafford Clark, M.B squadron leader R.A F V R, to Dorothy Stewart (*née* Crosley Oldfield)

DEATHS

BEGG —On Dec 17 Alexander Clarke Begg O B E M D Edin, M B Lond, consulting physician to the Swansea Hospital

FLEMMING —On Dec 19, at Upper Basildon near Reading Percy Flemming M D Lond, F R C S, aged 78

GRAY —On Dec 20 at Epsom James Hugo Gray, M D Adelaide professor of anatomy at St Mary s Hospital Paddington aged 32

HARRISSON —On Dec 15 at St Neots Hunts Ernest Henry Harrisson M A M D Camb, aged 64

STABB —On Dec 19, at Torquay, E Carthew Stabb, F R C S, aged 78

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export

Notes, Comments and Abstracts

TYNESIDE PROSPECT

IN the fifth reprint and second edition, since 1940, of his survey of social conditions on Tyneside,[1] Mr D M Goodfellow, Ph D, has done more than repeat the facts about high infant and tuberculosis death-rates, and the other penalties of the years of depression which make such bitter reading, he has added two new chapters about regional planning and in doing so lays bare a tangle of conflicting values The Royal Commission on Local Government found great disparity in the health services throughout the Tyneside area Some of the poorest towns make the best efforts to improve their social services, though they can only do so by taxing their citizens and thus increasing poverty, some towns reach high standards in services which in a neighbouring town may hardly exist, and in many services the national standard is only reached in Newcastle itself Thus the social services as a whole do not correspond to the needs of the area To overcome such disparities the commission proposed the establishment of a new region, to consist of industrial Tyneside plus Northumberland county, and the formation of a new municipal borough to include the whole of industrial Tyneside Dr Goodfellow, though he favours the regional idea, insists that to believe the mere advent of regions would automatically solve all problems is a bad mistake To weld Tyneside into one with the county might lead to over-emphasis on agricultural interests, and hence to disparities of social services within the region as wide as any now found on Tyneside Moreover it would divide industrial Tyneside from its natural partner, Durham, with which it has close economic and cultural ties The commission, indeed, suggested that the new region might later include Durham, but Dr Goodfellow believes that it would be better if it did so from the start, if only because of Durham's considerable achievements in social services which would help to serve as a pattern and encouragement to Tyneside The county of Durham is at once smaller than Northumberland and much more heavily industrialised, its inclusion in the region would not introduce the preponderance of agricultural interests to be feared from linking Tyneside only with Northumberland The new Tyneside borough, in the view of the commission, should have powers corresponding to those exercised by a municipal borough Thus it would have control of drainage, sewerage, street-scavenging, the inspection of slaughter-houses and the maintenance of minor roads, but it seems likely that the maternity and child-welfare services would come under the regional authority There is a chance, Dr Goodfellow believes, that such limited scope as these powers offer might fail to attract the right type of councillor Housing, too, would be a special problem Some Tyneside towns have attacked housing troubles with great tenacity and success in the past twenty-five years—Felling council, for example, have turned their overcrowded slum-ridden district into one of the best and most beautiful garden cities in the country Councils which carry out big housing schemes become big landlords and big employers of labour and they have an important share in town planning and industrial development, citizens begin to visit the council offices to pay rents and discuss repairs, and thus get to know the officials and councillors It seems to them proper that the council should control the schools, and they feel they have a personal share in their own schools and their own municipal housing If a new great municipal borough is formed it will take over the council houses of all districts, and this keen sense of local responsibility will be lost More disrupting still, housing will come under an authority which has no means of coordinating it with town and industrial planning, public-health services or education It might be better, Dr Goodfellow feels, to invest all powers in the regional authority, provided the region included both Northumberland and Durham with Tyneside in the middle Such a north-eastern region could take united decisions on industrial planning and uniform development of social services on lines suited to both agricultural and industrial districts, and coul ensure equitable treatment by the national exchequer Moreover a really clever authority might find means t foster and maintain a sense of local responsibilit among the citizens of its various districts, and th would be something new in large-scale local governmen

GOOD ENGLISH EARTH

NOW that we must deck our table from our own field agriculture is coming into her own again, and long m we all enjoy it She has been a struggling industry t long *England and the Farmer* (Editor H J MASINGHAM London B T Batsford Pp 152 10s 6d a timely symposium of authoritative opinion, deserv to be widely read and pondered In a vigorous intr duction, Mr Massingham pleads for a return to t small mixed farm, to farming for subsistence rather tha by a prostitution of scientific knowledge, for big profi *This note is stressed by other writers, notably* Dr L Picton in his provocative article on diet and farming which he contrasts the difference between the fo produced by the sea and the land The sea is se manuring "All the wastes of the sea remain in t sea Its cycle of fertility is established a its by-product is vigour", but food from the la nowadays is largely produced by means of chemi applications with consequent loss of quality and a v legacy of defective nutrition and subnormal healt There is a quiet dignity about this book, and the ma beautiful photographs enhance its charm

MEDICAL DIRECTORY FOR 1942

PUNCTUAL as ever in its appearance the new directo contains 65,394 names, being 1090 more than in the 19 issue It is easy to believe that 300 fewer doctors a living in London, not so easy to guess the significance 500 more names in the Scots and Irish sections But w must not in these days inquire too closely where o colleagues are working, we must try to be content wi *having at all events an up-to-date box number* Oth signs of the times are the occasional heading "emergen hospital," and the list of 962 temporarily registere practitioners (not included in the figures already give Among the universities from which these have qualifie to mention a selection from the first column, a Bratislava, Toronto, Oklahoma, Cracow, Prague, Vermon *Wurzburg, Lwow, Ohio, Vienna, Warsaw,* Berli Medicine indeed has joined hands across the wor With sympathetic regret we note that the resetting i new and clearer type has made no further advance Th price of the directory remains at 63*s*, from J & Churchill

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TRIOFAX TRIPLE DYE JELLY, issued by Burroughs Wellcome and Co in collapsible tubes, contains gentian violet, brilliant green and euflavine, incorporated in a stable water-soluble jelly It is intended for application to burns, especially of the hand and face

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SOLUTION OF LAST WEEK'S CROSSWORD PUZZLE

Appointments

CARGILL W P, M B Manc, D P H deputy M O H fo Southampton

D'AMIAN, ELSE, M D L R C P E part time assist M O fo Swinton and Pendlebury

GAMGEE, KATHERINE, M L M R C S, D P H asst M O (maternity and child welfare) for Middlesbrough

JONES OLWEN, M B Lond medical registrar at the Royal Fre Hospital

ROBERTS, G. I M B Lpool R S O at the municipal acciden unit, Card

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[1] Tyneside The Social Facts Newcastle on Tyne Cooperative Printing Society 1941 Pp 100 1*s*